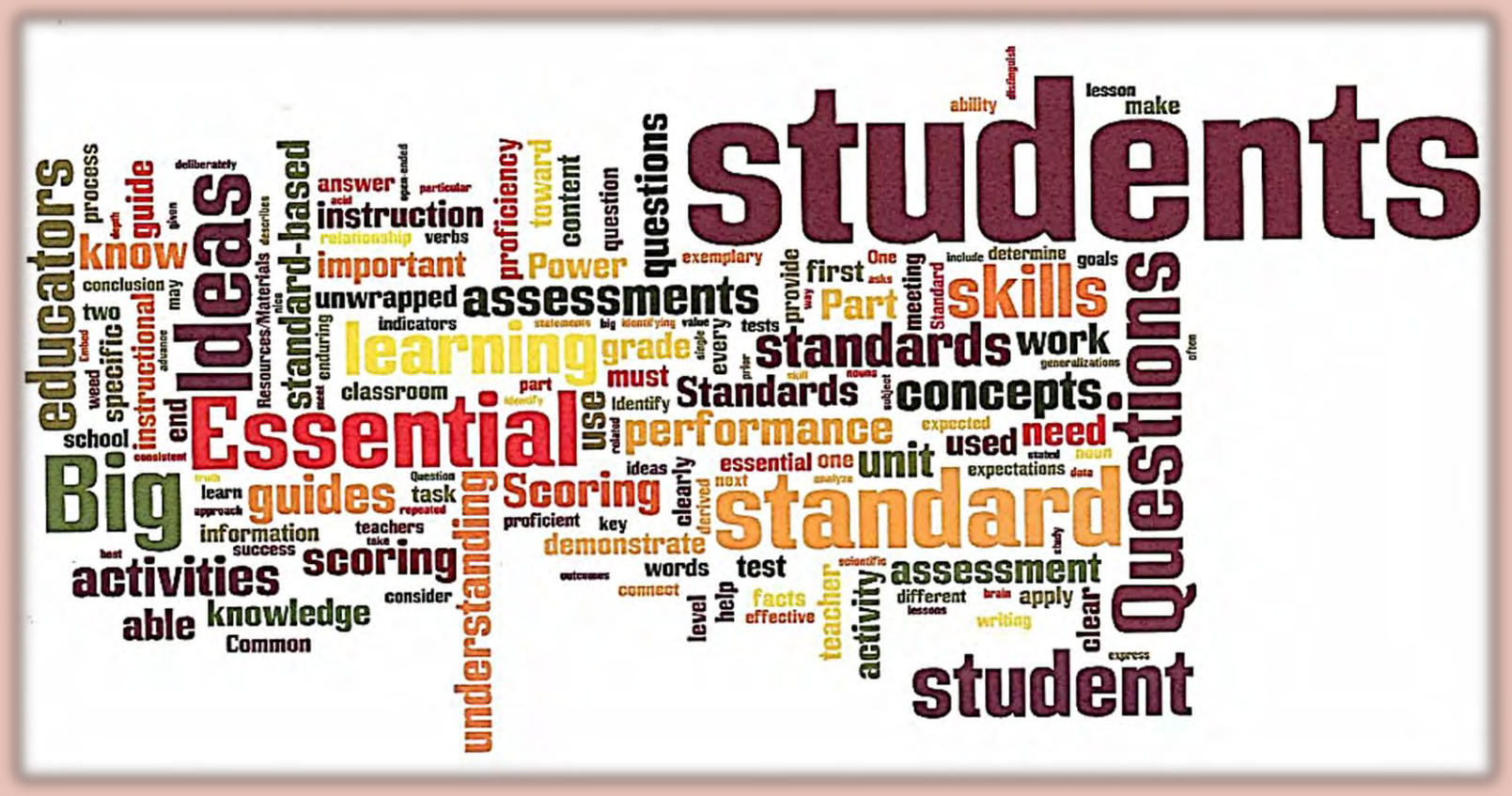
Welcome to SY 2014-2015!



Module 1: Implementing a Multicultural & Culturally Responsive Curriculum

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Agenda

Welcome, Connector and Norms

TOPIC 1: Curriculum Guidebook
TOPIC 2: Scope & Sequence
TOPIC 3: Literacy Framework
TOPIC 4: Curriculum Maps
TOPIC 5: Exemplar Unit

Planning, Reflection and Closure

Shifting Forward

- Take three quiet minutes to read the ***Common Core Shifts for English Language Arts/Literacy*** handout.
- Highlight key ideas for each shift and think about your perceived challenges and opportunities presented by each shift.
- Take two minutes to record your thoughts on the ***Processing the Shifts*** handout.
- Share with an elbow partner.

Norms

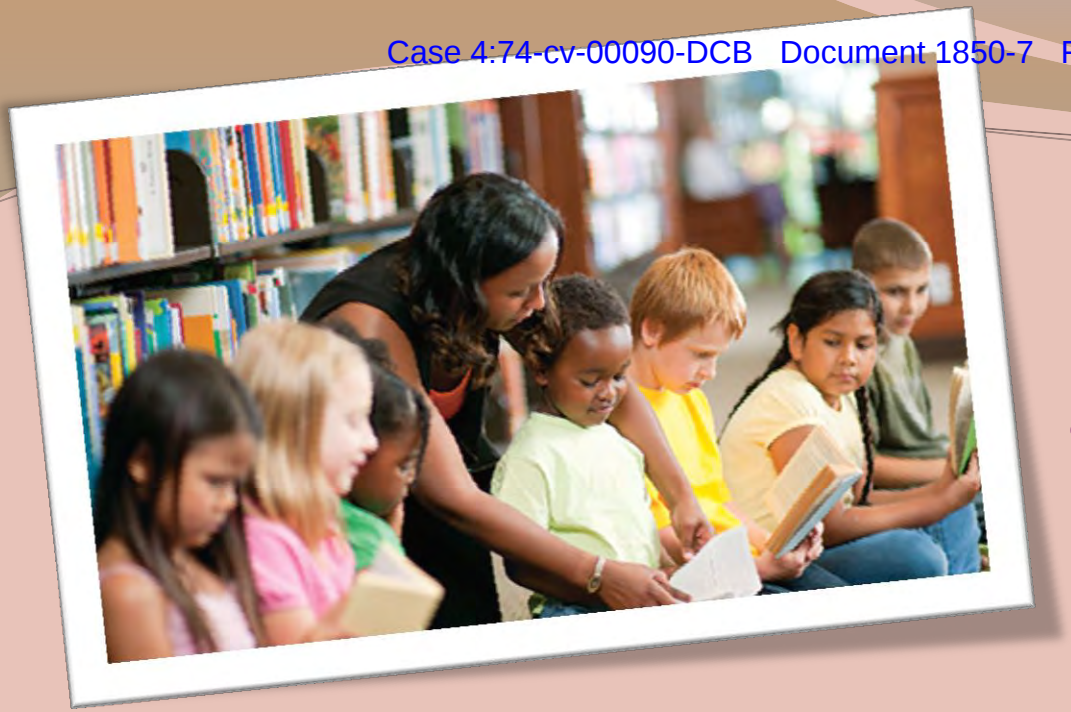
- No crying
- Equity of Voice
- Active Listening
- Respect for All Perspectives
- Safety and Confidentiality
- Respectful Use of Technology

Purpose of today's presentation:

- To promote a higher quality of education for our students by introducing a curriculum that is more
  - Challenging (level of cognitive demand)
  - Relevant (culturally responsive)
  - Consistent (articulated K-12)
- And to meet the goals established by the
  - Strategic Plan
  - Curriculum Audit
  - Unitary Status Plan

Cultural Connection

- Student engagement with a lesson increases when the teacher incorporates aspects of students' cultures into instruction. Thus, the new curriculum is designed to be both multicultural & culturally responsive.



Instructional Support

TUSD is committed to deliberately and systematically planning well-structured lessons that provide students with multiple opportunities to…

- Value their own cultures and experiences.
- Value the uniqueness of cultural groups other than their own.
- Value the richness of cultural diversity and commonality.
- Build awareness and sensitivity to individual differences within cultural groups.
- Provide opportunities to analyze and evaluate social issues and to propose solutions to contemporary social problems.

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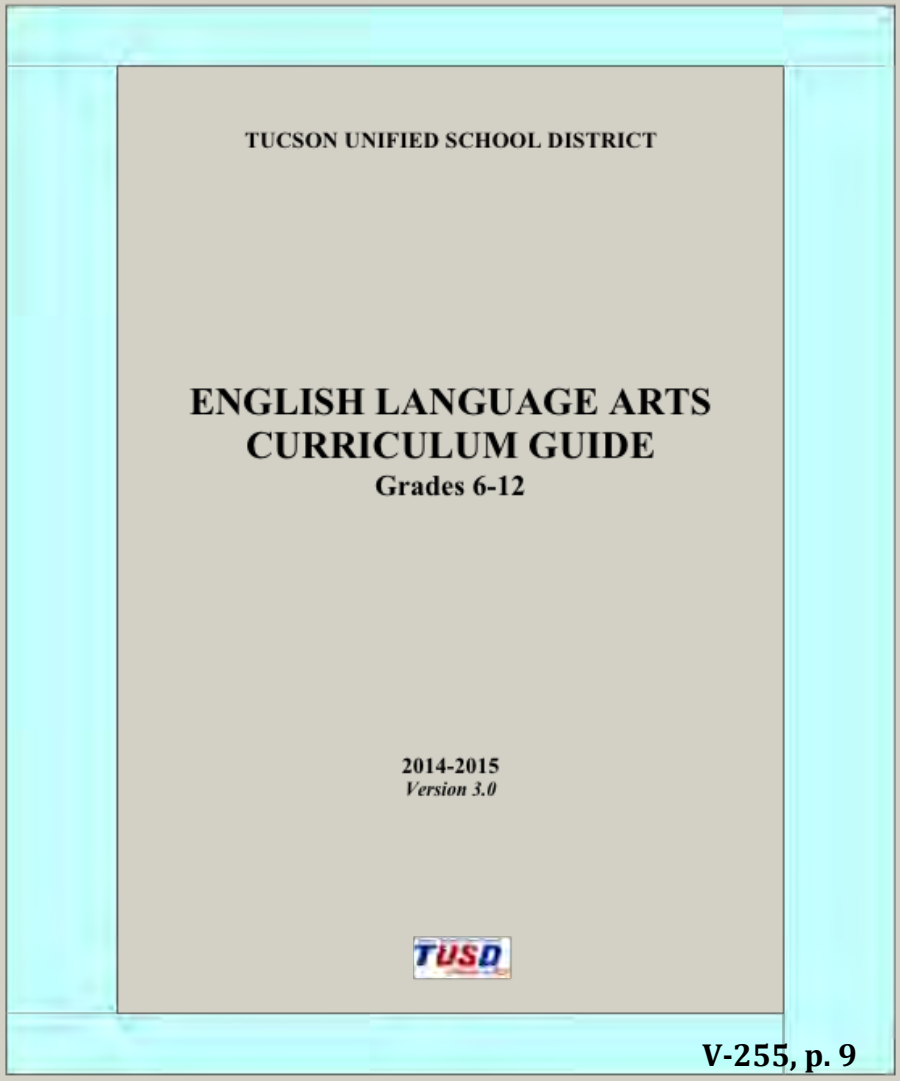
Looking Ahead: Goals for 2014-2015

- Seamlessly integrate multicultural perspectives into the broader curriculum.
- Purchase cultural book kits for grades 1-5.
- Select two "lab" schools to integrate multicultural and global literature into the ELA block.
- Offer district-wide professional development and "short takes" to make Multicultural Education synonymous with the "TUSD Way."
- Offer training and workshops at the lab schools for all and any interested TUSD teachers and administrators.
- Develop the specific multicultural competence measures, based on Danielson.

ELA Curriculum Guide

- Shows the established scope and sequence for all English language arts courses in grades 6-12, and provides sample curriculum maps.



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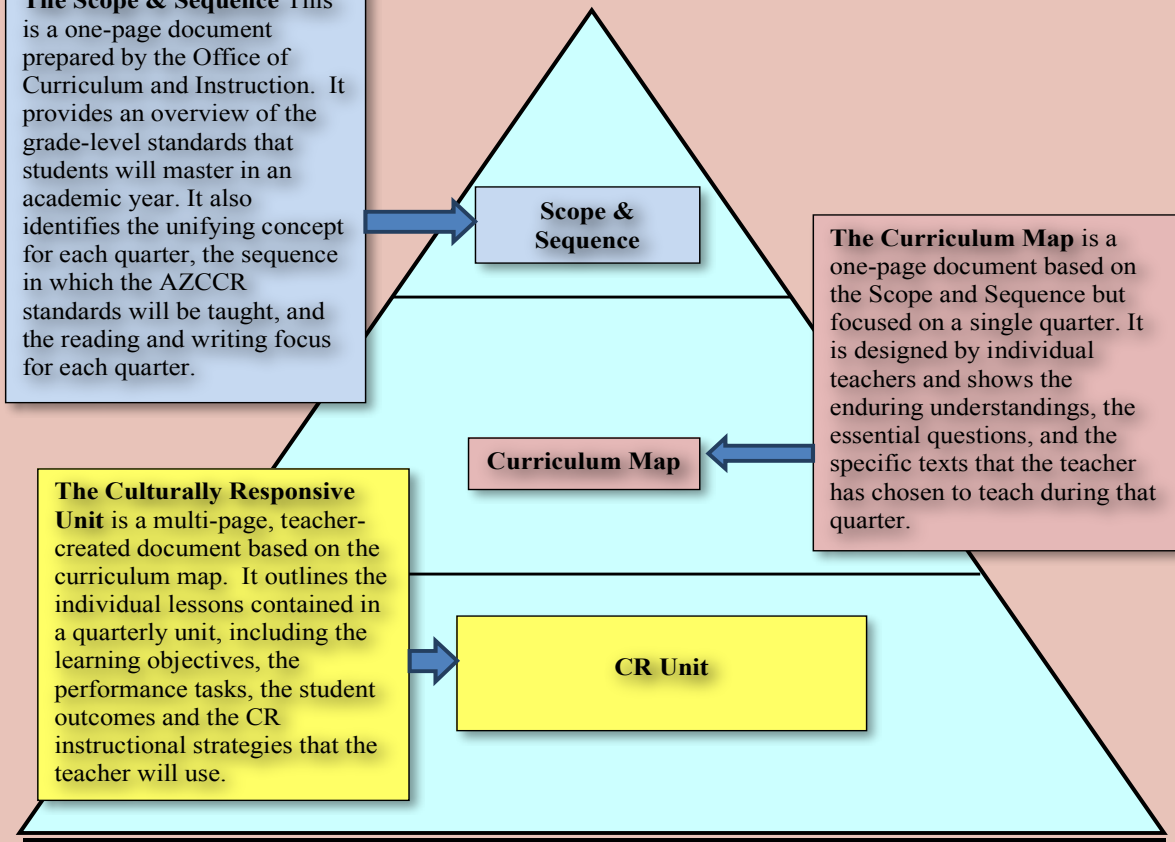
Tucson Unified School District

PYRAMID OF CURRICULUM DEVELOPMENT

English Language Arts

The Scope & Sequence This is a one-page document prepared by the Office of Curriculum and Instruction. It provides an overview of the grade-level standards that students will master in an academic year. It also identifies the unifying concept for each quarter, the sequence in which the AZCCR standards will be taught, and the reading and writing focus for each quarter.



The Curriculum Map is a one-page document based on the Scope and Sequence but focused on a single quarter. It is designed by individual teachers and shows the enduring understandings, the essential questions, and the specific texts that the teacher has chosen to teach during that quarter.

The Culturally Responsive Unit is a multi-page, teacher-created document based on the curriculum map. It outlines the individual lessons contained in a quarterly unit, including the learning objectives, the performance tasks, the student outcomes and the CR instructional strategies that the teacher will use.

TOOL KIT					
AZCCR Standards	Literacy Framework	Glossary of Curricular Terms	Unit Quality Rubric	PARCC Writing Rubric	Examples of EU & EQs
Curriculum Map Template	Lesson Plan Template	AZ Content Standards	Standards Checklist	UbD Unit Planner	House Graphic

Scope & Sequence

Established by the district to describe the basic elements that must be included in the curriculum map for a given course.

TUSD Scope & Sequence: 11th Grade ELA

1st Quarter	
Unifying Concept: Foundations	
Reading Focus: *Literary*	**Writing Focus:** *Argumentative*
Constant Standards are addressed routinely every quarter. **RL** 10; **RI** 10; **W** 4, 5, 6, 9, 10; **SL** 1, 2, 6; **L** 1, 2, 6	
Target Standards: shall be emphasized during the quarter and used in a formal assessment to evaluate student mastery. **RL** 1, 2, 5, 6 **RI** 5 **W** 1, 3	
Complementary Standards reinforce the target standards. **RI** 6 **L** 5	

2nd Quarter	
Unifying Concept: Perceptions	
Reading Focus: *Informational*	**Writing Focus:** *Explanatory*
Constant Standards are addressed routinely every quarter. **RL** 10; **RI** 10; **W** 4, 5, 6, 9, 10; **SL** 1, 2, 6; **L** 1, 2, 6	
Target Standards: shall be emphasized during the quarter and used in a formal assessment to evaluate student mastery. **RL** 3, 4 **RI** 1, 2, 3, 7, 8 **W** 2 **L** 3, 4	
Complementary Standards reinforce the target standards. **RI** 6, 9 **W** 7, 8	

3rd Quarter	
Unifying Concept: Transformations	
Reading Focus: *Literary*	**Writing Focus:** *Explanatory*
Constant Standards are addressed routinely every quarter. **RL** 10; **RI** 10; **W** 4, 5, 6, 9, 10; **SL** 1, 2, 6; **L** 1, 2, 6	
Target Standards: shall be emphasized during the quarter and used in a formal assessment to evaluate student mastery. **RL** 7, 9 **W** 2, 7, 8 **L** 5	
Complementary Standards reinforce the target standards. **W** 3 **SL** 4, 5 **L** 3, 4	

4th Quarter	
Unifying Concept: Realizations	
Reading Focus: *Informational*	**Writing Focus:** *Argumentative*
Constant Standards are addressed routinely every quarter. **RL** 10; **RI** 10; **W** 4, 5, 6, 9, 10; **SL** 1, 2, 6; **L** 1, 2, 6	
Target Standards: shall be emphasized during the quarter and used in a formal assessment to evaluate student mastery. **RI 4,** 6, 9 **W** 1 **SL** 3, 4, 5	
Complementary Standards reinforce the target standards. **RL** 4 **RI** 8 **L** 4	

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AZCCR Standards

- Constant Standards
- Target Standards
- Complementary Standards

Literacy Framework

Literacy Framework (Grades 6-12 ELA)

READING FOCUS

1st Quarter: Literary	2nd Quarter: Informational	3rd Quarter: Literary	4th Quarter: Informational
1 extended text **3 short literary texts** **2 short informational texts**	**1 extended text** **3 short literary texts** **2 short informational texts**	**1 extended text** **3 short literary texts** **2 short informational texts**	**1 extended text** **3 short literary texts** **2 short informational texts**

READING COMPLEX TEXTS: Students will read informational and literary grade-level texts of appropriate complexity. Because the ELA classroom must focus on literature (stories, drama, and poetry) as well as literary nonfiction, a great deal of informational reading in grades 6-12 must take place in content classes to meet the demands of the AZCCR standards.

READING EXTENDED TEXTS: Each unit includes at least one extended text, requiring about two to three weeks of concentrated focus: This should be an extended, full-length work of literature (such as a novel or a play) or longer literary nonfiction, depending on the focus of the unit. As with shorter texts, students will perform a close, analytic reading of the extended text; compare and synthesize ideas across other related texts; conduct text-focused discussions; and produce written work.

READING SHORT TEXTS: Each unit includes several short texts of sufficient complexity for close reading (with emphasis in two units on reading U.S. historical documents) that would allow students to draw ample evidence from the texts and present their analyses in writing as well as through speaking. Educators can create coherence within the curriculum as a whole by choosing short texts to complement the extended text described below, by focusing instruction on similar standards and skills across multiple genres, and by choosing informational texts that build the background knowledge needed to read and comprehend other texts students will study. Shorter texts may account for three to four weeks of instruction. **Literary texts** includes adventure stories, historical fiction, mysteries, myths, science fiction, realistic fiction, allegories, parodies, satire, drama, graphic novels, plays, and poetry (narrative, lyrical, free-verse, sonnets, odes, ballads, and epics).**Informational/literary nonfiction** include personal essays; speeches; opinion pieces; essays; biographies; memoirs; journalism; and historical, scientific, or technical accounts (digital or not).

WRITING FOCUS

1st Quarter: Argumentation	2nd Quarter: Inform/Explain	3rd Quarter: Inform/Explain	4th Quarter: Argumentation
4 analyses **1 research inquiry** (brief/full) **1 narrative** (real/unreal event) **routine writing** (journals, etc.)	**4 analyses** **1 research inquiry** (brief/full) **1 narrative** (real/unreal event) **routine writing** (journals, etc.)	**4 analyses** **1 research inquiry** (brief/full) **1 narrative** (real/unreal event) **routine writing** (journals, etc.)	**4 analyses** **1 research inquiry** (brief/full) **1 narrative** (real/unreal event) **routine writing** (journals, etc.)

WRITING TO TEXTS: Evidence from texts should be included in all writing, balanced with on-demand and review-and-revision tasks, so that
- in grades 6-8 **70%** is analytical (35% argument & 35% explanatory/informative) and **30%** is narrative; and
- in grades 9-12 **80%** is analytical (40% argument & 40% explanatory/informative) and **20%** is narrative

WRITING & TECHNOLOGY: Building student competence and confidence with technology should be part of instruction.

ROUTINE WRITING: Routine writing, such as short constructed-responses to text-dependent questions, builds content knowledge and provides opportunities for reflection on a specific aspect of a text or texts. Routine written responses to such text-dependent questions allow students to build sophisticated understandings of vocabulary, text structure, and content and to develop needed proficiencies in analysis.

ANALYTICA WRITING: At least four analyses should be assigned per unit: All analytic writing should put a premium on using evidence as well as on crafting works that display a high degree of logical integration and coherence. These responses can vary in length based on the questions asked and task performed, from answering brief questions to crafting multi-paragraph responses, allowing teachers to assess students' ability to paraphrase, infer, and integrate the ideas they have gleaned from their readings. Over the course of the year, analytic writing should include comparative analysis and compositions that share findings from the research project.

NARRATIVE WRITING: At least one narrative should be assigned per unit: Narrative writing offers students opportunities to express personal ideas and experiences; craft their own stories and descriptions; and deepen their understandings of literary concepts, structures, and genres through purposeful imitation. It also provides an additional opportunity for students to reflect on what they read through imaginative writing and to practice sequencing events and ideas through narrative descriptions.

RESEARCH PROJECT: Each unit includes the opportunity for students to produce one extended project that uses research to address a significant topic, problem, or issue. (Research for shorter tasks should be a regular component of instruction.) This task should entail integrating knowledge from several additional literary or informational texts in various media or formats on a particular topic or question drawn from one or more texts from the unit. Students are expected to assess the usefulness of each source, refocus their research during the process when appropriate and integrate the information gathered. Students can present their findings in a variety of modes in informal and more formal argumentative or explanatory contexts, either in writing or orally. Research aligned with the standards may take one to two weeks of instruction.

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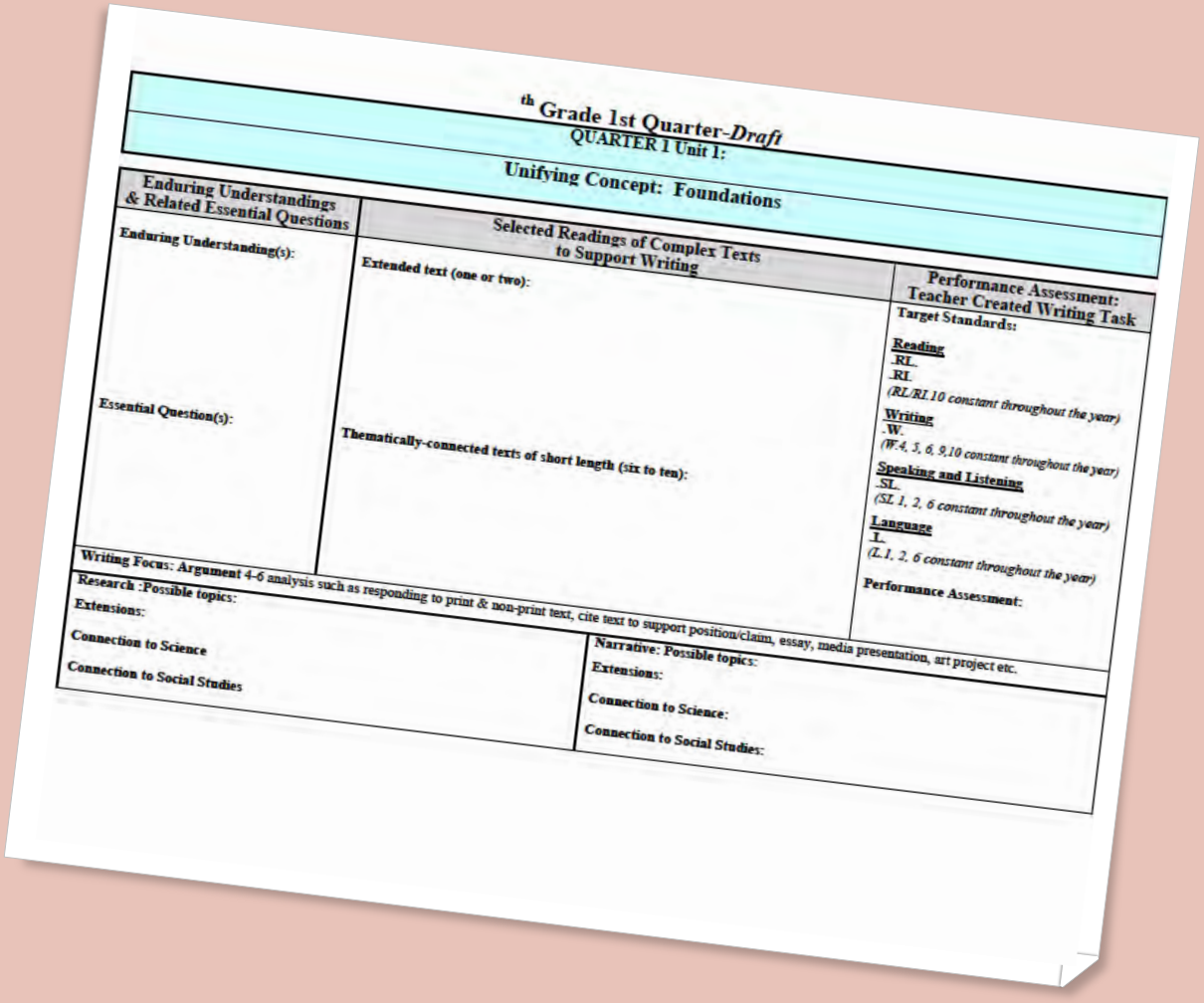
Depth vs. Width

- To emphasize that students should delve deeply into complex text, the Framework purposely suggests limiting the number of texts assigned each quarter:
  - One extended text
    - Novel/play or book-length non-fiction, such as a biography
  - Three short literary pieces
    - Short stories, poems, folktales
  - Two short informational texts
    - Essays, articles, letters

Curriculum Map Template



th Grade 1st Quarter-*Draft*

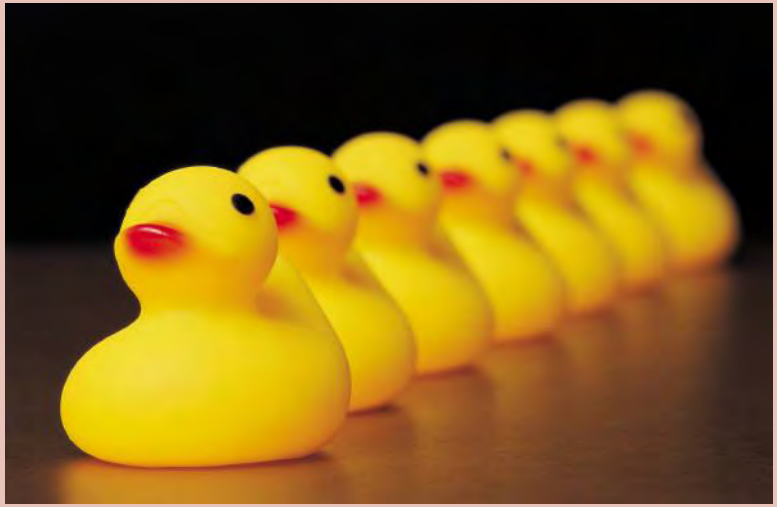
QUARTER I Unit 1:

Unifying Concept: Foundations

Enduring Understandings & Related Essential Questions	Selected Readings of Complex Texts to Support Writing	Performance Assessment: Teacher Created Writing Task
Enduring Understanding(s): **Essential Question(s):**	**Extended text (one or two):** **Thematically-connected texts of short length (six to ten):**	**Target Standards:** **Reading** .RL. .RI. *(RL/RL.10 constant throughout the year)* **Writing** .W. *(W.4, 5, 6, 9,10 constant throughout the year)* **Speaking and Listening** .SL. *(SL.1, 2, 6 constant throughout the year)* **Language** .L. *(L.1, 2, 6 constant throughout the year)* **Performance Assessment:**
Writing Focus: Argument 4-6 analysis such as responding to print & non-print text, cite text to support position/claim, essay, media presentation, art project etc.		
Research :Possible topics: **Extensions:** **Connection to Science** **Connection to Social Studies**	**Narrative: Possible topics:** **Extensions:** **Connection to Science:** **Connection to Social Studies:**	

Exemplar Unit

- Eleventh Grade English
- Designated Culturally Relevant Course
- Customized for a particular teacher



COURSE DESCRIPTION

This two-semester course provides 1 English credit toward graduation requirements. Students will explore the major periods of Mexican American literature, beginning with the oral traditions of Native American, Spanish and Mexican folklore and their influence on contemporary works. Students will read critically from a variety of genres and formats, including some English translations of texts originally written in Nahuatl or Spanish. Along with considering the content of these works, students will examine their cultural, historical, and political contexts, as well as how issues of race, class and gender affect their production and meaning. Keeping a dialectic journal, students will become conversant with the language of literary analysis and rhetoric, articulating and elaborating their thoughts in Socratic Seminars and Literature Circle discussion groups. Finally, students will write analytical and argumentative essays based on their readings, citing pertinent textual passages to support their conclusions.

First Quarter	**Unit Title**
	The Heritage of Mexican American Literature
	Unit Description
	This nine-week unit investigates elements from traditional oral forms— folktales, dichos (proverbs), legends, and corridos (ballads)—as well as historical documents that continue to influence modern day Mexican American literature. Early accounts include not only the literary and historical writings authored by Spanish explorers, missionaries and soldiers, but also documents authored by Mayan and Aztec writers. Evidence suggests that surviving works from pre-Columbian literature are only remnants of what once was an extensive body of knowledge, most of it intentionally destroyed during the Spanish invasion of Mesoamerica.

Unit Title	**Second Quarter**
The Emergence of Chicano Literature	
Unit Description	
During this quarter, students will examine Mexican American literature that documents the emergence of a distinctly Mexican American culture native to the United States and struggling to establish itself within the dominant society. Students will analyze writings from this period, which typically address the injustices faced by Mexican Americans, who despite being native to the continent and having strong indigenous roots, have been treated as outsiders and virtual "strangers in their own land."	

Third Quarter	**Unit Title**
	La Familia
	Unit Description
	Does aspiring to live the American Dream require sacrificing the cultural values traditionally nurtured in the barrio? Students will explore that and related questions on the theme of family, which appears regularly in works by Mexican American authors, whether depicting the extended family, the nuclear family, the fragmented family separated by divorce or by deportation, the family disintegrating from the crush of poverty, or the interracial family.

Unit Title	**Fourth Quarter**
Life and Death along the Border	
Unit Description	
Students will compare the various approaches that contemporary authors have taken in characterizing the land and the people along the border with Mexico. The Southwest border region, where six Mexican states meet four U.S. states, is a vast area with a distinctive mixture of cultures, languages, customs, myths, physical dangers, and spectacular landscapes. For writers in general, and for many Mexican American authors in particular, the nature of the border region is an irresistible subject to explore.	

TUSD CURRICULUM MAP – ENGLISH LANGUAGE ARTS

English: Grade 11, Quarter 1	**Unit Title:** Heritage of Mexican American Literature
Unifying Concept: Foundations	**Viewpoint:** CR Mexican American Literature

ENDURING UNDERSTANDING: Literature reflects cultural values.

ESSENTIAL QUESTION: In what ways do literary works reflect cultural values?

SELECTED READINGS OF COMPLEX TEXTS	STANDARDS
EXTENDED TEXT: *Women Who Live in Coffee Shops*, Stella Pope Duarte **SUPPLEMENTARY TEXTS & MEDIA:** "Woman Hollering Creek" by Sandra Cisneros "It Was a Silvery Night" by Tomás Rivera "You Men Who Fault Women" by Sor Juana Inez de la Cruz "To His Coy Mistress" by Andrew Marvel "La Llorona, El Kookoóee and Sexuality" by Rudolfo Anaya "History of Acoma Pueblo" by Denise Holladay Damico "The Killing of a State Cop," Simon Ortiz "Supermán es ilegal," Jorge Lerma	**Reading** –Literary Focus RL 1, 2, 5, 6; RI 5 **Writing**-Argumentative Focus W 1, 3 **Speaking & Listening** SL 3, 4 **Language** L 4, 5 **Constant** RL 10; RI 10; W 4, 5, 6, 9, 10; SL 1,2, 6; L 1,2,6

RESEARCH COMPONENT:
A structured interview with a family member documenting the version of boogieman or other scary childhood stories the person remembers being told during his or her childhood.

NARRATIVE COMPONENT:
A 500-word narrative providing a vivid account of a frightening incident, real or imagined.

INTERDISCIPLINARY CONNECTION:
Science: Dendrochronology and the dating of ancient structures.
Social Studies: The Spanish colonial period in American history.

PERFORMANCE ASSESSMENTS:

Summative: An argumentative essay in response to the following prompt: *Characterize the narrator's values in one of the works you have read this quarter; then defend your characterization by citing evidence from the text.*

Formative: Short weekly writing responses to open-ended prompts, summaries, a reading log with reflections, participation in class discussions, graphic organizers, self-evaluations.

Social Studies

- Literacy standards for social studies and other content areas are distinct from those used in English language arts.
  - Concept of Disciplinary Literacy

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MS Science Curriculum: Year-at-a-Glance

TUSD

TUSD Science Curriculum, Grade 8 **Year At A Glance**

Science concepts at this grade level are organized into 3 main units of study. Concepts are developed in learning progressions throughout each unit, but do not depend on a specific sequence of instructional units across the school year.

AZ Science Standards: (Strands (S), Concepts (C))

All units address Arizona Science Standard Strand 1: Inquiry Process. Concepts: students formulate predictions, questions, or hypotheses based on observation (C1), design and conduct controlled investigations (C2), analyze and interpret data to explain correlations and results and formulate new questions (C3), and communicate results of investigations (C4).

All units address Arizona's College and Career Ready Standards: English Language Arts and Literacy in History/Social Studies, Science, and Technical Subjects: Reading: Key Ideas and Details, Craft and Structure, Integration of Knowledge and Ideas, Range of Reading and Level of Text Complexity; Writing: Text Types and Purposes, Production and Distribution of Writing, Research to Build and Present Knowledge, Range of Writing

Strand 1: Inquiry (S1)	Strand 2: History and Nature of Science (S2)	Strand 3: Science in Personal and Social Perspectives (S3)	Strand 4: Life Science (S4)	Strand 5: Physical Science (S5)	Strand 6: Earth and Space Science (S6)

Our Genes, Ourselves/Evolution Unit Enduring Understandings All organisms reproduce either sexually or asexually. All organisms have genes, which are units of information for inherited traits passed from parents to offspring. Both heredity and environment play a role in determining the traits of an organism. Evolution occurs over time. Organisms adapt to their environment. Natural selection is the process by which organisms favorably adapt to the environment and survive to reproduce. Difficult ethical issues can occur when using information obtained through modern biotechnology.		**Chemical Building Blocks Unit** Enduring Understandings Everything in the universe is composed of matter and energy. All kinds of matter can be identified based on their physical and chemical properties. An atom is the basic unit of every element. All the matter in the universe that we know is characterized in the Periodic Table of the Elements. Interactions between atoms cause chemical changes that produce new substances with different chemical properties.		**Motion, Forces and Energy Unit** Enduring Understandings Everything in the universe is in motion. Force is a push or pull that can result in a change in motion. There are scientific laws that explain the motion of an object.	
Identify individual, cultural, and technological contributions to scientific knowledge.	8-S2-C1	Identify individual, cultural, and technological contributions to scientific knowledge.	8-S2-C1	Identify individual, cultural, and technological contributions to scientific knowledge.	8-S2-C1
Understand how science is a process for generating knowledge.	8-S2-C2	Understand how science is a process for generating knowledge.	8-S2-C2	Understand how science is a process for generating knowledge.	8-S2-C2
Describe the interactions between human populations, natural hazards, and the environment.	8-S3-C1	Describe the interactions between human populations, natural hazards, and the environment.	8-S3-C1	Describe the interactions between human populations, natural hazards, and the environment.	8-S3-C1
Develop viable solutions to a need or problem.	8-S3-C2	Develop viable solutions to a need or problem.	8-S3-C2	Develop viable solutions to a need or problem.	8-S3-C2
Understand the basic principles of heredity.	8-S4-C2	Understand physical and chemical properties of matter.	8-S5-C1	Understand the relationship between force and motion.	8-S5-C2
Identify structural and behavioral adaptations	8-S4-C4			Understand that energy can be stored and transferred.	8-S5-C3

Science Curriculum: COURSE DESCRIPTION

TUSD

Tucson Unified School District Science
Motion, Forces & Energy Unit, Grade 8

COURSE DESCRIPTION Motion, Forces, and Energy Unit
Students learn and apply important concepts of motion, forces, and energy throughout this unit. They conduct investigations to describe and measure motion using speed, velocity, and acceleration. Newton's three laws of motion are explored and students learn how forces change all types of motion. They manipulate variables, create models, and communicate results of carefully designed experiments. During the inquiry lessons students will use science and engineering practices that support critical thinking, questioning, engineering design processes, reading and writing to build scientific literacy, communication, and problem solving. Incorporating science crosscutting concepts will help students organize knowledge from various disciplines and enable them to develop a coherent and scientifically-based view of the world. Students will read critically from a variety of science genres and formats, and respond thoughtfully in discussions and through writing to develop science content knowledge. Students will articulate and elaborate their thoughts and analyses by writing as scientists do in science notebooks, and then will produce expository and analytical text to further their science content knowledge and communicate their thinking and learning.

Part One	**Motion** Students are introduced to basic concepts of motion by exploring and engaging in labs and demonstrations focused on inertia, air resistance, and Newton's laws. They measure speed, velocity, and acceleration to determine patterns and trends and apply the data to develop explanations of different types of motion. They learn to graph motion showing changes in distance as a function of time as well as calculate speeds of various moving objects. Students apply their understanding of motion by planning and conducting experiments to determine the speed at which something travels as well as its direction in order to then know its velocity.

Forces Students are introduced to Newton's three laws of motion and learn how forces change all kinds of motion. Applying the three laws allows students to conduct scientific experiments, manipulate and control variables, collect and interpret data, and explain generalizations. Students develop, revise, and engineer models to test. Important foundational concepts will be defined and communicated through scientific vocabulary, experimental design, lab reports, and application to real world situations. Engineering design processes are used to meet design challenges. The relationships between force, mass, and acceleration are explored and tested. Students also explore friction and identify factors that determine the friction force between two surfaces. The effects of gravity and air resistance on an object in free fall are determined. Newton's third law is explored by defining and calculating momentum and the conservation of momentum. Action-reaction experiences allow students to construct explanations of how forces can be added together only if they are acting on the same object. Units of measurement are used in formulas and mathematical calculations to fully understand the scientific concepts.	**Part Two**

Part Three	**Energy and Power** All motion can be described in terms of energy. Students develop and communicate their understanding of kinetic and potential energy in action – they plan, design, and build a model to demonstrate the application of these concepts. By modifying variables of their design students are able to extend and deepen their learning about energy conversions and the law of conservation of energy. Students describe the relationship between work and energy, define and calculate potential and kinetic energy, and identify different forms of energy in real world situations. Students determine that work is the transfer of energy and learn scientific and mathematical measurements to indicate work and energy. Different forms of energy – mechanic, thermal, chemical, electrical, electromagnet, nuclear - are introduced and applied to relevant experiences through reading, writing, and simple experiments.

Science Curriculum: CURRICULUM MAP

TUSD

Tucson Unified School District Science
Motion, Forces & Energy Unit, Grade 8

8th Grade Motion, Forces, and Energy Curriculum Map

Enduring Understandings:
- Everything in the universe is in motion and there are laws that explain the motion of objects.
- Force is a push or pull that can result in a change in motion.

Big Ideas	Reading & Writing Opportunities in Science	Assessment Opportunities
Essential Question(s) • How can we explain that everything in the universe is in motion? • Why does a body resist changes in its motion? • How do bodies accelerate? • How do mass and force determine acceleration? • In what ways do forces occur? • Where do we see examples of the laws of motion in our daily lives? **Crosscutting Concepts** • Patterns • Cause and effect: Mechanism and explanation • Scale, proportion, and quantity • Systems and system models • Energy and matter: flows, cycles, and conservation • Structure and function • Stability and change **Unifying Concepts** Quarter 1: Foundations/ Systems Quarter 2 Coming of Age/Perspective Quarter 3: Transformation/ Change Quarter 4: Reality vs. Creativity	**When reading scientific texts**, students need to be able to gain content knowledge from challenging texts that often make extensive use of elaborate diagrams and data to convey information and illustrate concepts. Examples: • Read a section from a textbook and analyze how structures within the text (headers, bold words, embedded definitions, and graphics) help the reader understand the meaning of the text. • Follow written instructions for conducting force and motion experiments • Determine the meaning of variables in mathematical equations, such as f=ma • Integrate written descriptions in a lab journal of measured movement over time with position-time graphs. **Writing is a key means** of asserting and defending claims, constructing arguments based on reason and evidence, showing what students know about a subject. Science notebooks are critical and essential components of science learning whereby students record observations, data, visual representations, and thinking about their learning. Examples: • After completing an experiment that compared the motion of an object on different surfaces, write a conclusion that supports or refutes the statement "Rough surfaces provide more friction than smooth surfaces" and provide evidence to support the claim with the experimentally collected data in addition to other existing research. • As part of a challenge, design and test model cars with the goal of trying to get the car to go down a ramp and then travel the longest distance. Write a technical report that includes appropriate displays of the test data, descriptions and/or illustrations of the car design, and explanations of how preliminary test data were used to refine the car design. • Write a lab report based on an activity aligned to the grade level Science Standard. In the report, include procedures, tables, graphs, charts, and/or diagrams that communicate the purpose, results, and conclusions of the research. • Following a lab aligned to the grade level Science Standard, make a research claim and then find supporting evidence or scientific principles that support the claim. These additional sources can either be teacher provided or student researched.	**Pre/Post Unit Assessment**: http://intranet/science/Kit_Asmts.html Concept Map - pre and post with linking phrases to indicate relationships of concepts and processes **Formative/Performance Assessment Examples** Quick writes (e.g. definitions and examples of different forms of energy and their use to do work in the world) Conduct research and construct explanations using words, visuals, and data (e.g. how food energy is related to nutrition) Engage in arguments with evidence and reasoning (e.g. to support application of Newton's laws of motion to engineering design) Design and conduct a fair test experiment identifying and controlling variables and using safe procedures

Science Curriculum: CURRICULUM MAP

TUSD

Tucson Unified School District Science
Motion, Forces & Energy Unit, Grade 8

Texts and Resources **Primary:** Prentice Hall Teacher Guide Prentice Hall Student Resource Books TUSD Science Resource Center website **Supplemental:**	**Arizona 8th Grade Science Standards** **Constant Standard: Strand 1-Inquiry** **Targeted Science Standards:** **(8-S2-C1)** Identify individual, cultural, and technological contributions to scientific knowledge. **(8-S2-C2)** Understand how science is a process for generating knowledge. **(8-S3-C1)** Describe the interactions between human populations, natural hazards, and the environment. **(8-S3-C2)** Develop viable solutions to a need or problem. **(8-S5-C2)** Understand the relationship between force and motion. **(8-S5-C3)** Understand that energy can be stored and transferred.	
	6-8 Reading Standards for Literacy in Science and Technical Subjects for 8th Grade **Constant Standards are addressed routinely every quarter.** RST.10, WHST 4, 5, 6, 9 and 10 **Target Standards are emphasized during the quarter and used in a formal assessment to evaluate student mastery.** *Complementary Standards reinforce the target standards.* **Quarter 1: RI 1, 6, 9, WHST 1** ***(RI 2, WHST 2 and 3)*** **Quarter 2: RI 1, 2, 3, 4, 6, WHST 2, 7, 8** **Quarter 3: RI 1, 2, 3, 5, WHST 2 and 3** ***(RI 5 and 6)*** **Quarter 4: RI 1, 2, 3, 7, 8, WHST 1 and 8** ***(RI 4, 6, WHST 7)***	
	Quarterly Reading Focus: Quarter 1: Literary Quarter 2: Informational Quarter 3: Literary Quarter 4: Informational	**Quarterly Writing Focus:** Quarter 1: Argumentative Quarter 2: Explanatory Quarter 3: Argumentative Quarter 4: Explanatory
	Science and Engineering Practices	
	• Asking questions and defining problems • Developing and using models • Planning and carrying out investigations • Analyzing and interpreting data	• Using mathematics and computational thinking • Constructing explanations • Engaging in argument from evidence • Obtaining, evaluating, and communicating

Science Curriculum: SCOPE & SEQUENCE

Tucson Unified School District Science
Motion, Forces & Energy Unit, Grade 8

TUSD

Science Scope and Sequence, Motion, Forces & Energy Unit, 8th Grade

Part One- Motion
Unifying Concept: Describing and Measuring Motion
Constant Standards routinely addressed in this part of the unit: **(8-S1-C1)** Formulate predictions, questions, or hypotheses based on observations. Locate appropriate resources. **(8-S1-C2)** Design and conduct controlled investigations. **(8-S1-C3)** Analyze and interpret data to explain correlations and results; formulate new questions. **(8-S1-C4)** Communicate results of investigations. **(8-S2-C1)** Identify individual, cultural, and technological contributions to scientific knowledge. **(8-S2-C2)** Understand how science is a process for generating knowledge. **(8-S3-C2)** Develop viable solutions to a need or problem.
Target Content Standards: shall be emphasized during the lessons and used in a formal assessment to evaluate student mastery. **(8-S5-C2)** Understand the relationship between force and motion.

Part Two- Forces
Unifying Concept: Forces & Motion, Action & Reaction
Constant Standards routinely addressed in each part of the unit and include: **(8-S1-C1)** Formulate predictions, questions, or hypotheses based on observations. Locate appropriate resources. **(8-S1-C2)** Design and conduct controlled investigations. **(8-S1-C3)** Analyze and interpret data to explain correlations and results; formulate new questions. **(8-S1-C4)** Communicate results of investigations. **(8-S2-C1)** Identify individual, cultural, and technological contributions to scientific knowledge. **(8-S2-C2)** Understand how science is a process for generating knowledge. **(8-S3-C2)** Develop viable solutions to a need or problem.
Target Content Standards: shall be emphasized during the investigation and used in a formal assessment to evaluate student mastery. **(8-S5-C2)** Understand the relationship between force and motion.

Part Three- Energy
Unifying Concept: Power and Momentum
Constant Standards are routinely addressed in each part of the unit and include: **(8-S1-C1)** Formulate predictions, questions, or hypotheses based on observations. Locate appropriate resources. **(8-S1-C2)** Design and conduct controlled investigations. **(8-S1-C3)** Analyze and interpret data to explain correlations and results; formulate new questions. **(8-S1-C4)** Communicate results of investigations. **(8-S2-C1)** Identify individual, cultural, and technological contributions to scientific knowledge. **(8-S2-C2)** Understand how science is a process for generating knowledge. **(8-S3-C2)** Develop viable solutions to a need or problem.
Target Content Standards: shall be emphasized during the investigation and used in a formal assessment to evaluate student mastery. **(8-S5-C2)** Understand the relationship between force and motion.

HS Science Curriculum: Year-at-a-

TUSD

Grade 9 STEM Science & Sustainability YEAR at a GLANCE

STEM Science course concepts are organized into 5 main units of study. Concepts are developed in learning progressions throughout each unit, but do not depend on a specific sequence of instructional units across the school year (with the exception of the Inquiry Unit, which should be taught only once at the beginning of the year and embedded throughout) regardless of the sequence of the **MACRO** and **MICRO** Units.

All units address Arizona Science Standard Strand 1: Inquiry Process. Concepts = students formulate predictions, questions, or hypotheses based on observation (C1), design and conduct controlled investigations (C2), analyze and interpret data to explain correlations and results and formulate new questions (C3), and communicate results of investigations (C4).

Strand 1 - Inquiry	Strand 2 - History and Nature of Science	Strand 3 - Science in Personal and Social Perspectives	Strand 4 - Life Science	Strand 5 - Physical Science	Strand 6 - Earth and Space Science

MANDATORY UNIT ONE	MICRO	MICRO	MACRO	MACRO
Principles of Science, Engineering, and Inquiry **Big Ideas:** *The goal of science is the construction of theories that explain the material world.* *Science often involves the use of models and simulations to help develop explanations about natural phenomenon.* *Science cannot advance if scientists are unable to communicate their findings clearly (and persuasively) or learn about the finding of others.* *Understanding the scientific process (method) and being able to work with metric units and conversions allows your data to be gathered in an understanding and systematic method.* ***AZ Science Standards*** **Strand 1: Inquiry Process** **Strand 2: History and Nature of Science** **Strand 3: Science in Personal and Social Perspectives** **Strand 4: Life Science** **Energy Literacy Essential Principles** covered throughout ALL UNITS of course http://energy.gov/eere/education/downloads/7-energy-literacy-principles **Digital Age Learning Standards- Intl. Society for Technical Education** http://www.iste.org/standards/standards-for-students	**Using Earth's Resources** **Big Ideas:** *The quality of life of individuals and societies is affected by energy choices.* *Science and technology are fundamental to the development of sustainable living.* *Various sources of energy can be used to power human activities, and often this energy* *Looking for and analyzing patterns is foundational to understanding the position of elements of the Periodic Table and their subsequent chemical combinations* *Different regions of the globe have renewable and non-renewable energy resources.* ***AZ Science Standard-*** **Strand 3 - Science in Personal and Social Perspectives** **Strand 5: Physical Sciences**	**Moving the World** **Big Ideas:** *Various sources of energy can be used to power human activities.* *Energy is most often transferred from source to destination* *Most energy sources used by humans today are non-renewable.* *Energy decisions are influenced by economic, political, environmental and social factors.* *The Laws of Physics are fundamental to understanding energy use and transfer.* *Energy is a physical quantity that follows precise natural laws.* *Science and technology (research and development) are both needed to create and manage Earth's fuel resources.* *The Electromagnetic Spectrum (ems) includes all energy wavelengths.* ***AZ Science Standards*** **Strand 3 - Science in Personal and Social Perspectives** **Strand 5 - Physical Science**	**Living on Earth** **Big Ideas:** *Energy is a physical quantity that follows precise natural laws.* *Energy is required for all living organisms in all Earth systems.* *Energy is neither created nor destroyed only transferred.* *Global and local population growth can create environmental concerns.* *Scientific research and technological development are foundations for creating sustainable living for humans, while maintaining the integrity of the environment "forever".* *In the long run, green energy pathways are more beneficial to the planet while still allowing energy for human living.* ***AZ Science Standards*** **Strand 3 - Science in Personal and Social Perspectives** **Strand 4 - Life Science** **Strand 5: Physical Sciences** **Strand 6 - Earth and Space Science**	**Feeding the World** **Big Ideas:** *Feeding global populations requires systematic thinking and collective problem solving.* *Biological processes depend on energy flow through the Earth system.* *Genetic engineering has enabled modern agriculture to increase food production per acre of land.* *The food choices we make for our source of macromolecules (protein, carbohydrates, lipids) for energy and growth affects the environment of the world.* *The quality of life of individuals and societies is affected by energy choices.* *Energy is involved in both the production and transportation of food.* ***AZ Science Standards*** **Strand 4 - Life Science** **Strand 6: Earth & Space Science**

TUSD Science Department 7/2/2014 mcp/j

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Planning Site Implementation

Presenters? Prep time? Where/when? Date & time for PD? Combined staff or by department? Equipment? Handouts? Questions to anticipate?

A Moment for Reflection

Please respond to the following…

- What are the three most important things you learned today?
- What are two questions you would still like answered?
- What is the one walk-away idea that you want to emphasize with your faculty?

Thank You for Your Feedback!

Kathryn Chávez

&

Sal Gabaldón