

# 1 Background

# High School



"The more students practice these habits of mind, the better prepared they will be to demonstrate knowledge and skills through various assessments, and to become scientifically literate individuals."

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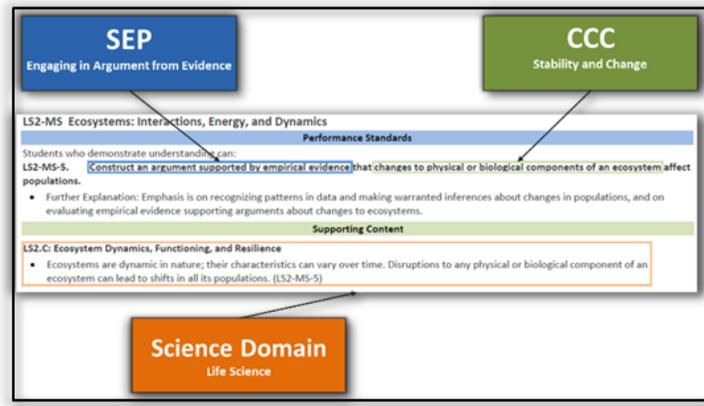
What is included in the high school science standards?

- Science and Engineering Practices (SEP):** Activities scientists use to generate knowledge, & solve problems.
- Science Domains:** Overlapping content areas that organize and classify scientific knowledge.
- Crosscutting Concepts (CCC):** Habits of mind used by all scientists that unite all science domains.

What are the SEPs, Domains, and CCCs?

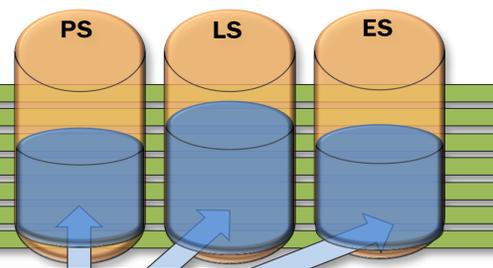
Science & Engineering Practices (SEP)	Science Domains	Crosscutting Concepts (CCC)
Asking Question/ Defining Problems	Life Science	Identifying Patterns
Developing and Using Models	Earth and Space Sciences	Cause and Effect
Planning & Carrying out Investigations	Physical Sciences	Scale, Proportion and Quantity
Analyzing and Interpreting Data		Systems & System Models
Using Mathematics & Computer Technology and Computational Thinking		Energy and Matter: Flows Cycles & Conservation
Constructing Explanations/ Designing Solutions		Structure and Function
Engaging in Argument from Evidence		Stability and Change
Obtaining, Evaluating and Communicating Information		

Where can the SEP, Domain, & CCC be found?



# 2 Model of ISSS

The orange **science domain** silos are filled with the blue **science and engineering practices**. The green **habits of mind** used by all scientists cut across and unite all of the science domains.



- Identifying Patterns
- Cause and Effect
- Scale, Proportion and Quantity
- Systems & System Models
- Energy and Matter
- Structure and Function
- Stability and Change

- Science & Engineering Practices (SEP)
- Asking Question/ Defining Problems
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# 3 SEP x CCC Matrix

The SEP x CCC Matrix can show patterns in the ISSS.

	P	CandE	SPQ	Sys	EandM	SandF	SandC	Infl	N/A
Ask									
Ob									
Plan									
Dev									
Analyze									
Using									
Con									
Eng							LS2-M-5		

# 4 Key Findings

The 74 ISSS in high school cover all science domains.

	# ISSS w/ CCC	% of High ISSS
P	8	11%
CandE	16	22%
SPQ	6	8%
Sys	11	15%
EandM	16	22%
SandF	4	5%
SandC	12	16%
Infl	0	0%
N/A	1	1%

	# ISSS w/ SEP	% of High ISSS
Ask	2	3%
Ob	6	8%
Plan	6	8%
Dev	17	23%
Analyze	5	7%
Using	13	18%
Con	16	22%
Eng	9	12%

- SEP x CCC in a total of 8 ISSS (11%)  
⇒ Dev & EandM (8 ISSS)
- SEP x CCC in a total of 5 ISSS (7%)  
⇒ Con & EandM (5 ISSS)
- SEP x CCC in a total of 12 ISSS (16%)  
⇒ Using & Sys (4 ISSS)  
⇒ Con & EandM (4 ISSS)  
⇒ Con & SandC (4 ISSS)

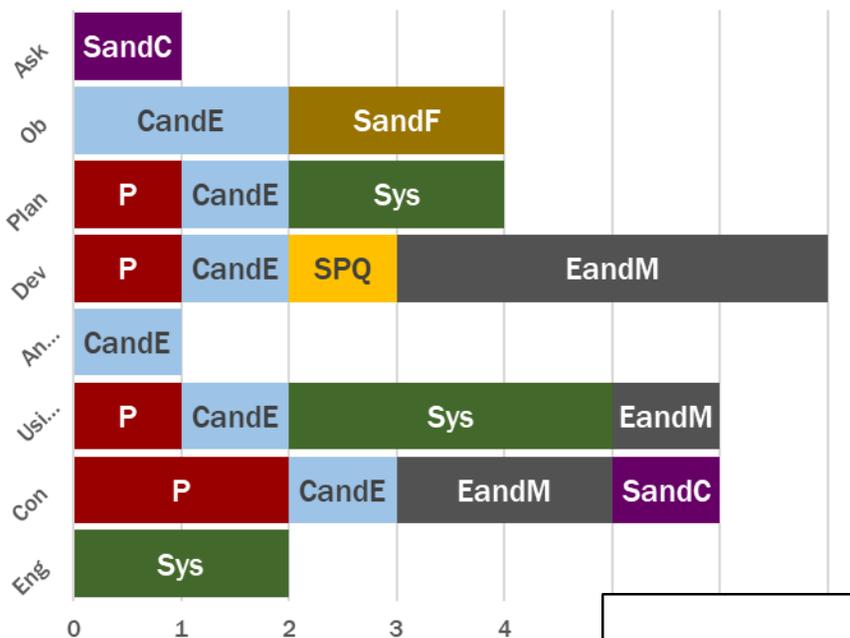
Engaging in Argument from Evidence (Eng) }  
Stability and Change (SandC) } LS2-MS-5





The number and types of CCCs per SEP at each science domain shows how the three dimensions fit together.

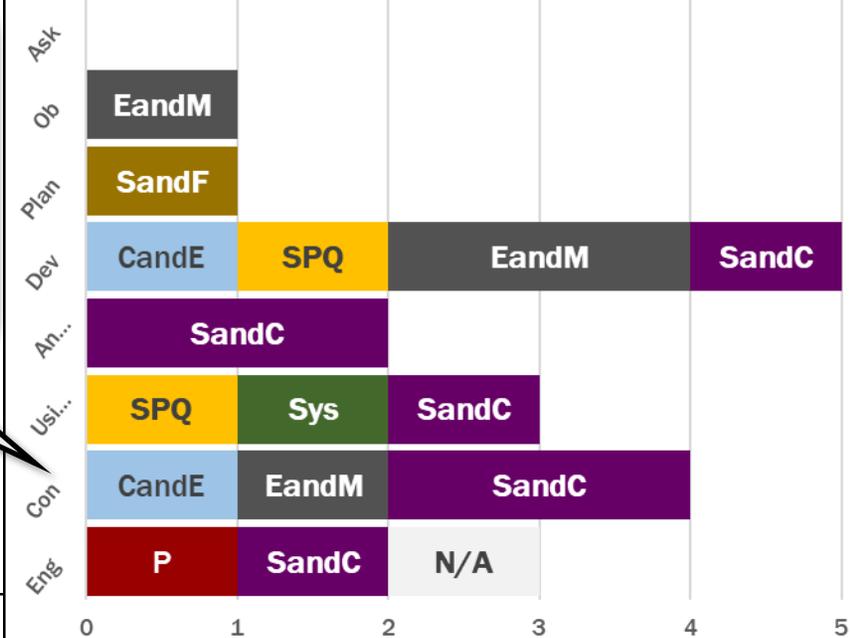
### Physical Science



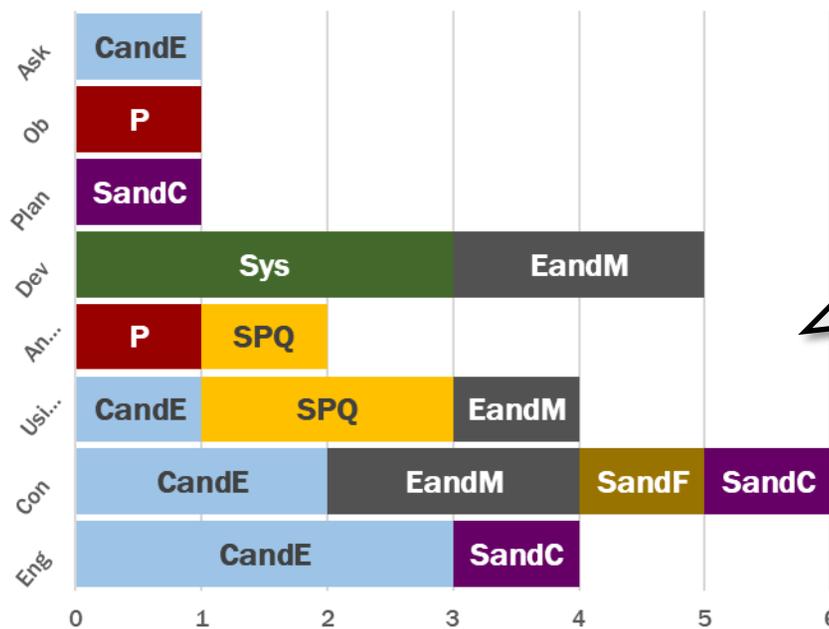
The earth and space sciences domain has 19 high school ISSS.

When students analyze earth and space science data what are they uncovering?

### Earth and Space Sciences



### Life Science



The physical science domain has a total of 31 high school ISSS.

Students ask questions to generate understanding of how change effects the stability of a system.

What habits of mind do students engage when planning and conducting physical science investigations?

The life science domain has 24 high school ISSS.

Students analyze data at different scales and quantities to understand their patterns.

What habits of mind do students exercise when engaging in argument using evidence?

