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Science 20/20

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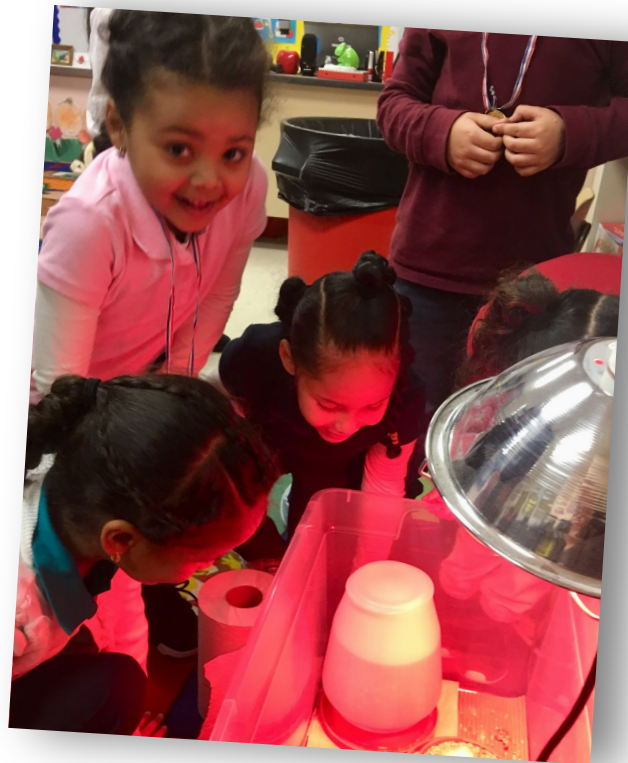
I Like Scientists!

Strategies for Science Instruction for
ELs in the Early Years



Who's in the Room?

- ESL
- Elementary
- Coach
- Administrators
- Teacher Ed



The Confluence of Equity & Education



1

Literacy Needs of Language Learners in the Early Grades

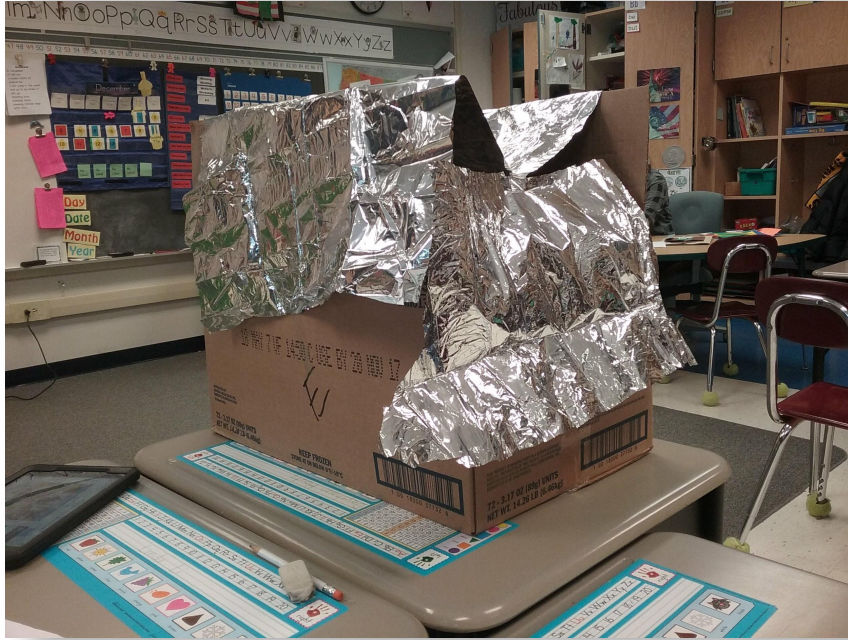
2

Science Content Storyline with 3D-Focused Investigations

3

Integration of Kid Writing

Investigation Challenge



A Story of Changes



- It is our unit on states of matter. We study solids, liquids, and their phase changes.
- We use ice to see how it melts and changes
- Students also investigate keeping ice cubes cold
- Students build ice cube keepers and then we set timers to see how long they last
- Students take pictures on Seesaw to document what is happening



SeeSaw



→ ↻ ↗ 🔒 <https://app.seesaw.me/#/class/class.244e9f8f-8558-429f-92bb-3cc66154c66d/display/approved> 🔍 ☆ 👤 ⋮

Apps <https://scasdesp...> <https://drive.goog...> Elementary Curric... My Learning Plan Google Classroom Gr 2 Physical Sci... » Other Bookmarks

Journal

Seen by: Natalia Molodtsova

Mar 20, 2018

• Athena Vesprey, Melissa Keuler, Natalia Molodtsova, Ryder Rahne

Like Comment

Han Li

Seen by: 乡像李

Mar 20, 2018

• Aidan Wildy, Athena Vesprey, Melissa Keuler, Ryder Rahne

Like Comment

Leo Verti

Seen by: Mike Verti, Sara Verti

Mar 20, 2018

• Athena Vesprey, Leo Verti, Melissa Keuler, Mike Verti, Ryder Rahne, Sara Verti

Like Comment

Han Li

Room 248 2017-2018
Teacher

Class Journal
786 Items

Aidan Wildy
248 Items

Athena Vesprey
213 Items

BEVERLY CROW
158 Items

Deyshaun Houtz
210 Items

Han Li
231 Items

Jackson Welsh
215 Items

Jacob Metzel
227 Items

Jana Hayajneh
146 Items

Kristina Molodtsova
250 Items

Leo Verti
236 Items

Muhammad Warraich
204 Items

Norah Alotaibi
203 Items

Pavlo Zazuliak
93 Items

Qina Hong
220 Items

Rama Hayajneh
199 Items

Ryder Rahne
241 Items

Umar Binyameen

1

Literacy Needs of Language Learners in the Early Grades



- Please describe your class composition.
- How did you communicate with your students?
- In what ways was literacy fostered?
- How did you access students' knowledge (Prior and Funds of Knowledge?)



Figure D: WIDA Performance Definitions **Listening and Reading, Grades K–12**

Within sociocultural contexts for processing language...

Discourse Dimension		Sentence Dimension	Word/Phrase Dimension
Linguistic Complexity		Language Forms and Conventions	Vocabulary Usage
<p>Level 6 - Reaching</p> <p>English language learners will process a range of grade-appropriate oral or written language for a variety of academic purposes and audiences. Automaticity in language processing is reflected in the ability to identify and act on significant information from a variety of genres and registers. English language learners' strategic competence in processing academic language facilitates their access to content area concepts and ideas.</p>			
<p>At each grade, toward the end of a given level of English language proficiency, and with instructional support, English language learners will process...</p>			
Level 5 Bridging	<ul style="list-style-type: none"> Rich descriptive discourse with complex sentences Cohesive and organized, related ideas across content areas 	<ul style="list-style-type: none"> A variety of complex grammatical structures Sentence patterns characteristic of particular content areas 	<ul style="list-style-type: none"> Technical and abstract content-area language Words and expressions with shades of meaning across content areas
Level 4 Expanding	<ul style="list-style-type: none"> Connected discourse with a variety of sentences Expanded related ideas characteristic of particular content areas 	<ul style="list-style-type: none"> Complex grammatical structures A broad range of sentence patterns characteristic of particular content areas 	<ul style="list-style-type: none"> Specific and some technical content-area language Words or expressions with multiple meanings across content areas
Level 3 Developing	<ul style="list-style-type: none"> Discourse with a series of extended sentences Related ideas specific to particular content areas 	<ul style="list-style-type: none"> Compound and some complex grammatical constructions Sentence patterns across content areas 	<ul style="list-style-type: none"> Specific content-area language and expressions Words and expressions with common collocations and idioms across content areas
Level 2 Emerging	<ul style="list-style-type: none"> Multiple related simple sentences An idea with details 	<ul style="list-style-type: none"> Compound grammatical structures Repetitive phrasal and sentence patterns across content areas 	<ul style="list-style-type: none"> General content words and expressions, including cognates Social and instructional words and expressions across content areas
Level 1 Entering	<ul style="list-style-type: none"> Single statements or questions An idea within words, phrases, or chunks of language 	<ul style="list-style-type: none"> Simple grammatical constructions (e.g., commands, Wh- questions, declaratives) Common social and instructional forms and patterns 	<ul style="list-style-type: none"> General content-related words Everyday social, instructional and some content-related words and phrases

Figure E: WIDA Performance Definitions **Speaking and Writing**, Grades K–12



Within sociocultural contexts for language use...

	Discourse Dimension	Sentence Dimension	Word/Phrase Dimension
	Linguistic Complexity	Language Forms and Conventions	Vocabulary Usage
Level 6 - Reaching English language learners will use a range of grade-appropriate language for a variety of academic purposes and audiences. Agility in academic language use is reflected in oral fluency and automaticity in response, flexibility in adjusting to different registers and skillfulness in interpersonal interaction. English language learners' strategic competence in academic language use facilitates their ability to relate information and ideas with precision and sophistication for each content area.			
At each grade, toward the end of a given level of English language proficiency, and with instructional support, English language learners will produce...			
Level 5 Bridging	<ul style="list-style-type: none">Multiple, complex sentencesOrganized, cohesive, and coherent expression of ideas characteristic of particular content areas	<ul style="list-style-type: none">A variety of complex grammatical structures matched to purposeA broad range of sentence patterns characteristic of particular content areas	<ul style="list-style-type: none">Technical and abstract content-area language, including content-specific collocationsWords and expressions with precise meaning across content areas
Level 4 Expanding	<ul style="list-style-type: none">Short, expanded, and some complex sentencesOrganized expression of ideas with emerging cohesion characteristic of particular content areas	<ul style="list-style-type: none">Compound and complex grammatical structuresSentence patterns characteristic of particular content areas	<ul style="list-style-type: none">Specific and some technical content-area languageWords and expressions with expressive meaning through use of collocations and idioms across content areas
Level 3 Developing	<ul style="list-style-type: none">Short and some expanded sentences with emerging complexityExpanded expression of one idea or emerging expression of multiple related ideas across content areas	<ul style="list-style-type: none">Simple and compound grammatical structures with occasional variationSentence patterns across content areas	<ul style="list-style-type: none">Specific content language, including cognates and expressionsWords or expressions with multiple meanings used across content areas
Level 2 Emerging	<ul style="list-style-type: none">Phrases or short sentencesEmerging expression of ideas	<ul style="list-style-type: none">Formulaic grammatical structuresRepetitive phrasal and sentence patterns across content areas	<ul style="list-style-type: none">General content words and expressionsSocial and instructional words and expressions across content areas
Level 1 Entering	<ul style="list-style-type: none">Words, phrases, or chunks of languageSingle words used to represent ideas	<ul style="list-style-type: none">Phrase-level grammatical structuresPhrasal patterns associated with familiar social and instructional situations	<ul style="list-style-type: none">General content-related wordsEveryday social and instructional words and expressions

Key Use Definition	Examples
Recount —To display knowledge or narrate experiences or events.	<ul style="list-style-type: none"> • State the steps to make something • Describe experiences • Order steps to get the answer • Produce information reports
Explain —To clarify the “why” or the “how” of ideas, actions, or phenomena.	<ul style="list-style-type: none"> • Examine relationships among content-related ideas and concepts • Show relationships between cause and effect • State consequences of behaviors • Describe factors that contribute to events
Argue —To persuade by making claims supported by evidence.	<ul style="list-style-type: none"> • State preferences or opinions • Present claims supported by evidence • Critique the reasoning of others • Give reasons for a stance
Discuss —To interact with others to build meaning and share knowledge.	<ul style="list-style-type: none"> • Contribute ideas to a conversation • Extend knowledge with a mentor • Elaborate ideas with peers • Question and critique ideas in small groups

2 Intersection of Standards

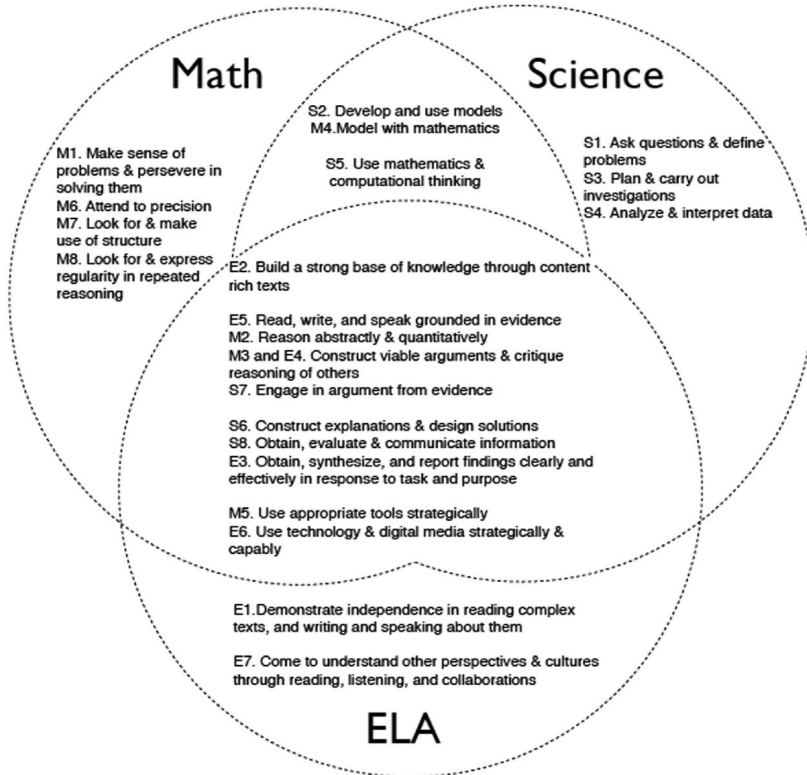


FIGURE 1. Relationships and convergences found in the Common Core State Standards for Mathematics (practices), Common Core State Standards for English Language Arts and Literacy (student portraits), and the Science Framework (science and engineering practices)

The letter and number set preceding each phrase denotes the discipline and number designated by the content standards. The Science Framework is being used to guide the development of the Next Generation Science Standards.

Lee, O., Quinn, H., & Valdés, G. (2013).



Science in the Elementary Grades

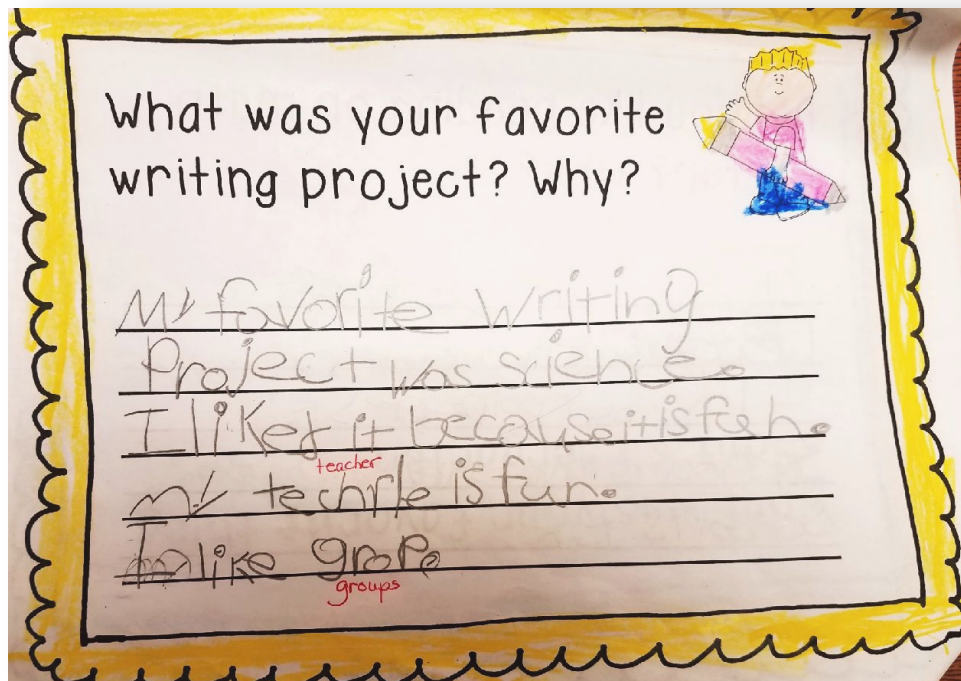
- On average, elementary-age students in grades K-3 **do not receive daily science instruction** (an average of 19-minutes immersed in science)¹.
- These students receive about **54-minutes per day of mathematics** instruction and **89-minutes per day of English-language arts** instruction.
- Recognize the need for integrating science and literacy ².

1. National Academies of Science, Engineering, Medicine: Science Teachers' Learning, 2015
2. National Research Council, 2014

Materials and Interactions Storyline



2nd Grade Materials and Interactions Content Storyline





Science in the Early Grades

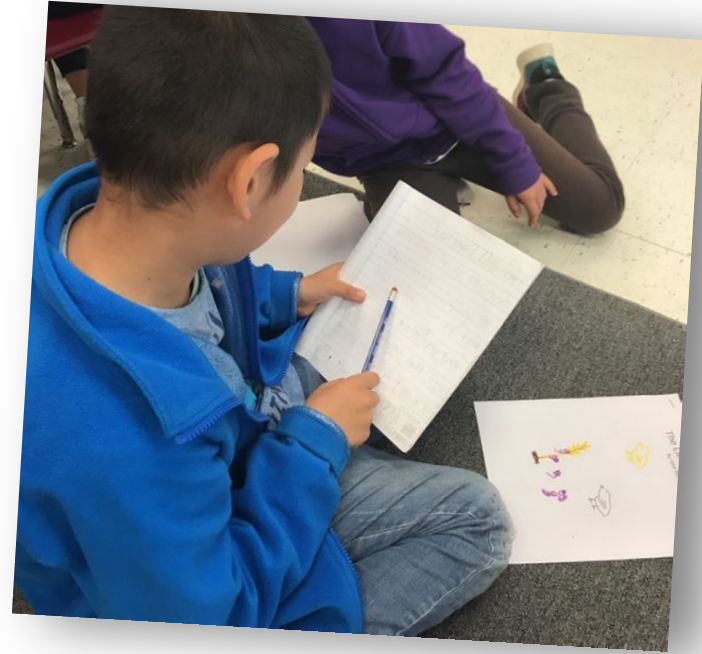
- Positions students as knowers.
- Allows students participate and contribute ideas.
- Collaborative nature of science.
- Provides a hook for students to engage in rich content.



3 Integration of *Kid Writing*



- *Kid Writing* is a program designed to engage students in writing.
- Science provides an authentic context for writing provides an experience with phenomena and/or content to develop oral language.
- Fostering oral language provides students opportunities to then be able to discuss and write about their experiences.





Thank you!!



- We are grateful for your time!
- We would like to thank our colleague and mentor, **Dr. Carla Zembal-Saul** for all of her support and guidance.
- Please let us know if you have any questions about session evaluation!

Questions?



Please contact us!!

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Department of Education

Office of English Language
Acquisition

National Professional
Development Grant

Over 5 years

