towards defining and assessing academic language

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CREATE conference
Orlando, October 2012

catalyzing comprehension through discussion & debate (CCDD)

- five year grant (2010-2015) to the SERP Institute from the Institute of Education Sciences as part of the IES Reading for Understanding Research Initiative

- IES initiative spans preK-12. CCDD focus is grades 4-8

- CCDD project includes:

  – development of instruments to measure perspective taking (PT), complex reasoning (CR), and academic language (AL)

  – construction of longitudinal profiles of students' PT, CR, and AL skill development

  – development, implementation, and evaluation of programs intended to improve reading comprehension by developing PT, CR, and AL, with an emphasis on discussion

    - Word Generation Enhanced Program (Tier I)
    - Strategic Adolescent Reading Intervention (STARI) (Tier II)

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catalyzing comprehension through discussion & debate (CCDD)

CCDD project PIs:
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Stephanie Jones *(Harvard University)*   James Kim *(Harvard University)*
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today

why is academic language (AL) important?
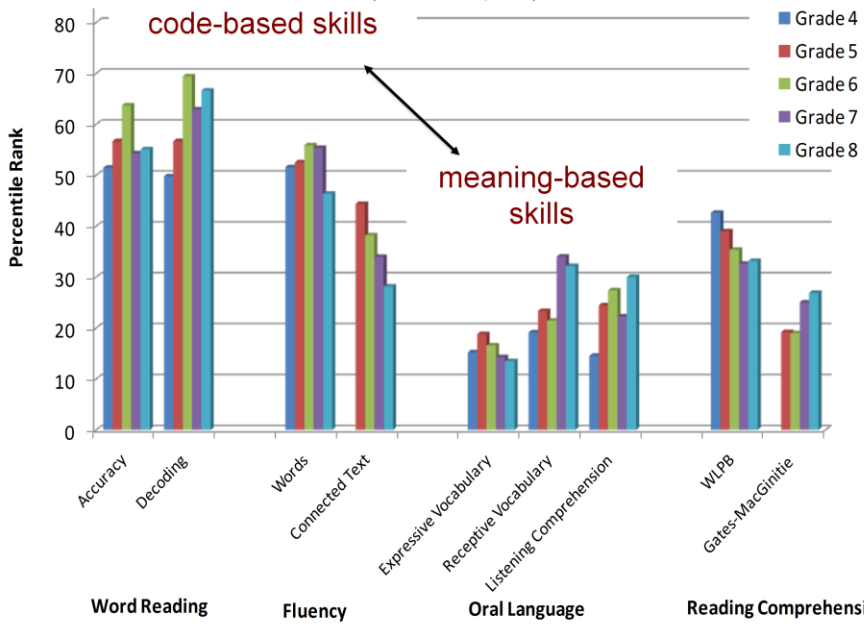
how do we define AL?

> * *what skills are involved in AL beyond academic vocabulary?*

how can we assess AL?

are AL skills associated to reading comprehension?

THE GAP BETWEEN READING WORDS & COMPREHENDING TEXT
(LESAUX ET AL., 2010)

Crosson & Lesaux, 2009; Lesaux, Crosson, Kieffer & Pierce, 2010

academic language (AL)

- the written language of school texts
- the oral language used in classrooms and professional education
- the language of academic assessments
- the oral and written language of science
- the language associated with prestige and power

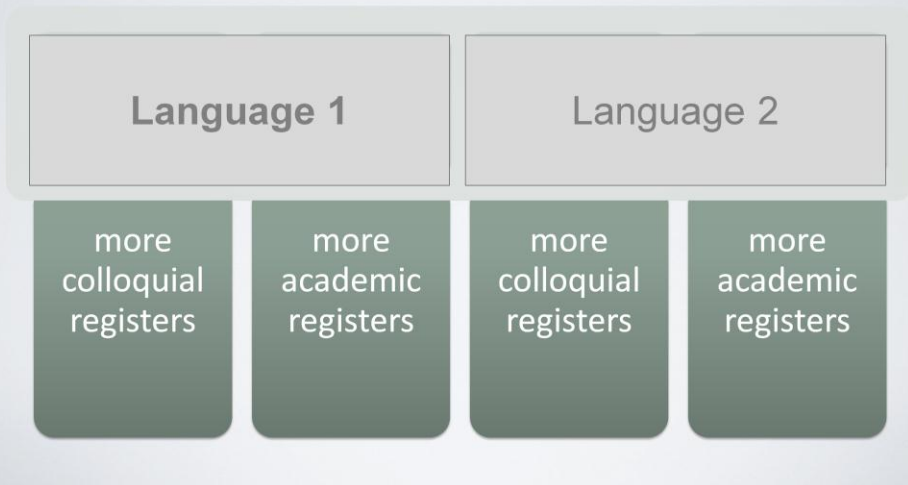# language for school learning: academic language

- the language of school is **different from everyday language**: Many students who are highly successful in communicating in informal contexts may struggle at school (Halliday, 2004)

- learning language forms valued in school is **a challenge** for all students, but it is especially challenging for those with minimal exposure to and use of such language outside of school

- control over the language of school is a **requirement for success** in challenging literacy tasks, such as reading textbooks or writing school-valued genres across content areas

- students need to understand how language works in school, yet the **linguistic expectations of school-based tasks are rarely made explicit** (Schleppegrell, 2001, 2004)
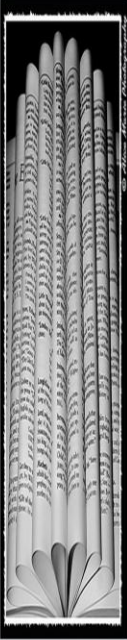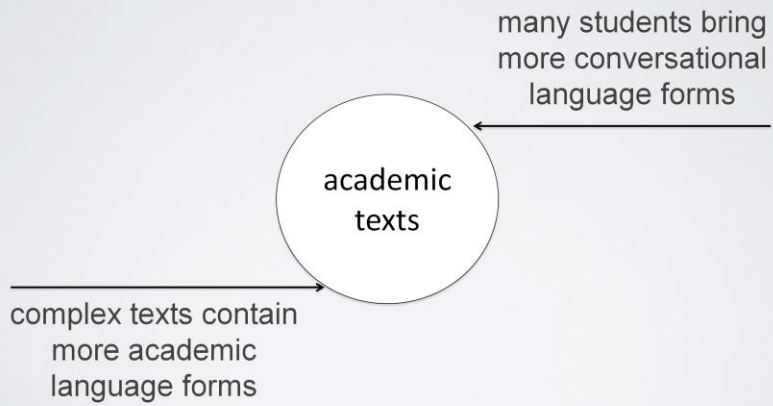
Language for school learning: area of concern

- Language minority children:
  - attain similar levels in word level skills (decoding, word identification, and spelling) as compared to those of English monolinguals, but
  - lag considerably behind in reading comprehension and writing
  - English proficiency predicts English reading comprehension and writing (August & Shanahan, 2006)

* also an area for concern for many monolingual students who are struggling readers (Snow & Biancarosa, 2004)

languages & registers

Language 1 | Language 2

| more colloquial registers | more academic registers | more colloquial registers | more academic registers |

the challenging language of academic texts

many students bring
more conversational
language forms

academic
texts

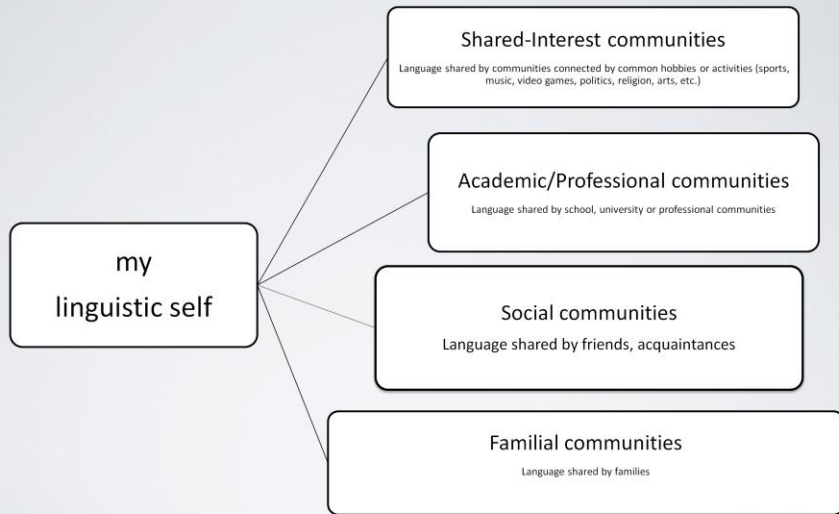complex texts contain
more academic
language forms

academic language:
expanding language resources

register

- constellation of lexical and grammatical features that characterizes particular uses of language (Halliday & Hassan, 1989; Schleppegrell, 2001: 431-432)

○ A register reflects the context of a text's production and at the same time enables the text to realize that context… the grammatical choices are made on the basis of the speaker's perception of the social context, and those choices then also serve to instantiate that social context.

○ Registers manifest themselves both in choice of words of phrases and also in the way that clauses are constructed and linked.

multiple registers: expanding language resources

Shared-Interest communities
Language shared by communities connected by common hobbies or activities (sports, music, video games, politics, religion, arts, etc.)

Academic/Professional communities
Language shared by school, university or professional communities

Social communities
Language shared by friends, acquaintances

Familial communities
Language shared by families

my linguistic self

Phillips-Galloway & Dobbs (2012)

Is mastering academic language the only goal in later language learning?
NO!

- language learning as *rhetorical flexibility*:

    the ability to use a wider set of language forms and functions for an increasing variety of social contexts (Ravid & Tolchinsky, 2002)

two important pedagogical implications

1. language development continues throughout adolescence and potentially throughout life

   • as speakers develop new language skills to navigate an increasing number of social contexts

2. being a skilled language user in some social contexts does not guarantee adequate language proficiency in other social contexts

   • whereas speakers are enculturated at home into the language of face-to-face interaction which typically prepares them well for colloquial conversations in their respective communities (Heath, 1983; Ochs, 1993), the process of acquiring and being socialized into academic language –or the "language of school"—appears to be challenging for many colloquially fluent students (Cummins, 2000; Schleppegrell, 2004; Snow & Uccelli, 2009)

defining academic language

the challenge of defining AL

❑ Cummins (1980, 1981) proposed the distinction between:

- BICS (Basic Interpersonal Communicative Skills)
- CALP (Cognitive Academic Language Proficiency)
- ➢ raised awareness about conversational vs. academic language, but did not specify in detail what skills CALP included

❑ Subsequently, most research has focused on "academic vocabulary"

beyond AL as academic vocabulary

- discipline-specific academic words: *photosynthesis, gene*

- all-purpose academic words: *process, convert*
  - those found frequently in texts across content areas

  "words with high utility across content areas" (Hiebert, 2005)

  ***

  but…   what lies beyond vocabulary?

articulation of the construct

❑ From research
- Alison Bailey and colleagues at CRESST
- Mary Schleppegrell's textual analysis
- Ken Hyland's research on metadiscourse
- Developmental linguistics (R. Berman's team, S. Blum-Kulka)
- Snow & Uccelli (2009) – literature review
- Kintsch's reading comprehension model

❑ From standards
- Common Core Standards – specific language demands

❑ From CCDD's core goals
- Research on classroom discussion, argumentation, and persuasive writing (Richard Anderson, Cathy O'Connor)

research on AL: an inventory of features

MORE COLLOQUIAL		MORE ACADEMIC

1. Interpersonal stance

Expressive/Involved → Detached/Distanced (SCHLEPPEGRELL, 2001)

Situationally-driven personal stances → Authoritative stance (SCHLEPPEGRELL, 2001)

2. Information load

Redundancy (ONG, 1995) / Wordiness → Conciseness

Sparsity → Density *(proportion of content words per total words)* (HALLIDAY, 1994; SCHLEPPEGRELL, 2001)

3. Organization of information

Dependency (HALLIDAY, 1993) / Addition (ONG, 1995) → Constituency (HALLIDAY, 1993) / Subordination (ONG, 1995)

(one element is bound or linked to another but is not part of it) → *(embedding, one element is a structural part of another)*

Minimal awareness of unfolding text as discourse *(marginal role of metadiscourse markers)* → Explicit awareness of organized discourse *(central role of textual metadiscourse markers)* (HYLAND & TSE, 2004)

Situational support *(Exophoric reference)* → Autonomous text *(Endophoric reference)*

Loosely connected/dialogic structure → Stepwise logical argumentation/unfolding, tightly constructed

4. Lexical choices

Low lexical diversity → High lexical diversity (CHAFE & DANIELEWICZ, 1987)

Colloquial expressions → Formal/prestigious expressions (e.g., *say/like* vs. *for instance*)

Fuzziness (e.g., *sort of, something like*) → Precision *(lexical choices and connectives)*

Concrete/common-sense concepts → Abstract/Technical concepts

5. Representational congruence

Simple/Congruent grammar *(simple sentences)* *(e.g., You heat water and it evaporates faster.)* → Complex/congruent grammar *(complex sentences)* *(e.g., If the water gets hotter, it evaporates faster.)* / Compact/Incongruent gramm *(clause embedding and nomi *(e.g., The increasing evaporation of water due to rising temperatures)* (HALLIDA

Animated entities as agents *(e.g., Gutenberg invented printing with movable type.)* → Abstract concepts as agents *(e.g., Printing technology revolutionized European book-making.)* (HALLIDAY, 1993)

Snow & Uccelli (2009)

core AL skills

a set of **later-developing language skills** relevant for acquiring, sharing, analyzing, or co-constructing knowledge **across content areas** at school. These skills include awareness, understanding, and use of complex lexico-grammatical structures, language functions, and discourse structures.

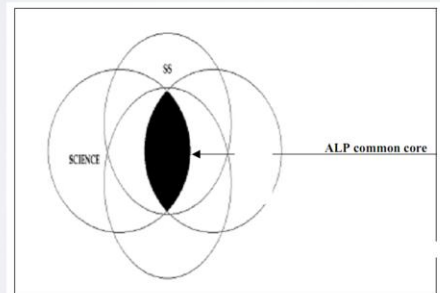AL across content areas (Bailey & Butler, 2003:6)

Figure 2. Hypothesized relationships between common core AL and content area-specific AL in the domain of math, science, social studies (SS), and language arts (LA).

everyday vs. academic language

- Everyday language

  I am <u>*worried*</u> *because one day the politicians might* <u>*explode*</u> *a nuclear bomb and everyone will* <u>*die*</u> *a horrible death.*

  Nominalizations

  Detached perspective

- Academic text

  <u>*Concern*</u> *has been expressed over { [the possible* <u>*detonation*</u> *of a nuclear device [which could result in widespread* <u>*mortality*</u>*.] }*

  Densely packed information

  (Derewianka, 1992)

AL: not an arbitrary set of conventions

- Halliday (1994) argues that the evolution of science goes hand in hand with the evolution of scientific/academic language scientific language not as a set of arbitrary conventions, but as lexico-grammatical resources that make scientific thought possible

  ❑ Nominalizations (or "grammatical metaphors" more broadly) described as a key feature of AL

    When a process
    is metaphorically transformed
    into a thing:

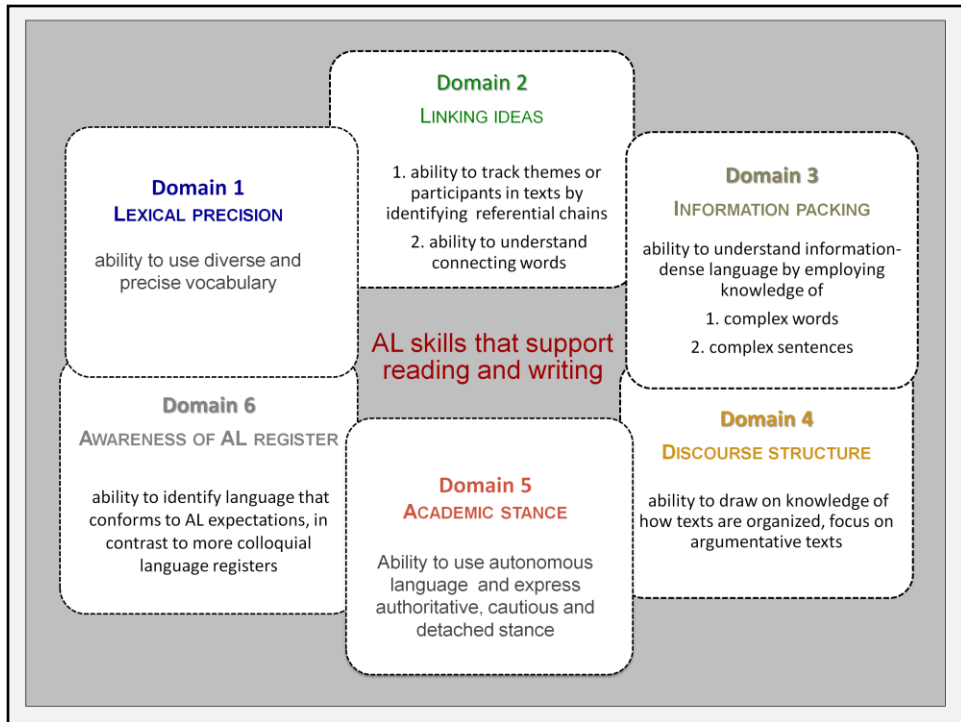   *[water evaporates]*
    ↓
    [evaporation]

    This provides "a less dynamic, more synoptic vision of the world... as it were held still... so that it can be observed, measured and, if possible, explained" (Halliday, 1994)

a continuum:
from more colloquial to more academic

"language can be **more or less academic** –that is furnished with fewer or more of the traits that are typical of academic language; we have no basis for postulating a separate category of language that has passed some threshold qualifying it as academic"

<div align="right">(Snow & Uccelli, 2009: 114-115)</div>

Domain 2
LINKING IDEAS

1. ability to track themes or participants in texts by identifying referential chains
2. ability to understand connecting words

Domain 1
LEXICAL PRECISION

ability to use diverse and precise vocabulary

Domain 3
INFORMATION PACKING

ability to understand information-dense language by employing knowledge of
1. complex words
2. complex sentences

AL skills that support reading and writing

Domain 6
AWARENESS OF AL REGISTER

ability to identify language that conforms to AL expectations, in contrast to more colloquial language registers

Domain 5
ACADEMIC STANCE

Ability to use autonomous language and express authoritative, cautious and detached stance

Domain 4
DISCOURSE STRUCTURE

ability to draw on knowledge of how texts are organized, focus on argumentative texts

assessing core AL skills: a pilot study
(Uccelli, Barr, Meneses, Sánchez, Galloway, & Dobbs, in preparation)

Goal: To develop a series of academic language tasks with the purpose of

- investigating **developmental trends** of AL skills in students from grades 4th through 8th; and

- **capturing variability** in students' AL skills as **independently** as possible from effects of background knowledge, higher-order reasoning, social perspective taking, and reading comprehension

ALA: Development Processs

AUGUST, 2010- MARCH, 2011
- **Operationalization of Academic Language:** on the basis of a review of the research literature and an analysis of the Common Core Standards

NOVEMBER, 2010-APRIL, 2011
- **Item Design:** using the operational AL construct as a guide

APRIL, 2011- MAY, 2011
- **Pre-Pilot Phase:** iterative process of item generation, administration, and modification by testing students in grades 4-8 (n=30) individually and in small groups. Observations and interviews informed the refinement of tasks, instructions, format and timing, and the modification or discard of items

MAY, 2011- JUNE, 2011
- **Pilot Phase: A 114-item AL-e Pilot** was group-administered to students in grades 4-8 (n=235) in three 45-minute sessions. Focus groups were held with students to gather information on the validity of the assessment.

JUNE, 2011- AUGUST, 2011
- **ALA PILOT Analyses:** data were scored, entered, and analyzed for the purpose of selecting a reduced set of items for the AL-e to be used during Year 2. Initial reliability and validity analyses were conducted.

SEPTEMBER, 2011 - OCTOBER, 2011
- **ALA Administration:** a 48-item assessment is group-administered to students in a 50-minute session.

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ALA Pilot Items*	
Task	**Number of items**
BREAKING WORDS (Kieffer, 2009)	18
UNDERSTANDING SENTENCES (TROG-2 – Selection)	32
CONNECTIVES CLOZE	10
CONNECTING IDEAS	16
TRACKING THEMES (Anaphora resolution)	6
ORGANIZING TEXT (Argumentative text)	2
Top Level Structure	4
AWARENESS OF DEFINITIONS	4
AWARENESS OF CONNECTIVES	6
PRODUCTION OF DEFINITIONS	8
EPISTEMIC MARKERS OF STANCE	12

PRE-PILOT:

ITEMS WERE GENERATED THROUGH AN ITERATIVE PROCESS OF DESIGN, TEST, MODIFICATION/DISCARD BY TESTING 30 STUDENTS IN GRADES 4-8, INDIVIDUALLY OR IN SMALL GROUPS

ALA PILOT

SAMPLE:
235 students (grades 4-8)

MEASURES:
•**ALA PILOT:** 118 items group-administered in three 45-minute sessions
•**MCAS** – (Massachussetts Comprehensive Assessment System): state-wide standards'-based assessment

Assessing general AL skills: Sample Demographics
(Uccelli, Barr, Meneses, Sánchez, Galloway, & Dobbs, in preparation)

Table 1: Students' Demographic Characteristics (n=218)

	n	%
Grade		
4th	48	22
5th	50	23
6th	35	16
7th	48	22
8th	37	17
Gender		
Female	114	52
Male	104	48
Language Status		
Classified as LEP	39	18
English proficient	179	82
SPED Status		
Classified as SPED	34	15
Not classified as SPED	184	84
S.E.S.		
Free/reduced lunch	175	80
No free/red. lunch	43	20

* No demographic information or grade information was available for 17 students

Additional demographic information

Distribution of students' home language and ethnicity (n=218)

	n	%
Language Status		
Classified as LEP	39	18
Classified as English **proficient**	179	82
Home Language		
English	152	70
Cape Verdean	36	17
Haitian Creole	14	6
Spanish	5	2
Portuguese	4	2
Somali	3	1
French	1	.5
Swahili	1	.5
Vietnamese	1	.5
Other	1	.5
Ethnicity		
Black/African American	143	66
White	48	22
Latino/Hispanic	15	7
American Indian/Alaskan Native	1	.5
Asian	2	1
Two or more races	9	4

* No demographic information or grade information was available for 17 students

A Task to Assess Multiple Domains of AL Simultaneously: The Definition Production Task

Directions:

- Please write a dictionary definition for the following words.
- Remember this is a dictionary for adults.

1. Horse:

"Animal with silky fur on it black brown or white with four legs. You can ride on it. It lives on a farm. You use it to go somewhere."
–prototypical grade 4 student

"A four-legged farm animal that can be ridden for transportation"
-prototypical grade 8 student

ALA Selected Item Set:
Results

AL Assessment (ALA)

- 48 items selected from a larger pool of 118 items

AL Domains	ALA	
	Task	**Number of items**
Information Packing	**BREAKING WORDS** (Kieffer, 2009 – Selection)	12
	UNDERSTANDING SENTENCES (Modeled after TROG items)	10
Linking Ideas	**CONNECTING IDEAS**	12
	TRACKING THEMES (Anaphora resolution)	5
Discourse Structure	**ORGANIZING TEXT** (Argumentative text)	2
Awareness of AL	**AWARENESS OF DEFINITIONS**	3
	PRODUCTION OF DEFINITIONS	4

ALA-Final Item Set for Study 1

❑ **Reliability**
- .92 as indexed by coefficient alpha, and
- .82 by split half reliability (evens vs. odds)

❑ **Confirmatory Factor Analysis:**
- The final set of items was examined using confirmatory factor analysis (CFA) to determine if a single factor was being measured
- The model fit results support the presence of a single factor: CFI - .95, TLI - .95, RMSEA - .03.
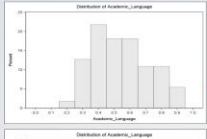
❑ **Criterion validity**
- Criterion validity was assessed examining the relation between Academic Language and the MCAS
- The zero order within-grade correlations between the ALA total score and the MCAS ranged from .41 to .77 indicating that performance on the ALA was positively related to performance on the MCAS-ELA

Distribution of Academic_Language
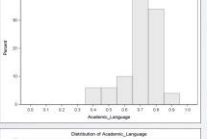
← 4th grade

← 5th grade
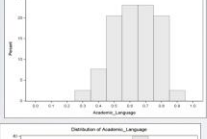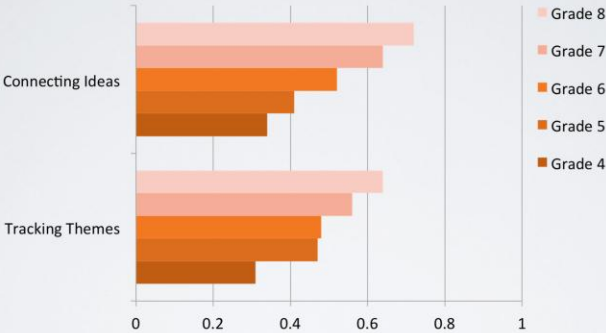
← 6th grade

← 7th grade

← 8th grade
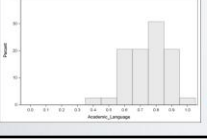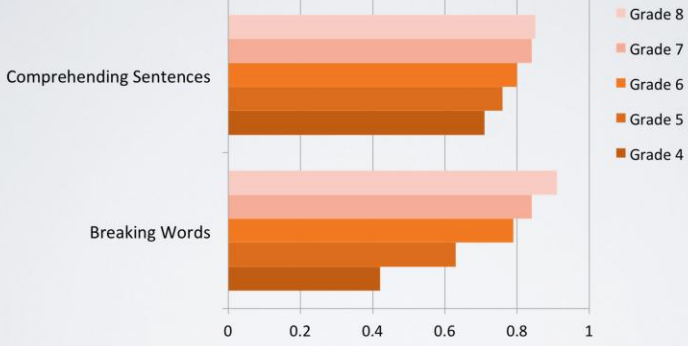
ALA scores:
Histograms
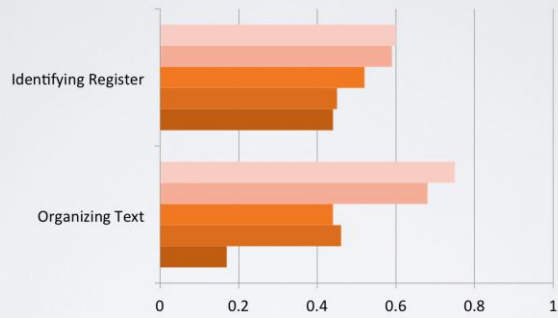by grade

ALA scores by grade and task
Linking Ideas

ALA scores by grade and task
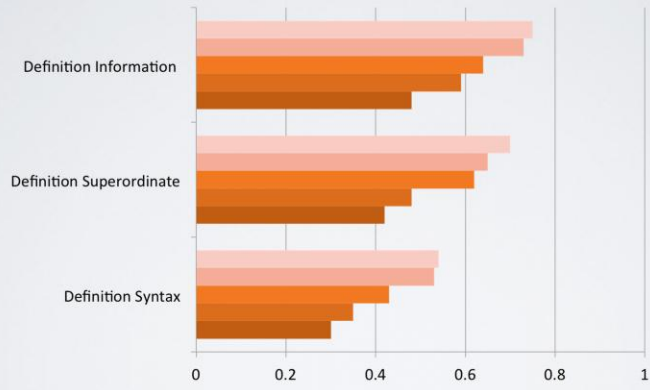*Packing Information*

ALA scores by grade and task
Register awareness & Discourse Structure

ALA scores by grade and task
Definition Production

A few take-away messages

➢ Vocabulary is crucial, but there is more to academic language than academic vocabulary

➢ Academic language entails complex repertoire of skills

➢ Academic language is a key dimension to attend throughout school, and in particular during the middle school and high school years to prepare students for the higher language demands of post-secondary education and life.

➢ Some pedagogical implications:
  ▪ Integrating a focus on AL instruction in the context of authentic oral and writing activities focused on meaning construction – some important areas:
    ▪ Precise meanings: Expand academic vocabulary
    ▪ Explicit connections: Organizational markers
    ▪ Linking participants and themes: Identifying chains of reference
    ▪ Concise information: Sentence combining; Nominalization
    ▪ Cautious inferences: Epistemic markers
    ▪ Discourse structure: Thesis – Argument – Counterargument – Rebuttal- Conclusion

STUDY 2: in progress

Table 1
Means, standard deviations and sample size for GALP, Reading Comprehension, Reading Fluency, and Vocabulary scores by grade (total N = 342).

	Mean (SD)
General Academic Language Proficiency (GALP - factor scores)	
Grade 4 (n=101)	-0.20 (1.60)
Grade 5 (n= 74)	-0.06 (1.20)
Grade 6 (n= 99)	0.60 (1.54)
Reading Comprehension (*Gates–MacGinitie Reading Test - ESS*)	
Grade 4 (n= 96)	494.50 (43.59)
Grade 5 (n= 86)	500.41 (41.26)
Grade 6 (n= 99)	505.52 (39.18)
Reading Fluency (*Test of Silent Word Reading Fluency- standard scores*)	
Grade 4 (n= 99)	94.35 (32.43)
Grade 5 (n= 91)	91.00 (30.95)
Grade 6 (n=100)	111.55 (29.94)
Vocabulary (Vocabulary *Association Test- raw scores*)	
Grade 4 (n=100)	32.41 (5.91)
Grade 5 (n= 95)	34.95 (5.40)
Grade 6 (n= 96)	36.51 (4.29)

Table 2

Regression model to predict reading comprehension (Gates ESS scores) based on GALP, controlling for reading fluency and vocabulary scores (n=223)

|	Unstandardized Coefficients (B)	Standard Error (SE B)	Standardized Coefficients (β)
Reading Fluency (*Test of Silent Word Reading Fluency*)	0.29***	0.07	0.23
Vocabulary (Vocabulary *Association Test*)	1.01*	0.46	0.13
General Academic Language Proficiency (GALP)	13.39***	1.68	0.50

$R^2 = 0.57$
*p<.05, **p<.01, ***p<.0001

Note that the analysis set has a lower number than the total of 342 participants given that many students did not have complete data.

Grades 4, 5 and 6

ALA scores predicting Gates-MacGinitie reading comprehension scores
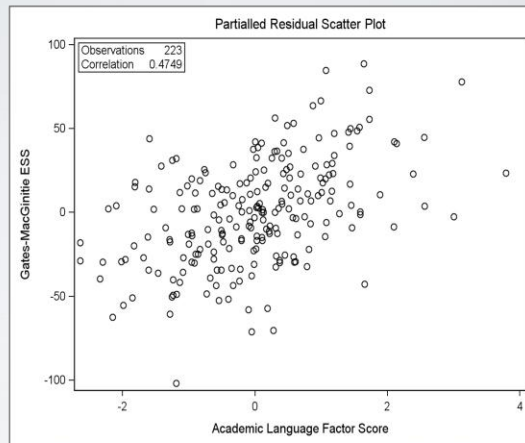
Correlation between ALA scores and Gates after the contribution of Word Association measure and Fluency was partialed out.

AL scores are on a z-metric.

A few take-away messages

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Muchas gracias

Hak'aka

Mèsi

Obrigada

Vielen Dank

Merci

非常感谢

Grazie

Thank you

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