Grades 4-5
SCIENCE
Framework for FORMATIVE/CLASSROOM Instruction and Assessment
Productive Domains of **Speaking and Writing**

The Pennsylvania English Learner (EL) Overlays assist educators in developing instructional units, lessons, or activities that are meaningful and comprehensible for English learners, and are aligned with Pennsylvania's *EL Differentiation Protocol*.

The EL Overlays illustrate the dynamic process of adapting instruction and assessment based on the English language proficiency of students. These are models that exemplify adaptations for a select instructional contexts and provide resources to extend this process to other instructional units. Key features of the Overlays are Model Performance Indicators (MPIs) which differentiate and scaffold instruction per ELP level by adjusting the language function and instructional support.

The EL Overlays are organized by: 1) content area, 2) grade cluster, and 3) language domain (Productive/productive).

Each **Productive** Overlay contains:

Page 1: Introduction

Page 2: Example Speaking Differentiation with Model Performance Indicators (MPIs)

Page 3: Example Writing Differentiation with Model Performance Indicators (MPIs)

Page 5: Productive Performance Indicator (PI) Builder

Page 6: Differentiation Template

Speaking Differentiation with Model Performance Indicators (MPIs)

ELD Standard 4: English learners communicate information, ideas, and concepts necessary for academic success in Science.

Content Standard(s): 3.5.4.A.2. Identify various earth structures (e.g., mountains, faults, drainage basins) through the use of models.

Concepts:

- ESS2.B The locations of mountain ranges, deep ocean trenches, ocean floor structures, earthquakes, and volcanoes occur in patterns.
- ESS2.A Water occurs underground, above ground, and in the atmosphere.
- ESS1.C Many types of rocks and minerals are formed from the remains of organisms or are altered by their activities.

Competencies:

- ESS2-3 Analyze and interpret data from maps to describe Earth's features (e.g., mountains, valleys, caves, sinkholes, lakes, rivers, peninsulas, lentic/lotic water systems, etc.).
- 4-ESS2-2 Identify various types of water environments in Pennsylvania.
- 4-ESS1-1 Use fossils as evidence to infer that some rocks were formed from the remains of once living organisms.

Key Use of Academic Language (KUALA): Students at all levels of English proficiency will produce **EXPLANATIONS**.

Academic Language Components

Discourse	Sentence	Word		
I noticed _____ happened because…	This is an example of…	Earth's	tsunami	map
The cause of _____ is...	I can picture…	features	geology plate	location
An effect of _____ is…	I wonder…	mountain	tectonics	source
I find _____ to be interesting because…	I know this is _____ because…	range	underground	represent
I heard evidence of _____ from…	This (picture/model/visual/etc.) helps me explain…	ocean trench	atmosphere	compare
I need more information on _____ because…	This is similar to…	ocean floor	fossils	contrast
This model represents…	This is different from…	fault	landforms	evidence
The difference between sources is…	This is a result of…	drainage basin	organism	model
This map is showing/representing...	This is evidence of...	earthquake	water	infer
		volcano	environment	conclude
				observe

ELP Level 1 Entering MPI	ELP Level 2 Emerging MPI	ELP Level 3 Developing MPI	ELP Level 4 Expanding MPI	ELP Level 5 Bridging MPI
Name parts of geological forms with a small group.	Ask WH-questions about geological forms using pictures and realia with a partner.	Describe how geological forms are organized with a partner.	Explain features of geological forms using a graphic organizer.	Evaluate and explain characteristics of geological forms from grade-level material.

Writing Differentiation with Model Performance Indicators (MPIs)

ELD Standard 4: English learners communicate information, ideas, and concepts necessary for academic success in Science.

Content Standard(s): 3.1.7.B.2. Apply models to predict specific results and observations (e.g., population growth, effects of infectious organisms)

Concepts:

- ESS2.A All Earth processes are the result of energy flowing and matter cycling within and among the planet's systems. The energy is derived from the sun and the earth's interior. These flows and cycles produce chemical and physical changes in Earth's materials and living organisms.
- ESS2.A Earth's major systems are the geosphere, hydrosphere, and biosphere, which interact in multiple ways to affect the Earth's surface materials and processes.

Competencies:

- 5-LS2-1 Use models to trace the cycling of particles of matter between the air and soil and among plants, animals, and microbes.
- 5-ESS2-1 Develop a model to describe the ways the geosphere, hydrosphere, and biosphere interact.

Key Use of Academic Language (KUALA): Students at all levels of English proficiency will produce **EXPLANATIONS**.

Academic Language Components

Discourse	Sentence	Word	
I noticed _____ happened because… The cause of _____ is... An effect of _____ is… I am showing evidence of _____ from… I need more information on _____ because… The difference between sources is… The model is showing that _____ happened because…	This shows… This is like… This is an example of… This represents… The main idea here is… This helps me explain… This is the same/unlike as/because… This is important because...	source represent compare/contrast evidence model infer conclude explain	build summarize present observe measure illustrate cause/effect map/model key or legend

ELP Level 1 Entering MPI	ELP Level 2 Emerging MPI	ELP Level 3 Developing MPI	ELP Level 4 Expanding MPI	ELP Level 5 Bridging MPI
Draw and label pictures of scientific phenomena based on observations (e.g., life cycles) in L1 or L2.	Record observations of scientific phenomena based on visuals/realia using a graphic organizer.	Describe and record observations of scientific phenomena on a tri-fold science board.	Produce journals based on scientific observations from classroom experiments.	Summarize explanations and observations in a scientific journal using grade-level materials.

Building Productive Performance Indicators (PIs) to differentiate and scaffold instruction per ELP level by adjusting the **language function** and **instructional support**.

1) **Language Function** how students will process language during a Productive activity to demonstrate attainment of the ELD and content standard.

The language of **RECOUNTS**		The language of **EXPLANATIONS**		The language of **ARGUMENTS**		The language of **DISCUSSIONS**	
Arrange	Name	Apply	Identify	Compare	Express	Answer	Initiate
Brainstorm	Order	Chart	Illustrate	Compose	Extract	Ask	Participate in
Categorize	Paraphrase	Classify	Interpret	Confirm	Interpret	Associate	Present
Compose	Reenact	Compare	Narrate	Connect	Justify	Compare	Recommend
Construct	Repeat	Compose	Note	Construct	Negotiate	Confirm	Reflect on
Copy	Replicate	Contrast	Organize	Critique	Respond to	Converse	Request
Cross check	Restate	Define	Present	Defend	Restate	Discuss	Respond to
Draw	Retell	Describe	Role play	Define	Suggest	Edit	Revise
Find	Rewrite	Develop	Show	Elaborate		Give	Use
Follow directions	Select	Express	Summarize			Indicate	
Label	Sequence	Follow directions	Tell				
List	Share	Generalize	Trace				
Locate	State						
Make	Take notes						

2) **Content Stem** - Selected focus of grade-level curricular lesson/activity for all students which remains consistent across all ELP levels:

3) **Instructional Support** - Scaffolds to accompany explicit instruction with multiple opportunities for student response and feedback decreasing in degree from ELP level 1 to level 5.

ELA Sensory Supports	ELA Graphic Supports	ELA Interactive Supports
Acting/Reader's Theater	Cloze Paragraphs/Sentences	Bilingual/Picture Dictionaries
Audio Books	Gallery Walk	Internet/Software Programs
Felt/Magnetic Figures	Graphic Organizer	Jigsaw Activities
Illustrations/Photographs	Illustrated Word/Phrase Banks or Walls	Pairs/Triads/Small Groups
Manipulatives	Information Chunking	Teacher Modeling/Monitoring
Pantomime	Rubrics	Use of L1
Read Alouds	Study Guides/Guided Notes	
Realia	Written Objectives	
Role Play		
Songs/Chants		
Total Physical Response (TPR)		
Videos		

Differentiation Template

ELD Standard 4: English learners communicate information, ideas, and concepts necessary for academic success in Science.

Content Standard(s):

Concepts:

Competencies:

Key Use of Academic Language (KUALA): Students at all levels of English proficiency will _____.

Academic Language Components					
Discourse		**Sentence**		**Word**	
ELP Level-specific PIs	**ELP Level 1 Entering**	**ELP Level 2 Emerging**	**ELP Level 3 Developing**	**ELP Level 4 Expanding**	**ELP Level 5 Bridging**
Include: **1) Language Function** **2) Content Stem** **(consist across all levels)** **3) Instructional Support(s)** *Language functions and instructional supports can be selected from Page 4, or supplied by the educator.*					