

# **Academic Language and the Common Core State Standards: Implications for English Learners**

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# Overview

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- Some context
- Key question
- Academic language
  - What we are examining
  - Significance
- *Language for Achievement* Taxonomy
  - Language demands
  - Language complexity
  - Template for analysis and examples
- Study: Analysis of Language Demands and the Common Core State Standards: Preliminary Findings
- Implications: Addressing academic language in instruction and assessment
- Framework for planning and implementation
- Critical considerations

# Context includes

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- National movement toward more rigorous and higher achievement expectations for *all* students
- College and career preparedness
- State officials<sup>1</sup> cited educational quality issues (e.g., rigor, alignment of academic and pedagogical content) as an important factor in their decision to adopt the CCSS.

<sup>1</sup>36 of 40 states responding to a Center on Education Policy (CEP) survey of state officials (2010)

Source: CEP (2011, January). States' Progress and Challenges in Implementing Common Cores State Standards. Washington, DC: Author.

# Key question

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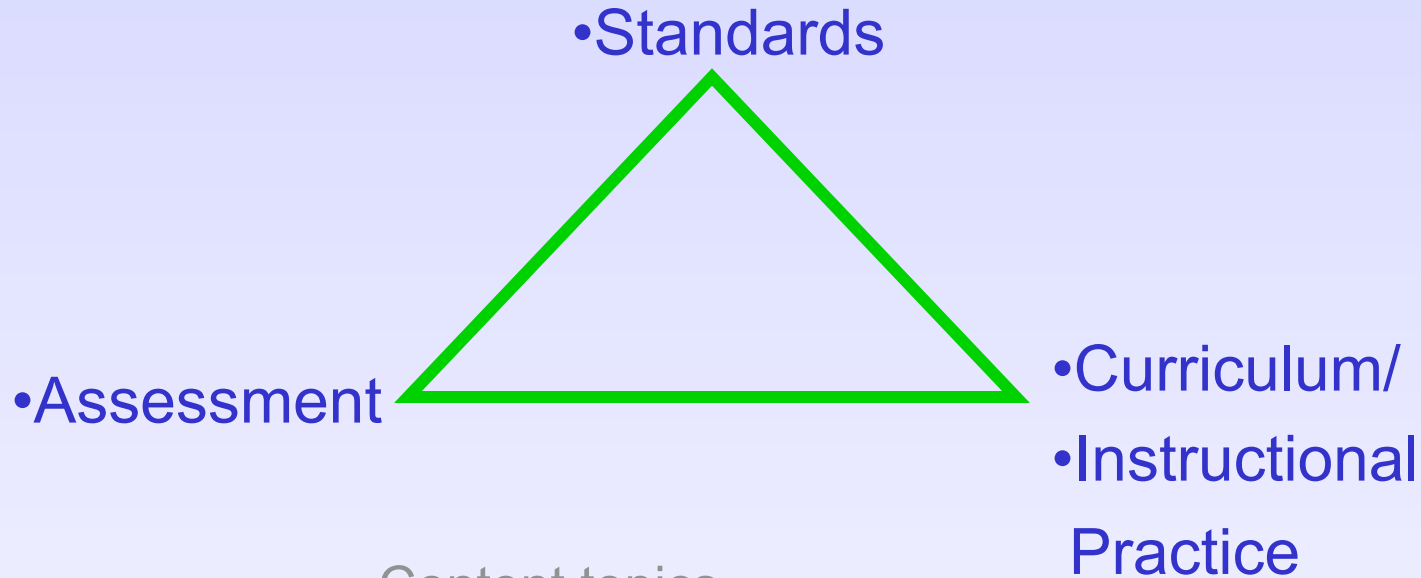
- How can we talk about the language students need to achieve?
  - Language needed by students to
    - *access* content
    - *meaningfully engage* with content
    - *achieve* content

# Key question (continued)

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- How can we talk about the language students need to achieve?
  - Language needed by teachers to
    - *explicitly identify* critical language needed by students
    - *intentionally* and *systematically* plan and address/integrate critical language in instruction
    - *appropriately coordinate* how critical language is taught

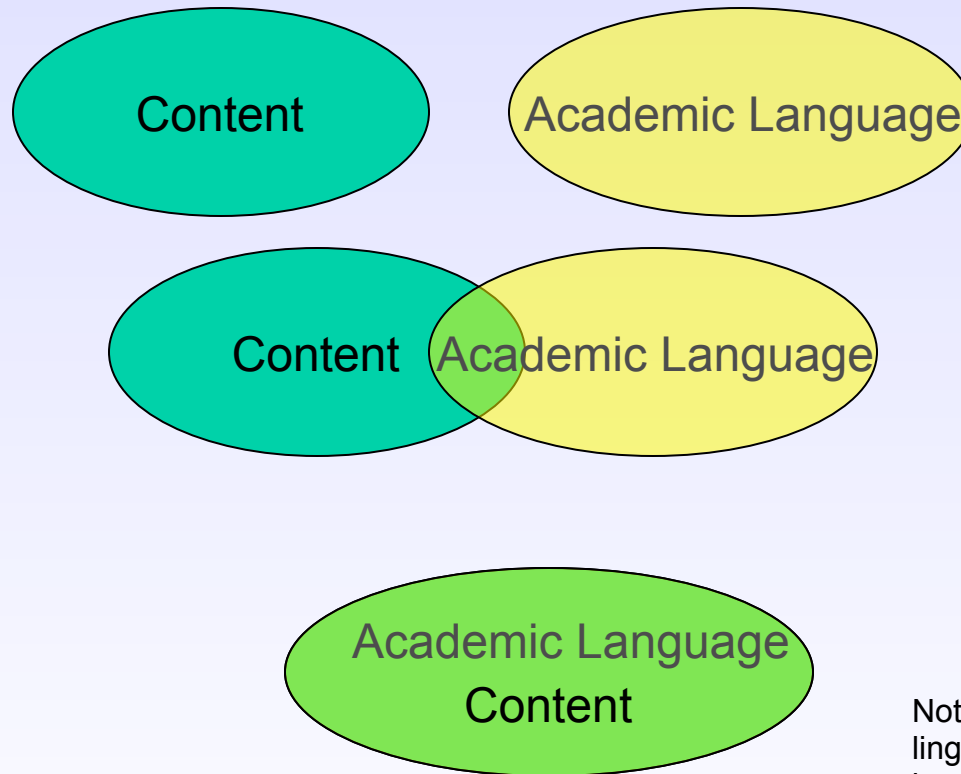
We are ensuring...



- Content topics
- Cognitive demand
- ➔ Language demand
- ➔ Language complexity

...in a manner  
supportive of  
English learners

# We are addressing the relationship...



Note: We recognize the importance of linguistic skills and socio-functional language; however, the focus is on academic English language.

# Academic Language

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- The language (e.g., lexicon, grammar, discourse features and functions) that students need to access, meaningfully engage with, and achieve rigorous academic content as they prepare for college and careers (Sato, 2008).

# Academic Language: Key Components

1. Lexicon/Morphology  
(Vocabulary)
2. Grammar/Syntax  
(Phrase and sentence structure)
3. Discourse/Language Functions
4. Text Structure/Genre

## Important notes:

- There is not necessarily a one-to-one correspondence between a cognitive demand and an academic language demand (**cognition ≠ language**)
- Distinctions should be made between **receptive** and **productive** language demands

# Significance includes

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- Language mediates and facilitates conceptual development and learning
- There are “appropriate,” “expected,” and “accepted” forms of communication associated with demonstrating competence

# Language for Achievement: Overview

Situational and socio-cultural contexts

## Spoken and Written Academic Text

Text Structure



Functions



Grammar



Vocabulary



## Instructional Academic Language

Classroom Discourse



Functions



Grammar



Vocabulary

# Language for Achievement: Language Demands Taxonomy

Language Demands—Academic English Language Functions

Academic English Language Function		Operational Definition—The language needed to engage with and achieve in the content (standard or item) consists of the use of:	Academic English Language Function		Operational Definition—The language needed to engage with and achieve in the content (standard or item) consists of the use of:	
A	Identification	a word or phrase to name an object, action, event, idea, fact, problem, need, or process.	Generalization		phrases or sentences to express an opinion, principle, trend, or conclusion that is based on facts, statistics, or other information, and/or to extend that opinion/principle/etc. to other relevant situations/contexts/etc.	
	Labeling	a word or phrase to name an object, action, event, or idea.				
	Enumeration	words or phrases to name distinct objects, actions, events, or ideas in a series, set, or in steps.	K		words, phrases, or sentences to express understanding of implied/implicit based on available information. Discourse markers include inferential logical connectors such as <i>although, while, thus, therefore.</i>	
B	Classification	words, phrases, or sentences to assign/associate an object, action, event, or idea to the category or type to which it belongs.			Prediction	words, phrases, or sentences to express an idea or notion about a future action or event based on available information. Discourse markers include adverbials such as <i>maybe, perhaps, obviously, evidently.</i>
	Sequencing	words, phrases, or sentences to express the order of information (e.g., a series of objects, actions, events, ideas). Discourse markers include adverbials such as <i>first, next, then, finally.</i>			Hypothesizing	phrases or sentences to express an idea/expectation or possible outcome based on available information. Discourse markers include adverbials such as <i>generally, typically, obviously, evidently.</i>
Organization	words, phrases, or sentences to express relationships between/among objects, actions, events, or ideas, or the structure or arrangement of information. Discourse markers include coordinating conjunctions such as <i>and, but, yet, or,</i> and adverbials such as <i>first, next, then, finally.</i>					
C	Comparison/ Contrast	words, phrases, or sentences to express similarities and/or differences, or to distinguish between two or more objects, actions, events, or ideas. Discourse markers include coordinating conjunctions <i>and, but, yet, or,</i> and adverbials such as <i>similarly, likewise, in contrast, instead, despite this.</i>	Argumentation	phrases or sentences to present a point of view with the intent of communicating or supporting a particular position or conviction. Discourse structures include expressions such as <i>in my opinion, it seems to me,</i> and adverbials such as <i>since, because, although, however.</i>		
D	Inquiring	words, phrases, or sentences to solicit information (e.g., <i>yes-no</i> questions, <i>wh</i> -questions, statements used as questions).	L	Persuasion	phrases or sentences to present ideas, opinions, and/or principles with the intent of creating agreement around or convincing others of a position or conviction. Discourse markers include expressions such as <i>in my opinion, it seems to me,</i> and adverbials such as <i>since, because, although, however.</i>	
E	Description	word, phrase, or sentence to express or observe the attributes or properties of an object, action, event, idea, or solution.			Negotiation	phrases or sentences to engage in a discussion with the purpose of creating mutual agreement from two or more different points of view.
F	Definition	word, phrase, or sentence to express the meaning of a given word, phrase, or expression.	M	Synthesizing	phrases or sentences to express, describe, or explain relationships among two or more ideas. Relationship verbs such as <i>contain, entail, consist of,</i> participles such as <i>a part of, a segment of,</i> and quantifiers such as <i>some, a good number of, almost all, a few, hardly any</i> often are used.	
G	Explanation	phrases or sentences to express the rationale, reasons, causes, or relationships related to one or more actions, events, ideas, or processes. Discourse markers include coordinating conjunctions <i>so, for,</i> and adverbials such as <i>therefore, as a result, for that reason.</i>				
H	Retelling	phrases or sentences to relate or repeat information. Discourse markers include coordinating conjunctions such as <i>and, but,</i> and adverbials such as <i>first, next, then, finally.</i>	N	Critiquing	phrases or sentences to express a focused review or analysis of an object, action, event, idea, or text.	
	Summarization	phrases or sentences to express important facts or ideas and relevant details about one or more objects, actions, events, ideas, or processes. Discourse structures include: beginning with an introductory sentence that specifies purpose or topic.	O	Evaluation	phrases or sentences to express a judgment about the meaning, importance, or significance of an action, event, idea, or text.	
I	Interpretation	phrases, sentences, or symbols to express understanding of the intended or alternate meaning of information.	P	Symbolization & Representation	symbols, numerals, and letters, to represent meaning within a conventional context (e.g., +, -, CO <sub>2</sub> , >, Δ, π, cos, y=3x+4, c <sup>2</sup> =a <sup>2</sup> +b <sup>2</sup> , h/2(b <sub>1</sub> +b <sub>2</sub> ), <i>cat</i> vs. <i>cat</i> ).	
J	Analyzing	phrases or sentences to indicate parts of a whole and/or the relationship between/among parts of an action, event, idea, or process. Relationship verbs such as <i>contain, entail, consist of,</i> participles such as <i>a part of, a segment of,</i> and quantifiers such as <i>some, a good number of, almost all, a few, hardly any</i> often are used.	Z	No Academic Language Function	Item or standard does not contain any academic language functions; may contain linguistic skills (e.g., phonemic awareness, syllabication).	

# Language Complexity: Vocabulary and Grammar

Lower Complexity	Higher Complexity
<ul style="list-style-type: none"> <li>☒ Semantically simple words and phrases</li> <li>☒ Common, high-frequency words and phrases</li> <li>☒ Simple, high-frequency morphological structures (e.g., common affixes, common compound words)</li> <li>☒ Short, simple sentences with limited modifying words or phrases</li> <li>☒ SVO sentence structure; simple verb and noun phrase constructions</li> <li>☒ Simple, familiar modals (e.g., can)</li> <li>☒ Simple wh- and yes/no questions</li> <li>☒ Direct (quoted) speech</li> <li>☒ Verbs in present tense, simple past tense, and future with going to and will</li> <li>☒ Simple, high-frequency noun, adjective, and adverb constructions</li> </ul>	<ul style="list-style-type: none"> <li>☒ Semantically complex words and phrases (e.g., multiple-meaning words, idioms, figurative language)</li> <li>☒ Specialized or technical words and phrases</li> <li>☒ Complex, higher level morphological structures (e.g., higher level affixes and compound words)</li> <li>☒ Compound and complex sentences; longer sentences with modifying words, phrases, and clauses</li> <li>☒ High level phrase and clause constructions (e.g., passive constructions, gerunds and infinitives as subjects and objects, conditional constructions)</li> <li>☒ Multiple-meaning modals, past forms of modals</li> <li>☒ Complex wh- and yes/no question constructions, tag questions</li> <li>☒ Indirect (reported) speech</li> <li>☒ Present, past, and future progressive and perfect verb structures</li> <li>☒ Complex, higher level noun, adjective, and adverb constructions</li> </ul>

# Language Complexity: Functions

Lower Complexity	Higher Complexity
<ul style="list-style-type: none"> <li><input checked="" type="checkbox"/> Length ranges from a word to paragraphs</li> <li><input checked="" type="checkbox"/> No/little variation in words and/or phrases in sentences/paragraphs; consistent use of language</li> <li><input checked="" type="checkbox"/> Repetition of key words/phrases/sentences <i>reinforces</i> information</li> <li><input checked="" type="checkbox"/> Language is used to present critical/central details</li> <li><input checked="" type="checkbox"/> No/little abstraction; language reflects more literal/concrete information; illustrative language is used; language is used to define/explain abstract information</li> <li><input checked="" type="checkbox"/> Graphics and/or relevant text features reinforce critical information/details</li> <li><input checked="" type="checkbox"/> Mostly common/familiar words/phrases; no/few uncommon words/phrases, compound words, gerunds, figurative language, and/or idioms</li> <li><input checked="" type="checkbox"/> Language is organized/structured</li> <li><input checked="" type="checkbox"/> Mostly simple sentence construction</li> <li><input checked="" type="checkbox"/> No/little passive voice</li> <li><input checked="" type="checkbox"/> Little variation in tense</li> <li><input checked="" type="checkbox"/> Mostly one idea/detail per sentence</li> <li><input checked="" type="checkbox"/> Mostly familiar construction (e.g., 's for possessive; s and es for plural)</li> <li><input checked="" type="checkbox"/> Mostly familiar text features (e.g., bulleted lists, bold face)</li> </ul>	<ul style="list-style-type: none"> <li><input checked="" type="checkbox"/> Length ranges from a word to paragraphs</li> <li><input checked="" type="checkbox"/> Some variation in words and/or phrases in sentences/paragraphs</li> <li><input checked="" type="checkbox"/> Repetition of key words/phrases/sentences <i>introduces new or extends</i> information</li> <li><input checked="" type="checkbox"/> Language is used to present critical/central details, but non-essential detail also is presented</li> <li><input checked="" type="checkbox"/> Some abstraction; language <i>may or may not</i> be used to define/explain abstract information; illustrative language <i>may or may not</i> be used; technical words/phrases are used</li> <li><input checked="" type="checkbox"/> Graphics and/or relevant text features <i>may or may not</i> reinforce critical information/details</li> <li><input checked="" type="checkbox"/> Some common/familiar words/phrases; some uncommon words/phrases, compound words, gerunds, figurative language, and/or idioms</li> <li><input checked="" type="checkbox"/> Language <i>may or may not</i> be organized/structured</li> <li><input checked="" type="checkbox"/> Varied sentence construction, including complex sentence construction</li> <li><input checked="" type="checkbox"/> Some passive voice</li> <li><input checked="" type="checkbox"/> Variation in tense</li> <li><input checked="" type="checkbox"/> Multiple ideas/details per sentence</li> <li><input checked="" type="checkbox"/> Some less familiar/irregular construction</li> <li><input checked="" type="checkbox"/> Some less familiar text features (e.g., pronunciation keys, text boxes)</li> </ul>

# Language Complexity: Spoken and Written Texts

Lower Complexity	Higher Complexity
<ul style="list-style-type: none"> <li>☒ Short texts, or longer texts chunked into short sections (words, phrases, single sentences, short paragraphs)</li> <li>☒ No or little variation of words/phrases in sentences/paragraphs</li> <li>☒ Repetition of key words/phrases reinforces information</li> <li>☒ One idea/detail per sentence; only critical/central ideas included</li> <li>☒ No or little abstraction; mostly literal/concrete information; abstract information is defined or explained</li> <li>☒ Visual aids, graphics, and/or text features reinforce critical information/details</li> <li>☒ Common text features (e.g. bulleted lists, boldface font)</li> </ul>	<ul style="list-style-type: none"> <li>☒ Long texts (long lists of words/phrases, a series of sentences, long paragraphs, multiple-paragraph texts)</li> <li>☒ Variation of words/phrases in sentences/paragraphs</li> <li>☒ Repetition of key words/phrases introduces new information or extends information</li> <li>☒ Multiple ideas/details per sentence; non-essential ideas included</li> <li>☒ Some or much abstraction that is not explicitly defined or explained</li> <li>☒ Visual aids, graphics, and/or text features may not reinforce critical information/details</li> <li>☒ Higher level text features (e.g., pronunciation keys, text boxes)</li> </ul>

Sato, Lagunoff, & Worth (2008)

# Language Complexity: Classroom Discourse

Lower Complexity	Higher Complexity
<ul style="list-style-type: none"> <li><input checked="" type="checkbox"/> Semantically simple words and phrases</li> <li><input checked="" type="checkbox"/> Common, high-frequency words and phrases</li> <li><input checked="" type="checkbox"/> Simple, high-frequency morphological structures (e.g., common affixes, common compound words)</li> <li><input checked="" type="checkbox"/> Short, simple sentences with limited modifying words or phrases</li> <li><input checked="" type="checkbox"/> SVO sentence structure; simple verb and noun phrase constructions</li> <li><input checked="" type="checkbox"/> Simple, familiar modals (e.g., can)</li> <li><input checked="" type="checkbox"/> Simple wh- and yes/no questions</li> <li><input checked="" type="checkbox"/> Direct (quoted) speech</li> <li><input checked="" type="checkbox"/> Verbs in present tense, simple past tense, and future with going to and will</li> <li><input checked="" type="checkbox"/> Simple, high-frequency noun, adjective, and adverb constructions</li> </ul> <p>Note: To the extent that spoken “texts” (planned, connected utterances) are used in classroom discourse, elements of lower complexity spoken text, as defined previously, apply here.</p>	<ul style="list-style-type: none"> <li><input checked="" type="checkbox"/> Semantically complex words and phrases (e.g., multiple-meaning words, idioms, figurative language)</li> <li><input checked="" type="checkbox"/> Specialized or technical words and phrases</li> <li><input checked="" type="checkbox"/> Complex, higher level morphological structures (e.g., higher level affixes and compound words)</li> <li><input checked="" type="checkbox"/> Compound and complex sentences; longer sentences with modifying words, phrases, and clauses</li> <li><input checked="" type="checkbox"/> High level phrase and clause constructions (e.g., passive constructions, gerunds and infinitives as subjects and objects, conditional constructions)</li> <li><input checked="" type="checkbox"/> Multiple-meaning modals, past forms of modals</li> <li><input checked="" type="checkbox"/> Complex wh- and yes/no question constructions, tag questions</li> <li><input checked="" type="checkbox"/> Indirect (reported) speech</li> <li><input checked="" type="checkbox"/> Present, past, and future progressive and perfect verb structures</li> <li><input checked="" type="checkbox"/> Complex, higher level noun, adjective, and adverb constructions</li> </ul> <p>Note: To the extent that spoken “texts” (planned, connected utterances) are used in classroom discourse, elements of higher complexity spoken text, as defined previously, apply here.</p>

Sato, Lagunoff, & Worth (2008)

# Cognition—Language Distinction: Example

(Released Grade 8 Algebra NAEP 2007)

Sarah has a part-time job at Better Burgers restaurant and is paid \$5.50 for each hour she works.

She has made the chart below to reflect her earnings but needs your help to complete it.

Fill in the missing entries in the chart.

Hours worked	Money earned (in dollars)
1	\$5.50
4	
	\$38.50
$7\frac{3}{4}$	\$42.63

If Sarah works  $h$  hours, then in terms of  $h$ , how much will she earn?

# Cognition—Language Distinction: Example

(Continued)

Cognitive Demand	Language Demand	
	Receptive Language	Productive Language
<b>Cognitive skills include:</b> Comprehension Analysis Number sense Computation	<b>Language functions include:</b> Labeling Classification Sequencing Organization Inquiring Description Symbolization and Representation	<b>Language functions include:</b> Symbolization and Representation

It is important to consider the differences between cognitive and language demands—there typically is not a one-to-one correspondence (e.g., analysis as a cognitive demand does not always only require the language of analysis). It also is important to consider differences between receptive and productive language demands

# Template for analysis: Cognitive and language demands

Cognitive Demand	Language Demand	
	Receptive Language	Productive Language
Cognitive skills	Key vocabulary/words	Key vocabulary/words
	Syntax/grammar	Syntax/grammar
	Language functions	Language functions
	Language complexity	Language complexity

## Additional knowledge and skills needed:

- Other knowledge (e.g., situational, socio-cultural)
- Other language (e.g., situational, socio-functional, linguistic skills)

## Grade 8 Algebra Task Example (continued)

Cognitive Demand	Language Demand	
	Receptive Language	Productive Language
Cognitive skills include: <ul style="list-style-type: none"> <li>• Comprehension</li> <li>• Analysis</li> <li>• Number sense</li> <li>• Computation</li> </ul>	Key vocabulary/words <ul style="list-style-type: none"> <li>• Paid</li> <li>• For each</li> <li>• Chart</li> <li>• Complete</li> <li>• Fill in</li> <li>• Missing</li> <li>• In terms of</li> <li>• How much</li> </ul>	Key vocabulary/words <ul style="list-style-type: none"> <li>• NA</li> </ul>

**Additional knowledge and skills needed:**

- Other knowledge (e.g., socio-cultural)
- Other language (e.g., socio-functional, linguistic skills)

## Grade 8 Algebra Task Example (continued)

Cognitive Demand	Language Demand	
	Receptive Language	Productive Language
Cognitive skills include: <ul style="list-style-type: none"> <li>• Comprehension</li> <li>• Analysis</li> <li>• Number sense</li> <li>• Computation</li> </ul>	Syntax/grammar <ul style="list-style-type: none"> <li>• Compound sentences</li> <li>• Passive construction</li> <li>• Irregular verbs</li> <li>• Conditional phrases</li> </ul>	Syntax/grammar <ul style="list-style-type: none"> <li>• NA</li> </ul>

### Additional knowledge and skills needed:

- Other knowledge (e.g., socio-cultural)
- Other language (e.g., socio-functional, linguistic skills)

## Grade 8 Algebra Task Example (continued)

Cognitive Demand	Language Demand	
	Receptive Language	Productive Language
Cognitive skills include: <ul style="list-style-type: none"> <li>• Comprehension</li> <li>• Analysis</li> <li>• Number sense</li> <li>• Computation</li> </ul>	Language functions include: <ul style="list-style-type: none"> <li>• Labeling</li> <li>• Classification</li> <li>• Sequencing</li> <li>• Organization</li> <li>• Inquiring</li> <li>• Description</li> <li>• Symbolization and Representation</li> </ul>	Language functions include: <ul style="list-style-type: none"> <li>• Symbolization and Representation</li> </ul>

**Additional knowledge and skills needed:**

- Other knowledge (e.g., socio-cultural)
- Other language (e.g., socio-functional, linguistic skills)

## Grade 8 Algebra Task Example (continued)

Cognitive Demand	Language Demand	
	Receptive Language	Productive Language
Cognitive skills include: <ul style="list-style-type: none"> <li>• Comprehension</li> <li>• Analysis</li> <li>• Number sense</li> <li>• Computation</li> </ul>	Language complexity: <ul style="list-style-type: none"> <li>• High density (e.g., length ranges from a number to a short paragraph; some variation in words/phrases used; symbols/variables used)</li> <li>• Complex construction (e.g., some uncommon words/phrases; varied sentence construction including complex sentence construction; some passive voice; multiple ideas/details per sentence)</li> </ul>	Language complexity: <ul style="list-style-type: none"> <li>• Low density (e.g., no/little variation in length or amount/type of information)</li> <li>• Simple construction (e.g., no/little variation in construction; common construction/symbols)</li> </ul>

### Additional knowledge and skills needed:

- Other knowledge (e.g., socio-cultural)
- Other language (e.g., socio-functional, linguistic skills)

# Study

- Analysis of academic language in the Common Core State Standards
  - High school ELA and mathematics
- Preliminary findings
- Note: Interpretation and discussion of implications is in progress

# Productive Language Functions Reflected in Common Core State Standards High School in English Language Arts (preliminary findings)

Language Function	Total number of occurrences
Interpretation	18
Analyzing	17
Evaluation	14
Explanation	13
Description	12
Organization	12
Generalization	12
Comparison/ Contrast	10
Summarization	10
Argumentation	8
Synthesizing	8
Inferring	6
Definition	5
Inquiring	5
Symbolization & Representation	5
Critiquing	3
Persuasion	2
No Academic Language Function <sup>a</sup>	3

<sup>a</sup>According to this analysis, the standard does not reflect *any* academic language functions; however, it may require linguistic skills such as phonemic awareness and syllabication.

# Productive Language Functions Reflected in Common Core State Standards High School READING Strand (preliminary findings)

Language Function	Total number of occurrences across the standards	Standard Number: Reading Strand										
		1	2	3	4	5	6	7	8	9	10	
Interpretation	9	X		X	X	X	X	X	X	X	X	X
Description	8	X	X	X		X	X	X	X	X		
Analyzing	7	X	X	X	X	X	X	X				
Explanation	7	X	X	X	X	X	X			X		
Generalization	7	X	X	X	X	X			X		X	
Evaluation	5					X	X	X	X	X		
Comparison/ Contrast	4			X	X			X		X		
Summarization	4		X				X	X				X
Argumentation	3	X					X		X			
Inferring	3	X				X						X
Organization	3		X	X	X							
Symbolization & Representation	2				X			X				
Synthesizing	2			X				X				
Definition	1				X							

Note: More than one language function was reflected in each of the CCSS in this table.

## Productive Language Functions Reflected in Common Core State Standards High School WRITING Strand (preliminary findings)

Language Function	Total number of occurrences across the standards	Standard Number: Writing Strand									
		1	2	3	4	5	6	7	8	9	10
Evaluation	7		X			X	X	X	X	X	X
Organization	6	X	X	X	X		X				X
Analyzing	5		X			X	X			X	X
Generalization	4				X	X		X			X
Inquiring	4					X	X	X			X
Summarization	4	X	X						X		X
Comparison/ Contrast	3	X					X				X
Critiquing	3					X	X				X
Description	3		X	X							X
Explanation	3	X	X								X
Interpretation	3		X							X	X
Synthesizing	3							X		X	X
Argumentation	2	X									X
Definition	2		X								X
Infering	2							X			X
Symbolization & Representation	2								X		X

Note: More than one language function was reflected in each of the CCSS in this table.

# Productive Language Functions Reflected in Common Core State Standards High School SPEAKING and LISTENING Strand (preliminary findings)

Language Function	Total number of occurrences across the standards	Standard Number: Speaking and Listening Strand				
		1	2	3	4	5
Analyzing	3		X	X	X	
Argumentation	3	X		X	X	
Explanation	3			X	X	X
Interpretation	3	X	X			X
Synthesizing	3	X	X	X		
Evaluation	2		X	X		
Persuasion	2	X		X		
Summarization	2	X	X			
Comparison/ Contrast	1		X			
Description	1				X	
Generalization	1	X				
Inferring	1	X				
Inquiring	1	X				
Organization	1				X	
Symbolization & Representation	1					X

Note: More than one language function was reflected in each of the CCSS in this table.

# Productive Language Functions Reflected in Common Core State Standards High School LANGUAGE Strand (preliminary findings)

Language Function	Total number of occurrences across the standards	Standard Number: Language Strand					
		1	2	3	4	5	6
Interpretation	3				X	X	X
Analyzing	2					X	X
Comparison/ Contrast	2					X	X
Definition	2				X		X
Organization	2				X		X
No Academic Language Function <sup>a</sup>	3	X	X	X			

Note: More than one language function was reflected in CCSS standards 4, 5, and 6 in this table.

<sup>a</sup>According to this analysis, the standard does not reflect *any* academic language functions; however, it may require linguistic skills such as phonemic awareness and syllabication.

## Productive Language Functions Reflected in Common Core State Standards High School Mathematics (preliminary findings)

Language Function	Count
Symbolization & Representation	151
Explanation	43
Interpretation	20
Argumentation	17
Identification	15
Description	13
Generalization	13
Comparison/ contrast	12
Labeling	9
Definition	6
Sequencing	3
Summarization	1
Analyzing	1
Classification	1
Critiquing	1
Enumeration	1
Evaluation	1
Inferring	1

# Standards with More Than One Productive Language Function in Common Core State Standards High School NUMBER & QUANTITY Section (preliminary findings)

Language Function	Standard Number												
	HS.N-RN.1	HS.N-RN.3	HS.N-Q.1	HS.N-Q.2	HS.N-Q.3	HS.N-CN.1	HS.N-CN.4	HS.N-CN.9	HS.N-VM.3	HS.N-VM.6	HS.N-VM.7	HS.N-VM.9	HS.N-VM.10
Symbolization & Representation	X	X	X	X	X	X	X	X	X	X	X		
Explanation	X	X					X	X				X	X
Identification			X	X	X				X	X	X		
Generalization		X				X						X	X
Comparison/ Contrast												X	X
Definition	X							X					
Classification									X				
Description				X									
Enumeration									X				
Labeling			X										

There are 27 standards in the Common Core State Standards High School Number and Quantity section. Symbolization and representation was reflected as the only language function for 14 standards: HS.N-RN.2; HS.N-CN.2; HS.N-CN.3; HS.N-CN.5; HS.N-CN.6; HS.N-CN.7; HS.N-CN.8; HS.N-VM.1; HS.N-VM.2; HS.N-VM.4; HS.N-VM.5; HS.N-VM.8; HS.N-VM.11; HS.N-VM.12

# Standards with More Than One Productive Language Function in Common Core Standards High School ALGEBRA Section (preliminary findings)

Language Function	Standard Number														
	HS.A-SSE.1	HS.A-SSE.3	HS.A-SSE.4	HS.A-APR.2	HS.A-APR.4	HS.A-APR.7	HS.A-CED.2	HS.A-CED.3	HS.A-CED.4	HS.A-REI.1	HS.A-REI.2	HS.A-REI.4	HS.A-REI.5	HS.A-REI.10	HS.A-REI.11
Symbolization & Representation	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X
Explanation		X	X	X		X			X	X	X	X	X	X	X
Generalization			X						X			X	X		
Identification	X	X					X		X						
Argumentation					X					X			X		
Description								X							
Interpretation								X							
Labeling							X								
Sequencing										X					

There are 27 standards in the Common Core State Standards High School Algebra section. Symbolization and representation was reflected as the only language function for 12 standards: HS.A-SSE.2; HS.A-APR.2; HS.A-APR.3; HS.A-APR.5; HS.A-APR.6; HS.A-CED.1; HS.A-REI.3; HS.A-REI.6; HS.A-REI.7; HS.A-REI.8; HS.A-REI.9; HS.A-REI.12

# Standards with More Than One Productive Language Function in Common Core Standards High School FUNCTIONS Section (preliminary findings)

Language Function	Standard Number														
	HS.F-IF.1	HS.F-IF.2	HS.F-IF.4	HS.F-IF.5	HS.F-IF.9	HS.F-BF.1	HS.F-BF.5	HS.F-LE.1	HS.F-TF.1	HS.F-TF.2	HS.F-TF.4	HS.F-TF.6	HS.F-TF.7	HS.F-TF.8	HS.F-TF.9
Symbolization & Representation	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X
Explanation	X						X		X	X	X	X			
Identification			X	X		X		X							
Interpretation	X	X	X										X		
Argumentation								X						X	X
Comparison/contrast					X										
Description											X				
Labeling			X												

Of the 28 standards, symbolization and representation was reflected as the only language function for 13 standards: HS.F-IF.3; HS.F-IF.6; HS.F-IF.7; HS.F-IF.8; HS.F-BF.2; HS.F-BF.3; HS.F-BF.4; HS.F-LE.2; HS.F-LE.3; HS.F-LE.4; HS.F-LE.5; HS.F-TF.3; HS.F-TF.5

# Standards with More Than One Productive Language Function in Common Core State Standards High School GEOMETRY Section (preliminary findings)

Language Function	Standard Number														
	HS.G-CO.1	HS.G-CO.2	HS.G-CO.3	HS.G-CO.4	HS.G-CO.5	HS.G-CO.7	HS.G-CO.8	HS.G-CO.9	HS.G-CO.10	HS.G-CO.11	HS.G-SRT.2	HS.G-SRT.3	HS.G-SRT.4	HS.G-SRT.5	
Symbolization & Representation	X	X	X	X	X	X	X	X	X	X	X	X	X	X	
Explanation				X		X	X				X	X		X	
Argumentation								X	X	X			X	X	
Description		X	X		X										
Generalization						X									
Definition	X			X			X								
Comparison/contrast		X													
Sequencing					X										
Identification															
Summarization				X											

Of the 43 standards, symbolization and representation was reflected as the only language function for 15 standards: HS.G-CO.6; HS.G-CO.12; HS.G-CO.13; HS.G-SRT.1; HS.G-SRT.8; HS.G-C.4; HS.G-GPE.1; HS.G-GPE.2; HS.G-GPE.3; HS.G-GPE.6; HS.G-GPE.7; HS.G-GMD.3; HS.G-GMD.4; HS.G-MG.2; HS.G-MG.3

## (continued) Standards with More Than One Productive Language Function in Common Core State Standards High School GEOMETRY Section (preliminary findings)

Language Function	Standard Number													
	HS.G-SRT.6	HS.G-SRT.7	HS.G-SRT.9	HS.G-SRT.10	HS.G-SRT.11	HS.G-C.1	HS.G-C.2	HS.G-C.3	HS.G-C.5	HS.G-GPE.4	HS.G-GPE.5	HS.G-GMD. <sub>1</sub>	HS.G-GMD. <sub>2</sub>	HS.G-MG.1
Symbolization & Representation	X	X	X	X	X	X	X	X	X	X	X	X	X	
Explanation	X	X	X	X	X				X		X	X	X	
Argumentation				X		X		X		X		X	X	
Description							X							X
Generalization	X		X						X					
Definition														
Comparison/contrast														X
Sequencing											X			
Identification					X									
Summarization														

# Standards with More Than One Productive Language Function in Common Core State Standards High School STATISTICS and PROBABILITY Section (preliminary findings)

Language Function	Standard Number															
	HS.S-ID. 1	HS.S-ID. 2	HS.S-ID. 3	HS.S-ID. 4	HS.S-ID. 5	HS.S-ID. 6	HS.S-ID. 7	HS.S-ID. 8	HS.S-ID. 9	HS.S-IC. 1	HS.S-IC. 3	HS.S-IC. 4	HS.S-IC. 5	HS.S-IC. 6	HS.S-CP. 1	
Symbolization & Representation	X	X	X	X	X	X	X	X		X	X	X	X	X	X	
Interpretation			X	X	X	X	X	X				X	X			
Comparison/ contrast		X	X						X		X		X			
Labeling	X					X										
Description			X			X									X	
Explanation										X	X					
Analyzing			X													
Critiquing														X		
Definition									X							
Evaluation														X		
Generalization																
Inferring										X						

There are 31 standards in the Common Core State Standards High School Statistics and Probability section. Symbolization and representation was reflected as the only language function for two standards: HS.S-IC.2; HS.S-MD.2

# (continued)Standards with More Than One Productive Language Function in Common Core State Standards High School STATISTICS and PROBABILITY Section (preliminary findings)

Language Function	Standard Number													
	HS.S-CP.2	HS.S-CP.3	HS.S-CP.4	HS.S-CP.5	HS.S-CP.6	HS.S-CP.7	HS.S-CP.8	HS.S-CP.9	HS.S-MD.1	HS.S-MD.3	HS.S-MD.4	HS.S-MD.5	HS.S-MD.6	HS.S-MD.7
Symbolization & Representation	X	X	X		X	X	X	X	X	X	X	X	X	X
Interpretation			X		X	X	X	X					X	X
Comparison/contrast				X								X		
Labeling			X						X	X	X			
Description												X	X	
Explanation	X	X		X										
Analyzing														
Critiquing														
Definition														
Evaluation														
Generalization														X
Inferring														

# **Effective implementation requires planned changes and monitoring of implementation**

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- Assessment
- Curriculum and Instruction
- Professional Development
- Etc.

# Implications

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We need to make the *intended* and *appropriate* scope, sequence, and relationship across language demands clear in order to help support our students' progress toward language and content proficiency in school.

- Standards:
  - Establish a reasonable academic *language progression* and identify gaps in academic language knowledge and skills—for a content area & cross content areas; for a grade & across grades
- Assessment:
  - Evaluate language demands/complexity in tests and test items
  - Intentionally incorporate into classroom/formative assessments
- Instruction:
  - Evaluate language demands in lessons, units, materials
  - Systematically incorporate into classroom practice
- Professional development:
  - Coordinate the discussion about and the practices supporting students' development of language for achievement—across teachers, classrooms, academic disciplines

# Some Considerations and Opportunities

	GENERAL	ENGLISH LEARNER RELATED
ASSESSMENT	<ul style="list-style-type: none"> <li>•<u>Test design</u>: e.g., What are the students to learn? What claims are to be made about the students in terms of constructs and degrees of expertise?</li> <li>•<u>Specifications</u>: e.g., Content specifications (e.g., clustering); range of complexity; administration conditions; item/task formats; item specifications</li> <li>•<u>Pilot Tests and Studies</u>: e.g., Alignment to standards, curriculum and instruction; validity studies; representative vs. purposeful vs. “convenience” samples of students vis-à-vis the purpose of the pilot/study; exploratory versus formative versus confirmatory studies; different methodologies (e.g., cognitive interviews)</li> </ul>	<ul style="list-style-type: none"> <li>•For content assessments: e.g., What types of needs do EL students have, and what types of supports will be provided to address these particular needs (consider accessibility strategies vs. accommodations)? <i>At what critical points throughout the assessment design and development process will accessibility be addressed/evaluated?</i></li> <li>•For ELP assessments: e.g., How is student performance on the ELP assessment expected to correspond with performance on the content assessments (e.g., in terms of content versus proficiency/achievement expectations)?</li> </ul>

# Some Considerations and Opportunities

	<b>GENERAL</b>	<b>ENGLISH LEARNER RELATED</b>
<b>CURRICULUM AND INSTRUCTION</b>	<ul style="list-style-type: none"> <li>• <u>Consistent and accurate understanding of the standards</u>: e.g., Similarities and differences between the current state standards and the CCSS (e.g., via a cross-walk content analysis); content specifications and examples that clarify and will support instructional practice and implementation</li> <li>• <u>Pilot Tests and Studies</u>: e.g., Utility and relevance studies; representative vs. purposeful vs. “convenience” samples of students vis-à-vis the purpose of the pilot/study; exploratory versus formative versus confirmatory studies; different methodologies (e.g., cognitive interviews, observations, surveys)</li> </ul>	<ul style="list-style-type: none"> <li>• Linkage between CCSS and ELD standards</li> <li>• Role of academic language (vocabulary, grammar, functions, text structure/discourse, situational and socio-cultural context)</li> <li>• Points of integration/coordination of academic content and academic language, including progressions for development of content and language</li> <li>• Specific instructional supports for English language development and socio-cultural understanding development that impacts language development and content achievement</li> </ul>

# Some Considerations and Opportunities

	<b>GENERAL</b>	<b>ENGLISH LEARNER RELATED</b>
<b>PROFESSIONAL DEVELOPMENT</b>	<ul style="list-style-type: none"> <li>•What are the objectives (e.g., awareness, skill building, materials development, significant and substantive changes in practice, deepening of understanding and expertise on particular content)?</li> <li>•Who should be involved (e.g., teachers, principals)?</li> <li>•Which model should be used?</li> <li>•How frequently should professional development events occur?</li> <li>•How can effectiveness be monitored and evaluated?</li> </ul>	<p>Involvement of content area teachers, language specialists, and principals. Participation of researchers, technical assistance providers, and educators from institutes of higher education, as appropriate.</p> <p>Coordination with teacher preparation and induction programs</p> <p>Establishment of structures and protocols that ensure continued engagement and support (e.g., establishing a community of practice; online resources)</p> <p>Metrics for evaluating success of coordination and communication between content and language experts/educators</p>

# Some Considerations and Opportunities

## **OTHER**

- Stakeholder support
- Special initiatives (e.g., implementation in lowest performing schools)
- Evaluation (e.g., implementation, impact, consequences)
- Involvement of institutes of higher education
- Involvement of technical assistance providers

# A general framework for planning and implementation:

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Key considerations include:

- Is the vision clearly defined and communicated to stakeholders (and which stakeholders need to be involved)?
- Will the vision serve the purpose(s) intended?
- Is there appropriate coherence in the vision/purpose(s) vis-à-vis the state system/goals more broadly
- Are there any potential unintended outcomes/consequences that need to be considered and addressed?

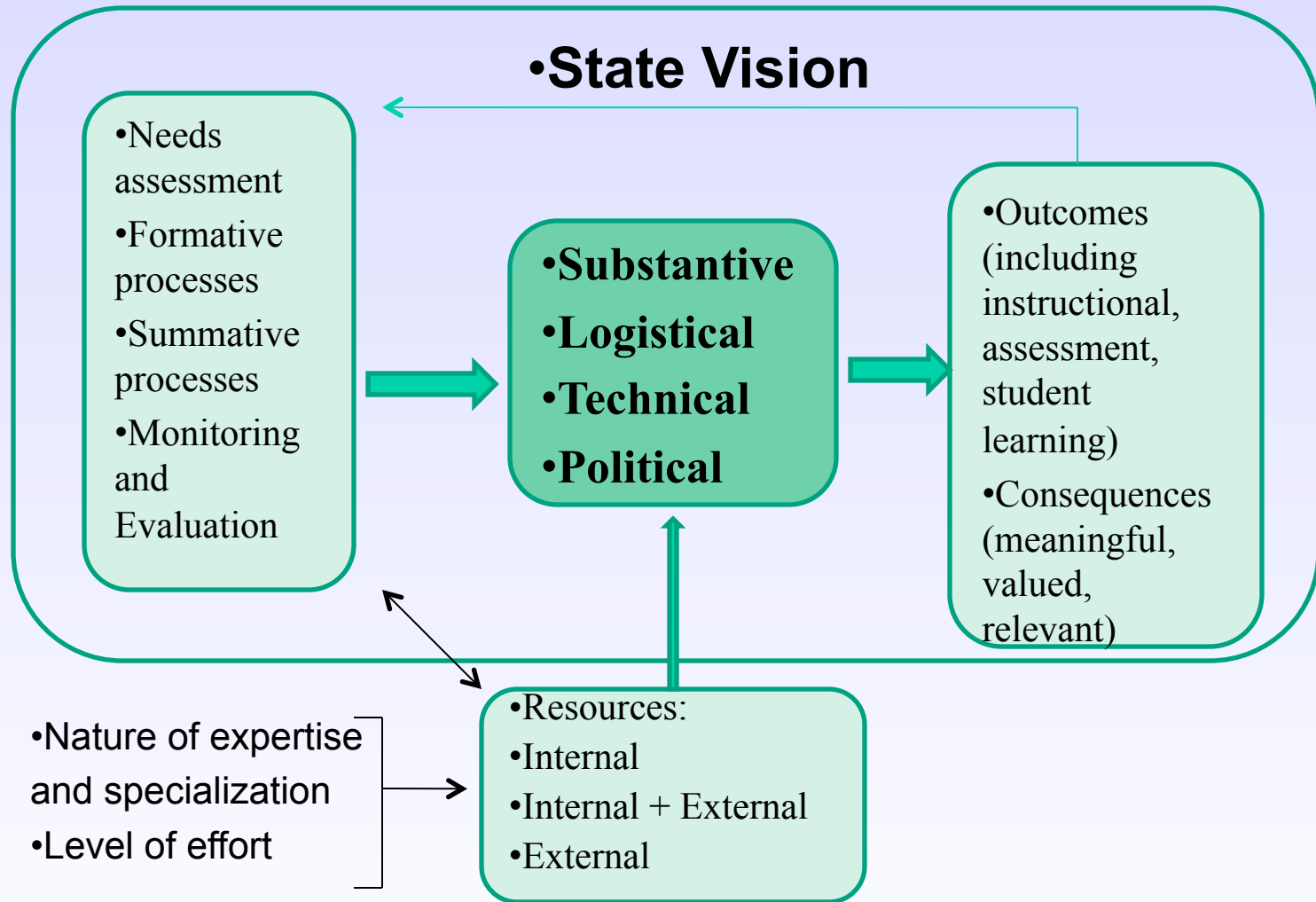
# A general framework for planning and implementation:

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Key considerations include (continued):

- Are there systems in place to monitor implementation as well as emerging effects and changes to context that may impact intended outcomes?
- Are there systems and protocols in place to support mid-stream changes or refinements that may be needed to improve outcomes?
- Are there specific indicators/measures for determining the degree to which intended outcomes were achieved?
- Are there processes in place to evaluate evidence over time to determine if continuing the course of action/activity is justified?

# A general framework for planning and implementation:



# Critical considerations

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- Important to appropriately distinguish *cognitive* and *language* demands
  - There is not always one-to-one correspondence between cognitive and language requirements
- Academic language should be addressed in an intentional, explicit, and consistent manner in instruction and assessment
- Language that supports achievement in schools (PreK-12)—academic language, in our current accountability context—is still an emerging area of our field. Therefore, a validity framework for integration and implementation of academic language in instruction and assessment is important (Sato et al., in press).
  - There is not (yet) an agreed-upon scope and sequence for academic language or understanding of how it develops within the PreK-12 context
  - State standards and assessment documents may not (yet) necessarily reflect the most current research on academic language
    - There is limited empirical evidence related to the relationship (e.g., correlational, causal) between specific academic language functions or sets of functions and achievement of specific content

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