Making Common the Language of Science
WIDA 2016

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Rationale

"English language learners communicate information, ideas and concepts necessary for academic success in the content area of Science."

WIDA 2012 ELD Standard 4

Use academic language for specific communicative purposes: Recount, explain, argue, discuss.

WIDA Can Do Descriptors, Key Uses Edition 2016

"Language and concepts are expanded through the interpretation of scientific processes and phenomenon. Learning by doing promotes language and concept development."

Hein & Price 1994, Miller & MacDonald 2015

"Once frequent use of abstract concept develops, language becomes an instrument of reasoning."

Albert Einstein, The Language of Science, 1941

Features of
Academic Language

	Performance Criteria
Discourse Level	**Linguistic Complexity** (Quantity and variety of oral and written text)
Sentence Level	**Language Forms and Conventions** (Types, array and use of language structures)
Word/Phrase Level	**Vocabulary Usage** (Specificity of word or phrase choice)

Modified version of page 7 of the 2012 Amplification of WIIDA's English Language Development Standards K-12

What is the Language of Science?

<u>PL 1-2: Entering/Emerging</u>

- Stating key words and phrases associated with science. **W**

- Naming components of a phenomenon. **W/P**

- Listing/demonstrating procedural steps. **P/S/D**

- Sequencing sentence strips to show processes. **S/D**

- Labeling charts, ordering cycled sequences. **W/P**

What is the Language of Science?

<u>PL 3-4: Developing/Expanding</u>

- Using key technical language. **W/P**

- Matching causes and effects. **P/S**

- Comparing data. **S/D**

- Connect related ideas or concepts. **S/D**

- Organize information on how/why phenomena occur. **P/S/D**

Source: WIDA 2016 Board of Regents of the University of Wisconsin System, on behalf of the WIDA Consortium, www.wida.us

What is the Language of Science?

PL 5-6: Bridging/Reaching

- Identify components of systems; describe relationships between components.

- Analyze how variables contribute to outcome.

- Differentiating similarities and differences.

- Summarizing discussions.

- Presenting reports/essays on explanation of phenomena.

(selections from 2016 Can Do Key Uses descriptors)

Audio Sample

Lesson aim: How does water move in a cycle?

Task: Use the picture to explain the water cycle.

WIDA LoS: Explain a process in an ordered cycle, stating why phenomenon occur.

How does the task simulate the ACCESS 2.0 speaking experience?

How does transcription assist the teacher to evaluate?

Disclaimer: Signed parental consent obtained to show student response to a closed audience non-published.

What is the LANGUAGE in science?

- Definitional/scientific language.

- Greek/Latin roots for vocabulary.

- Question formation – how/why.

- Comparison/contrasting terms/phrases.

- Passive construction.

- Flow of information in response.

[adapted from Gottleib 2016, p.81]

Video Samples

Lesson aim: How can you increase potential energy?

Group experiment: Angry Peeps

WIDA LoS: Analyze how variables contribute to outcome

Compare initial response to redirection/self-correction.

How does the sample address the language of science: analyze how variables contribute to outcome?

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Flow of Information in text

- Orientation to topic

- Description or classification

- Explanation

- Steps

- Closure: Purpose

[adapted from Martin and Rose 2012, stages of genre, p. 55]

Written sample

WIDA LoS: Summarize information in a text

How does light help us to see?

Cloze writing with levels of differentiation.

How does the sample show flow of information in a summary?

Bilingual Content Instruction

- Promotes biliteracy development: Teaching language through content builds a dual focus: content activities enriched through academic language.

- Allows students to demonstrate prior knowledge of the field.

- Facilitates learning by using native language for explanations of routines and instructions.

- Easier to model metalinguistic strategies in students' native language.

- Builds confidence and academic equity.

- Values students' native language and culture as well as their personal experiences.

Teaching Content Bilingually…

- Ensures proper level of assessment in native language.

- Lowers affective filter and builds a comfort level that addresses personal needs and cultural validation.

- Promotes bilingual teacher as an educational, social, and home advocate. Has the ability to identify students' strengths and weaknesses.

- Builds essential school and communication skills. Strategies, graphic organizers, manipulatives can be implemented bilingually.

- Sociocultural context: Makes explicit connections between content and students' culture and background experience. Teacher can personalize the lesson.

- Facilitates vocabulary acquisition through the use of cognates [in English and Spanish].

Assessing the Language of Science

- Assessment must be focused on language usage around a specific purpose, rather than content knowledge (Gottlieb 2016).

- Multimodality: watch and listen, listen, read, then write.

- Explain visuals/graphics.

- Use of technology provides a platform for response embedded in the task; such as narrating a video, creating a podcast.

- Provide an embedded language structure.

- Demonstrate learning through an **authentic experience** (simulation, model, reenactment)

- Performance-based assessment/potential for LAUNCH (Spencer & Juliani 2016)

Academic Language Checklist
(Assessing ELLs, Gottlieb 2016)

Sequential order to language production:

Identifying: words, terms, characteristics, components

Describing: steps, sequences, phenomena

Comparing: similarities & differences, evidence, claims

Explaining: reasons, predictions, hypotheses

Evaluating: changes, relationships, consequences

Evaluate a Unit

- Examine the student sample and evaluate the evidence of academic language.

Units:

Grade 5/6 Earthquake Science

Grade 7/8 Light & Optics

Bilingual Content Instruction

Adapted/Sheltered Content ESL/Replacement

Interdisciplinary Unit: A Long Walk to Water

Suggested Sources for Content

- Pearson Longman Cornerstone & Keystone textbook series

- NJ Model Curriculum non-fiction Exemplar Units http://www.state.nj.us/education/modelcurriculum/ela/exemplars/

- Brainpop/Brainpop ESL/Brainpopjr.

- Infographics archive: kidsdiscover.com

- Futurism.com – visually rich articles, infographics

- Reading A-Z/Science A-Z

- Pebblego.com (subscription required)

- Cloze passages in content areas

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