

This unit is written in English so that it is accessible to all US educators during this institute. However, we advocate that all lessons and units that will be conducted in Spanish be written in Spanish.

GRADE LEVEL: 4th Grade

Content Area: Science and Spanish Language Arts

Unit: Fuerzas

Unit Storyline:

In this Spanish unit, students will engage in multiple experiences and investigations with force and movement (Science 6), culminating in designing their own investigation to explore the effect of various forces on a common object found in the classroom (Science 6, D). In addition to hands-on experiences with objects in motion, students will engage in multiple reading experiences (read aloud, guided reading, partner reading and individual reading) about forces in motion, using a range of non-fiction, informational texts. Students will interact orally with their peers and the teacher to ask questions and make predictions about the information in the texts (Reading 6, B & C). Students will also keep a science journal where they will react in writing to the information they read, and will synthesize the information gathered from various texts. (Reading 6, H) Students will engage in the multiple steps of the writing process (Writing 11, A-E) to produce an informational text (Writing 12, B) describing the effects that different forces have on objects in the world around us, including a description of their own investigation (Science 6, D).

Standards/TEKS:

Content (Science) (6) Force, motion, and energy. The student knows that energy exists in many forms and can be observed in cycles, patterns, and systems. The student is expected to: (D) design a descriptive investigation to explore the effect of force on an object such as a push or a pull, gravity, friction, or magnetism.	Reading (6) Comprehension skills: listening, speaking, reading, writing, and thinking using multiple texts (B) generate questions about text before, during, and after reading to deepen understanding and gain (C) make, correct, or confirm predictions using text features, characteristics of genre, and structures (H) synthesize information to create new understanding	Writing (11) Composition: listening, speaking, reading, writing, and thinking using multiple texts--writing process. The student uses the writing process recursively to compose multiple texts that are legible and uses appropriate conventions. The student is expected to: (A) plan a first draft by selecting a genre for a particular topic, purpose, and audience using a range of strategies such as brainstorming, freewriting, and mapping;
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	(7) Response skills: listening, speaking, reading, writing, and thinking using multiple texts. The student responds to an increasingly challenging variety of sources that are read, heard, or viewed. The student is expected to: • (B) write responses that demonstrate understanding of texts, including comparing and contrasting ideas across a variety of sources; • (C) use text evidence to support an appropriate response; • (D) retell, paraphrase, or summarize texts in ways that maintain meaning and logical order;	• (B) develop drafts into a focused, structured, and coherent piece of writing by: ○ (i) organizing with purposeful structure, including an introduction, transitions, and a conclusion; • (C) revise drafts to improve sentence structure and word choice by adding, deleting, combining, and rearranging ideas for coherence and clarity; • (D) edit drafts using standard Spanish conventions, including: ○ (i) complete simple and compound sentences with subject-verb agreement and avoidance of splices, run-ons, and fragments; • (E) publish written work for appropriate audiences. (12) Composition: listening, speaking, reading, writing, and thinking using multiple texts--genres. The student uses genre characteristics and craft to compose multiple texts that are meaningful. The student is expected to: • (B) compose informational texts, including brief compositions that convey information about a topic, using a clear central idea and genre characteristics and craft
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Word Study (Foundational Skills, Phonics, Spelling, Conventions, Grammar)

(2) Desarrollar y apoyar las destrezas fundamentales del lenguaje: escuchar, hablar, leer, escribir y pensar —inicio de la lectura y la escritura. El estudiante desarrolla conocimiento de la estructura de las palabras a través de la conciencia fonológica, los conceptos impresos, la fonética y la morfología para comunicar, decodificar y escribir. Se espera que el estudiante:

- (A) demuestre y aplique conocimiento fonético al:
 - (i) decodificar palabras agudas, graves, esdrújulas y sobreesdrújulas (palabras con énfasis en la última, penúltima y antepenúltima sílaba y palabras con énfasis en la sílaba antes de la antepenúltima);
 - (ii) utilizar reglas ortográficas para dividir y combinar sílabas, incluyendo diptongos y hiatos formales y acentuados;

(For reference only – Word study in English)

(2) Developing and sustaining foundational language skills: listening, speaking, reading, writing, and thinking--beginning reading and writing. The student develops word structure knowledge through phonological awareness, print concepts, phonics, and morphology to communicate, decode, and spell. The student is expected to:

- (A) demonstrate and apply phonetic knowledge by:
 - (i) decoding words with specific orthographic patterns and rules, including regular and irregular plurals;
 - (ii) decoding multisyllabic words with closed syllables; open syllables; VCe syllables; vowel teams, including digraphs and diphthongs; r-controlled syllables; and final stable syllables;

Big Ideas, Learning Outcomes, and Formative Assessments:

Content Big Idea: I want my students to understand that there are multiple forces that have different effects on the movement of objects in our world. (Science 6, D). For example, the force of friction between two surfaces can slow or stop movement. For example, a pull can move an object that was stopped, or stop an object that was moving.

Literacy Big Idea:

I want my students to understand that when reading informational text, it is important to

- ask questions (Reading 6, B).
- make predictions (Reading 6, C)
- use the text to answer the questions and confirm predictions (Reading 6, C).
- synthesize information about a topic in order to generate deeper understanding of the topic (Reading 6, H).

in order to write an informational text that conveys information about a topic with a clear central idea and supporting details. (Writing 12, B)

Summative Assessment

After engaging in multiple hands-on experiences and investigations with forces and motion and after reading a variety of information texts on the subject during this unit, the students will end the unit by designing their own investigation to explore the effect of various forces on a common object found in the classroom (Science 6, D). . They will write an informational text (Writing 12, B) that will synthesize the information(Reading 6, H; 7, B, C, D). about force and motion they gained from their experiences, from the readings, and from the process of designing and implementing their investigation.

Building Oracy and Background Knowledge • Concept attainment, sentence prompts, and partner work: ○ <i>En la columna azul observo...</i> ○ <i>En la columna blanca observo...</i> ○ <i>A la derecha/izquierda observo/noto...</i> ○ <i>Jalar, empujar, la fricción, mucha fuerza, poca fuerza, con la gravedad, contra la gravedad, mucha fricción, poca fricción</i> ○ <i>Hay que usar mucha fuerza para deslizar un objeto sobre una superficie con mas puntos de entrabamiento</i> ○ <i>Hay que usar menos fuerza para deslizar un objeto sobre una superficie lisa.</i> ○ <i>Hay que usar más fuerza para mover los objetos contra la gravedad.</i> ○ <i>Hay que usar menos fuerza para mover los objetos con la gravedad</i> • Fishbowl and sentence prompts ○ <i>En la foto, observo...</i> ○ <i>Además, observo...</i> ○ <i>También, observo/se ve...</i>	Formative Assessment
Reading Comprehension: Using the following balanced literacy routines and strategies, students will read a variety of texts about Forces and Motion • Mini Lessons focusing on the skills outlined in the TEKS below • Small group instruction (guided reading groups) • Individual Reading and Student-Teacher Conferring • Say Something • Interactive Read Aloud All of these reading experiences will focus on meeting the following TEKS:	Content: Students will engage with a variety of objects and experiment with different forces on the objects. For example, they will set up a system where the same object moves quickly with a push, or slowly with a push, by varying the friction encountered by the object. Students will design their own investigation to explore the effect of a force on an object.

6) Comprehension skills: listening, speaking, reading, writing, and thinking using multiple texts • (B) generate questions about text before, during, and after reading to deepen understanding and gain • (C) make, correct, or confirm predictions using text features, characteristics of genre, and structures • (H) synthesize information to create new understanding (7) Response skills: listening, speaking, reading, writing, and thinking using multiple texts. The student responds to an increasingly challenging variety of sources that are read, heard, or viewed. The student is expected to: • (B) write responses that demonstrate understanding of texts, including comparing and contrasting ideas across a variety of sources; • (C) use text evidence to support an appropriate response; • (D) retell, paraphrase, or summarize texts in ways that maintain meaning and logical order;	Science: 6) Force, motion, and energy. The student knows that energy exists in many forms and can be observed in cycles, patterns, and systems. The student is expected to: • (D) design a descriptive investigation to explore the effect of force on an object such as a push or a pull, gravity, friction, or magnetism.	
Writing Students will engage in multiple writing experiences in order to practice the elements of process writing before engaging their final projects. Writing activities will be based on their investigations, experiences, and readings about forces and movement in the classroom. Balanced Literacy Routines and Strategies Include: • Mini Lessons (including teacher modeling) • Shared Writing – Language Experience Approach (LEA) • Independent Writing – science journals • Small group instruction • Conferring		

All of these writing experiences will focus on the following TEKS:

Writing

(11) Composition: listening, speaking, reading, writing, and thinking using multiple texts--writing process. The student uses the writing process recursively to compose multiple texts that are legible and uses appropriate conventions. The student is expected to:

- (A) plan a first draft by selecting a genre for a particular topic, purpose, and audience using a range of strategies such as brainstorming, freewriting, and mapping;
- (B) develop drafts into a focused, structured, and coherent piece of writing by:
- C) revise drafts to improve sentence structure and word choice by adding, deleting, combining, and rearranging ideas for coherence and clarity;
- (D) edit drafts using standard Spanish conventions, including:
 - (i) complete simple and compound sentences with subject-verb agreement and avoidance of splices, run-ons, and fragments;
- (E) publish written work for appropriate audiences.

(12) Composition: listening, speaking, reading, writing, and thinking using multiple texts--genres. The student uses genre characteristics and craft to compose multiple texts that are meaningful. The student is expected to:

- (B) compose informational texts, including brief compositions that convey information about a topic, using a clear central idea and genre characteristics and craft

Word Study and Fluency

Using words from student writing and reading about forces and motion, students will

- Divide words about force and motion into syllables
- Determine the stressed syllable
- Determine if these words are *palabras agudas, graves, esdrújulas ó sobreesdrújulas...*

...in order to meet the following TEKS:

(2) Desarrollar y apoyar las destrezas fundamentales del lenguaje: escuchar, hablar, leer, escribir y pensar —inicio de la lectura y la escritura. El estudiante desarrolla conocimiento de la estructura de las palabras a través de la conciencia fonológica, los conceptos impresos, la fonética y la morfología para comunicar, decodificar y escribir. Se espera que el estudiante:

- *(A) demuestre y aplique conocimiento fonético al:*
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 - *(ii) utilizar reglas ortográficas para dividir y combinar sílabas, incluyendo diptongos y hiatos formales y acentuados;*

Summative Assessment –

After engaging in multiple hands-on experiences and investigations with forces and motion and after reading a variety of informational texts on the subject during this unit, the students will end the unit by designing their own investigation to explore the effect of various forces on a common object found in the classroom. They will write an informational text that will synthesize the information about force and motion they gained from their experiences, from the readings, and from the process of designing and implementing their investigation.

Bridge Transfer – Side-by-side Predicted Bridge words:	Bridge – Transfer – Extension Students will practice the TPR in English – to develop English oracy (listening and speaking.) Then students will write short, narrative essays, in English, about their favorite investigation, experience, or book about forces and motion. (12) Composition: listening, speaking, reading, writing, and thinking using multiple texts--genres. (A) compose literary texts such as personal narratives and poetry using genre characteristics and craft	Bridge Contrastive Analysis – suffixes <table><tr><td>LA -ción</td><td>-tion</td></tr><tr><td>Fricción</td><td>friction</td></tr><tr><td>Educación</td><td>education</td></tr><tr><td>Información</td><td>information</td></tr><tr><td>Investigación</td><td>investigation</td></tr></table> <table><tr><td>LA -dad</td><td>-ty</td></tr><tr><td>gravedad</td><td>gravity</td></tr><tr><td>Ciudad</td><td>city</td></tr><tr><td>Dificultad</td><td>difficulty</td></tr><tr><td>comunidad</td><td>Community</td></tr><tr><td>Electricidad</td><td>electricity</td></tr></table> (2) Developing and sustaining foundational language skills: (B) demonstrate and apply spelling knowledge by: (vi) spelling words using knowledge of suffixes, including how they can change base words such as dropping e, changing y to i, and doubling final consonants; and (3) Developing and sustaining foundational language skills: (C) determine the meaning of and use words with affixes such as mis-, sub-, -ment, and -ity/ty and roots such as auto, graph, and meter;	LA -ción	-tion	Fricción	friction	Educación	education	Información	information	Investigación	investigation	LA -dad	-ty	gravedad	gravity	Ciudad	city	Dificultad	difficulty	comunidad	Community	Electricidad	electricity
LA -ción	-tion																							
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comunidad	Community																							
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- How did you feel as a learner?
 - I felt _____.

- What did you learn about biliteracy instruction?
 - One thing I learned about biliteracy instruction is...