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Navigating Change: Science Education Leadership Today

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Lincoln Public Schools

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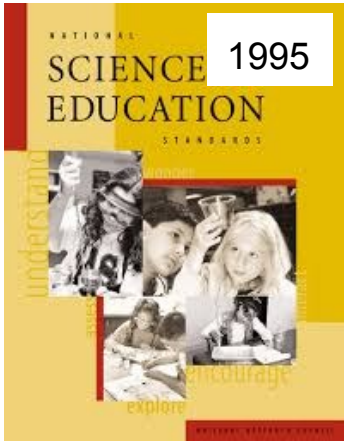
Navigating Change: Science Education Leadership Today

James Blake, K-12 Science Curriculum Specialist
Lincoln Public Schools

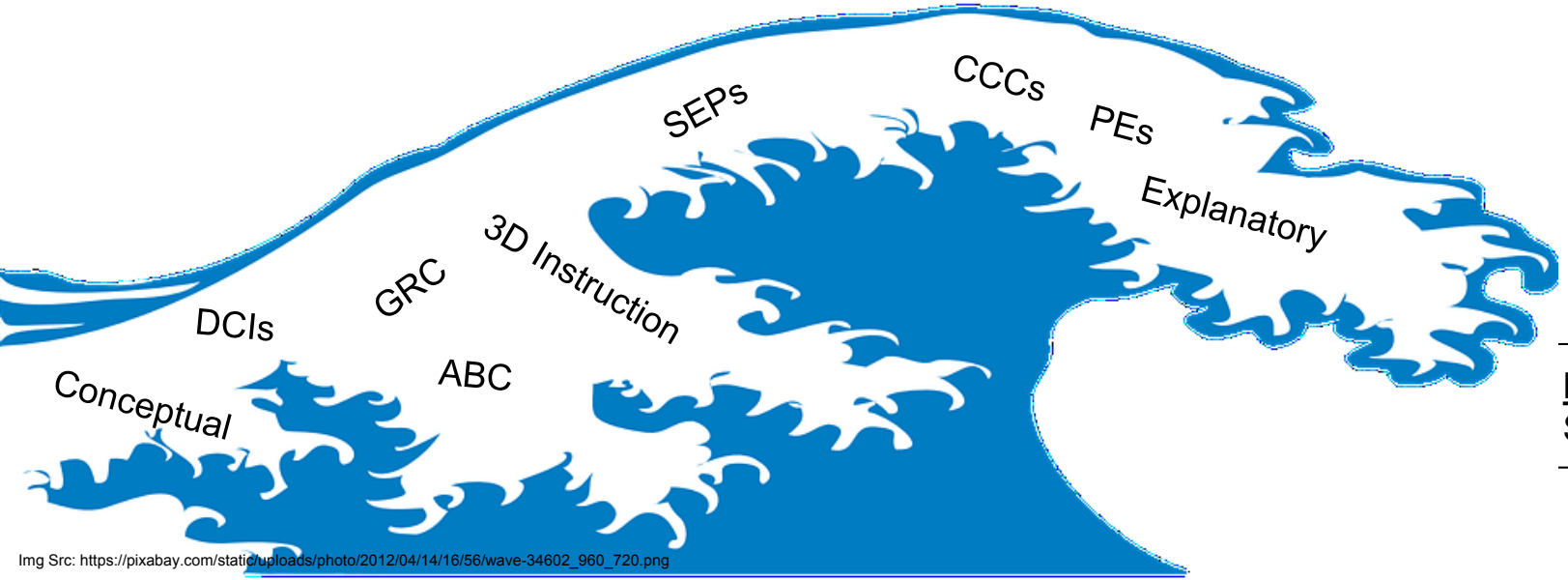
Why?



2010

NEBRASKA
DEPARTMENT OF
EDUCATION

Current LPS Standards



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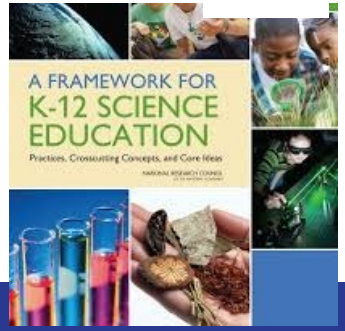
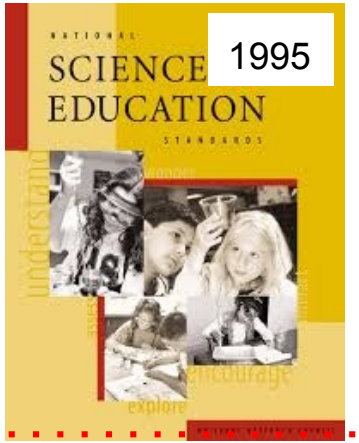
Future LPS Standards?

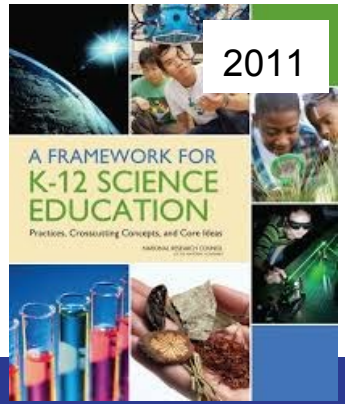


2013 NEXT GENERATION SCIENCE STANDARDS

Local Control

Why?





2013 NEXT GENERATION SCIENCE STANDARDS

Future LPS Standards?

Local Co...

...vector

What's new?
Three-Dimensional Teaching & Learning

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Implications of the Framework and NGSS for Instruction

Science instruction will involve less…

- Rote memorization of facts and terminology
- Learning ideas disconnected from questions about phenomena
- Teachers providing information to the whole class
- Teachers posing questions with only one right answer

Science instruction will involve more…

- Learning facts and terminology as needed while developing explanations and designing solutions supported by evidence-based arguments and reasoning
- Using systems thinking and modeling to explain phenomena and to provide a context for the ideas to be learned
- Students conducting investigations,solving problems, and engaging in discussions with teachers' guidance
- Students discussing open-ended questions that focus on the strength of the evidence used to generate claims.

National Research Council (2015). Guide to Implementing the Next Generation Science Standards.

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Science instruction will involve less…

Students reading textbooks and answering questions at the end of the chapter.

Having preplanned outcomes for “cookbook” laboratories or hands-on activities.

Using worksheets

Oversimplifying activities for students who are perceived to have less capability in science and engineering.

Science instruction will involve more…

Students reading multiple sources, including science-related magazine and journal articles and web based resources; students developing summaries of information.

Conducting multiple investigations driven by student’s questions, with a range of possible outcomes that collectively lead to a deep understanding of established core scientific ideas.

Student's producing journals, reports, posters, and media presentations that explain and argue

Providing supports so that all students can engage in sophisticated science and engineering practices.

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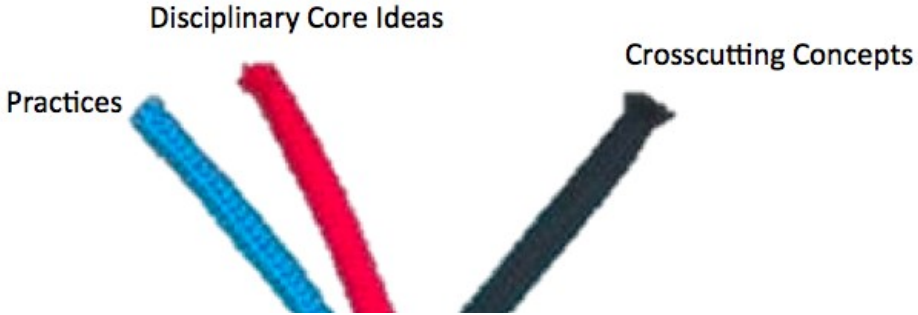
Three Dimensional Learning



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You do this (Practice) to show you know that (Core Idea) and it is connected to that (Crosscutting Concept)

Performance Expectations in Next Generation Science Standards

Shift in Standards

Current: One Dimensional Learning

Standard 1
Distinguish between physical and chemical properties of matter as physical (i.e., density, melting point, boiling point) or chemical (i.e., reactivity, combustibility). **7.2.1a**

Standard 2
Use inquiry to design and carry out a behavioral scientific investigation. **7.3.4.a**

After: Three Dimensional Learning (NGSS)

Analyze and interpret data on the properties of substances before and after the substances interact to determine if a chemical reaction has occurred **MS-PS1-1**

Patterns (implicit in this standard)

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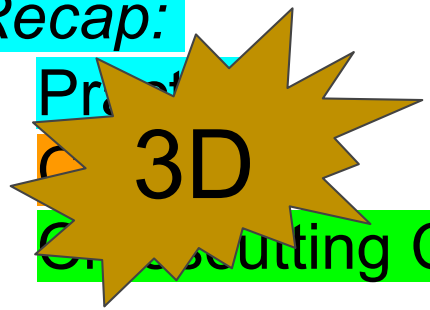
Recap:

- Pr
- C
- C utting Concept



Where do we start?

Curriculum
Instruction

Storylines
"Did I chose the right phenomena?"

Standards
Framework Inspired Standards--*completed now*

Assessment
External and Internal Assessments--*yet TBD*

How do we get there?

How Change Looks

How Change Feels

Year	LPS-Pilot **Schoo and Culler**	LPS-(22 per grade-all)	Ne
16-17	6th grade uses Framework Inspired standards		
17-18	7th grade uses Framework Inspired standards	6th grade school wide implementation *Preparation:* *7.0 required district flex summer to prepare.*	?2017 Science Adopte board ap A
18-19	*8th grade uses Framework Inspired standards	7th grade school wide implementation *Preparation:* *7.0 required district flex summer to prepare.*	
19-20		8th grade school wide implementation *Preparation:* *7.0 required district flex summer prepare.*	Students take new NeSA-S reflecting new standards

Img src: https://pixabay.com/en/board-game-shoots-ladders-play-401458/

Questions?