

# Shelley MOORE PH.D.



@tweetsomemoore



@fivemooreminutes



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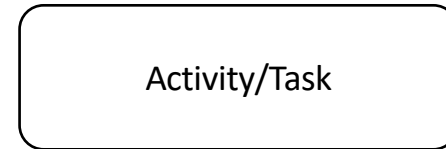
# Thinking Back

- Questions?
- Exciting?
- Concerns?
- Hopes

# UBD: Determining the Learning Standard

## Forward Design

Same for Everyone



Standardized

Differentiated

Grade Level Goals

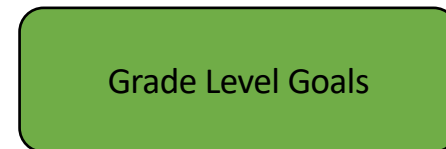
Adapted Goals

Modified Goals

Compromises the integrity of evaluation

## Backward Design

Same for Everyone



Differentiated

Activity 1

Activity 2

Activity 3

Does not compromise the integrity of evaluation

Standards Based

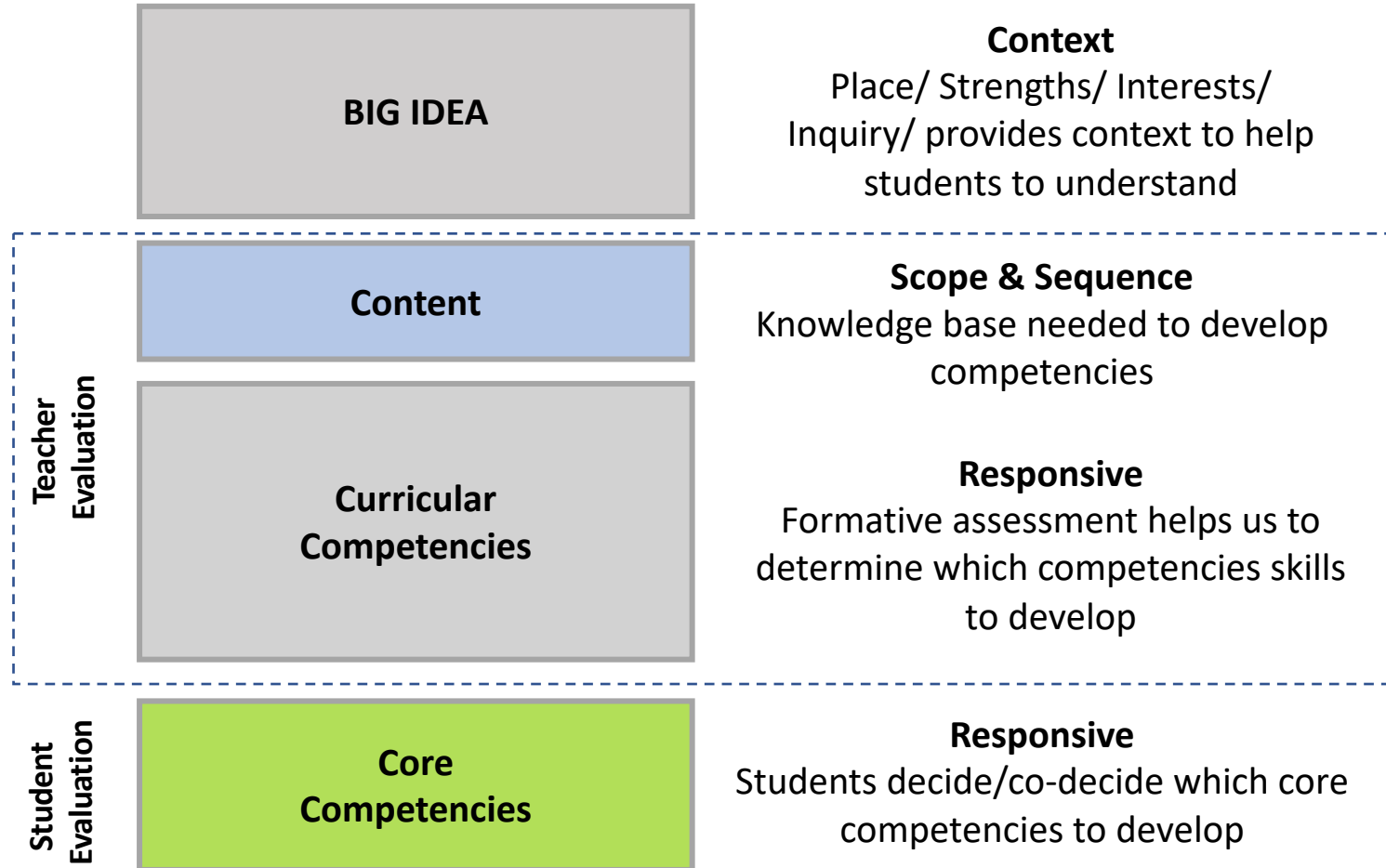
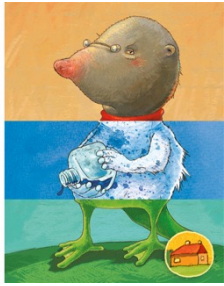
# Planning using Backwards Design and BC/NWT Curriculum

- **Backwards Design**
  - **Big Idea**
    - What do we need to understand?
  - **Content**
    - What do we need to know?
  - **Curricular Competencies**
    - What do we need to do?
  - **Core Competencies**
    - Who do we need to become?

Miserable

Two-toed

Lizard



<b>Grade:</b>	<b>Subject Area:</b>	<b>Planning Team:</b>
<b>Big Idea(s): What do I need to Understand?</b>		<b>Unit Guiding Question(s):</b>
<b>Key Vocabulary:</b>		
	<b>Learning Standard</b>	<b>Student Friendly Language</b>
<b>What do students need to know? Content</b>		<b>I know</b>
<b>What do students need to do? Curricular Competencies</b>		<b>I can</b>
<b>What do students need to do? Curricular Competencies</b>		<b>I can</b>
<b>What do students need to do? Curricular Competencies</b>		<b>I can</b>
<b>Who do student need to be? Core Competency Goals</b>	<b>I can become/ I am...</b>	

Grade: 9	Subject Area: Science	Planning Team: Colleen and Shelley	
<b>Big Ideas:</b> Students will understand that <u>the electron arrangement of atoms impacts their chemical nature.</u>		<b>Teacher Provocation:</b> How does the organization of <b>electrons</b> in <b>atoms</b> impact their <b>chemical nature</b> ?	<b>Student Generated Questions:</b>
<b>Vocabulary to know and use</b>	Electron, atom, chemical nature, element properties, periodic table, compounds, pattern, trend, data, inconsistencies, data, variables, scientific concepts	Question, predict, observe, process, analyze, apply, innovate, draw conclusions, transfer, apply	
Unit Goals	Learning Standard	Student Friendly Language	
<b>Content Goal</b>	Students will know <b>element properties</b> as organized in the <u>periodic table</u>	I know that there are <b>patterns</b> used in the <b>periodic table</b> I know that the <b>periodic table</b> organizes <b>elements</b> by their <b>properties</b>	
<b>Content Goal</b>	Students will know that the arrangement of <b>electrons</b> determines the <u>compounds</u> formed by <b>elements</b>	I know that <b>electrons</b> determine which <b>elements</b> make <b>compounds</b>	
<b>Curricular Competency:</b>	Students will be able to <b>question and predict</b> by ...making <b>observations</b> aimed at identifying their own <b>questions</b> , including increasingly complex ones, about the natural world	I can <b>question and predict</b> by <b>asking questions</b> about what I am <b>observing</b>	
	Students will be able to <b>process and analyze</b> by...seeking and analyzing <b>patterns, trends, and connections in data</b> , including describing relationships between variables (dependent and independent) and identifying <b>inconsistencies</b>	I can <b>process and analyze data</b> by seeing <b>patterns</b> and <b>trends in data</b> ; by finding connections in <b>data</b> and information; by describing relationships between <b>variables</b> ; by finding <b>inconsistencies</b> in <b>data</b>	
	Students will be able to <b>process and analyze</b> by...using knowledge of <b>scientific concepts</b> to <b>draw conclusions</b> that are consistent with evidence	I can <b>process and analyze data</b> by using what I know about scientific concepts to draw conclusions	
	Students will be able to <b>apply and innovate</b> by... <b>transferring and applying</b> learning to new situations	I can <b>apply and innovate</b> by <b>transferring</b> and <b>applying</b> what I am learning to new situations	
<b>Core Competency Goal</b>	We can communicate by...		



Name:

Date:

Unit Guiding Question: How does the organization of **electrons** in **atoms** impact their **chemical nature**?

**I still need support**

**I can do this!**

**I need some challenge**

I know that there are **patterns** used in the **periodic table**  
I know that the **periodic table** organizes **elements** by their **properties**

I know that **electrons** determine which **elements** make **compounds**

I can **question and predict** by **asking questions** about what I am **observing**

I can **process and analyze data** by seeing **patterns** and **trends in data**;  
by finding connections in **data** and information; by describing  
relationships between **variables**; by finding **inconsistencies** in **data**

I can **process and analyze data** by using what I know about scientific  
concepts to draw conclusions

I can **apply and innovate** by **transferring** and **applying** what I am  
learning to new situations

I can communicate by...

Name:

Date:

**Unit Guiding question:** How does the organization of **electrons** in **atoms** impact their **chemical nature**?

Goals	My evidence of learning	Showing my Learning				I Need Support	I Need Challenge
	Actvtivities/ tasks	Kinesthetic/ Concrete	Written/ abstract	Oral/ conversation	Visual/ pictorial/		
I know that there are <b>patterns</b> used in the <b>periodic table</b> I know that the <b>periodic table</b> organizes <b>elements</b> by their <b>properties</b>							
I know that <b>electrons</b> determine which <b>elements</b> make <b>compounds</b>							
I can <b>question and predict</b> by <b>asking questions</b> about what I am <b>observing</b>							
I can <b>process and analyze data</b> by seeing <b>patterns</b> and <b>trends in data</b> ; by finding connections in <b>data</b> and information; by describing relationships between <b>variables</b> ; by finding <b>inconsistencies</b> in <b>data</b>							

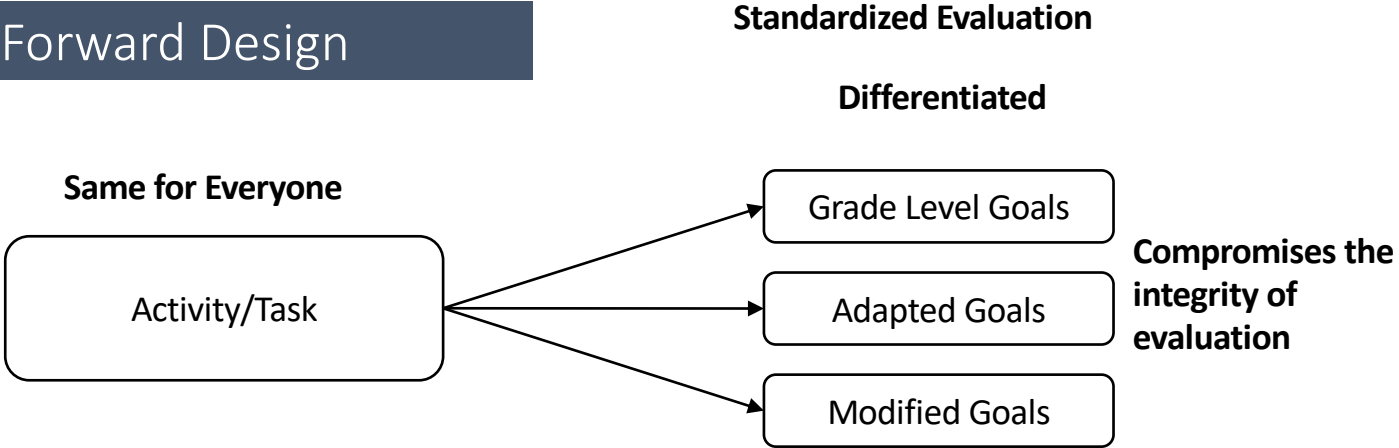
Name:

Date:

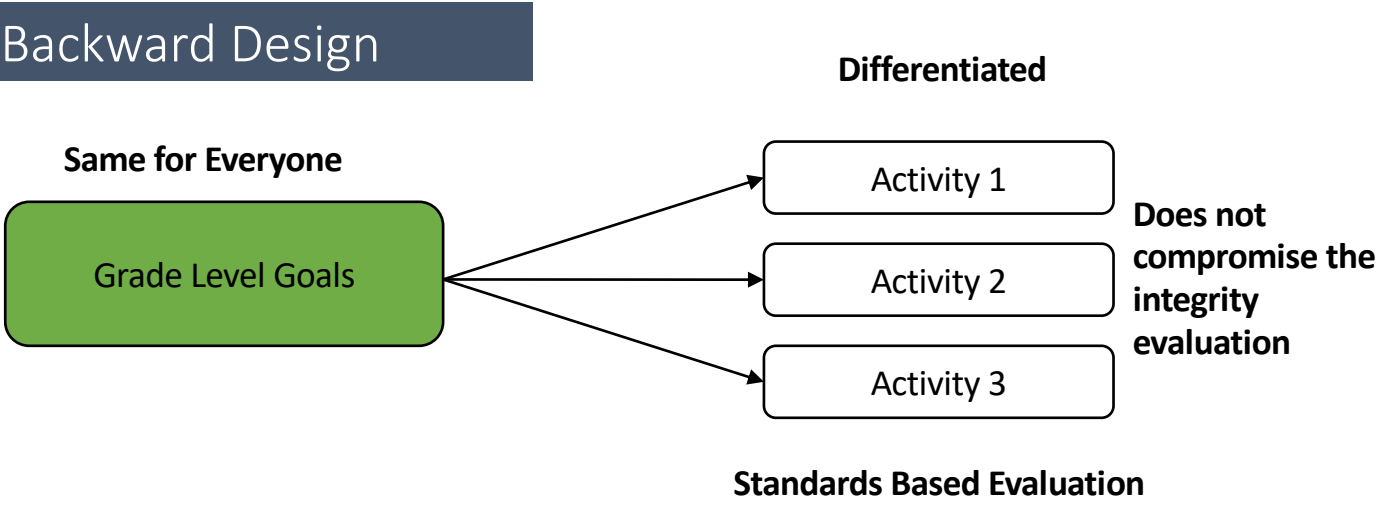
**Unit Guiding question:** How does the organization of **electrons** in **atoms** impact their **chemical nature**?

Goals	My evidence of learning	Showing my Learning				I Need Support	I Need Challenge
	Actvtivities/ tasks	Kinesthetic/ Concrete	Written/ abstract	Oral/ conversation	Visual/ pictorial/		
I can <b>process and analyze data</b> by using what I know about scientific concepts to draw conclusions							
I can <b>apply and innovate</b> by <b>transferring</b> and <b>applying</b> what I am learning to new situations							
I can communicate by...							

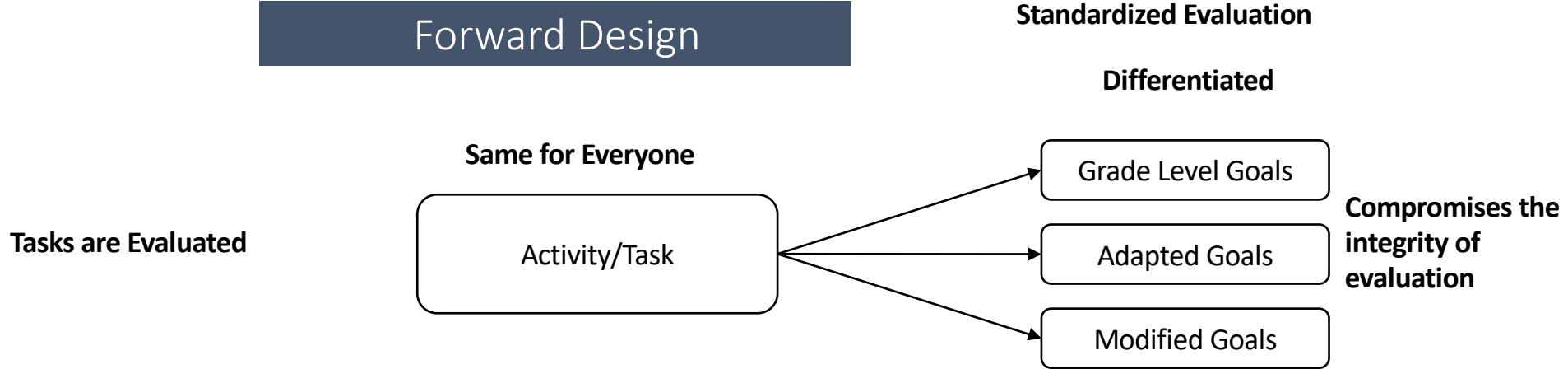
# Forward Design



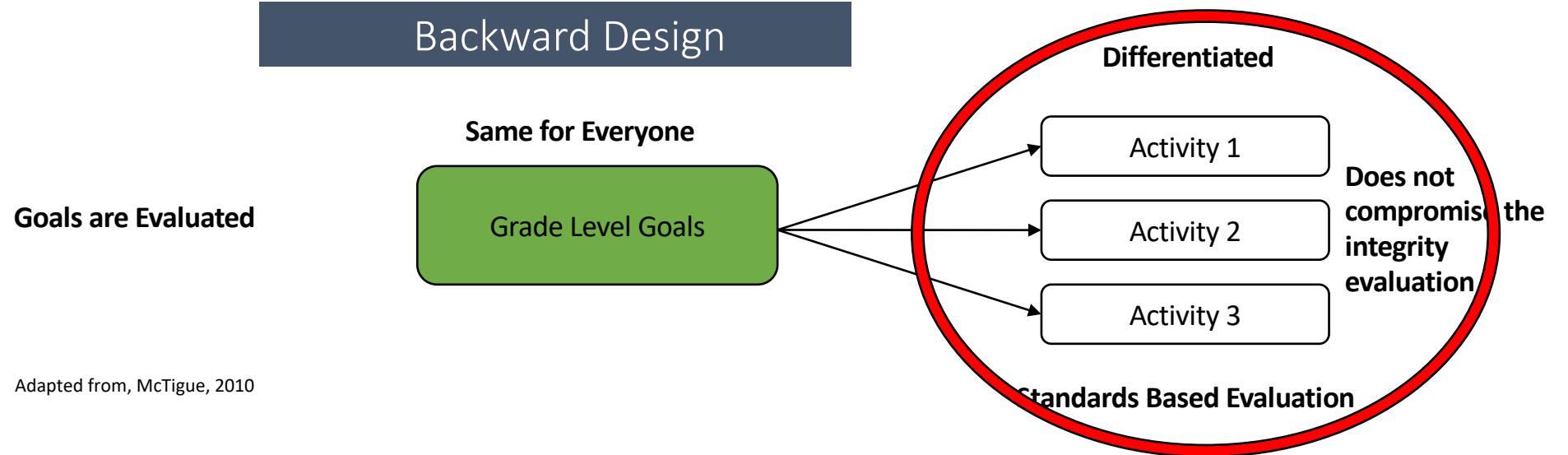
# Backward Design



# Forward Design

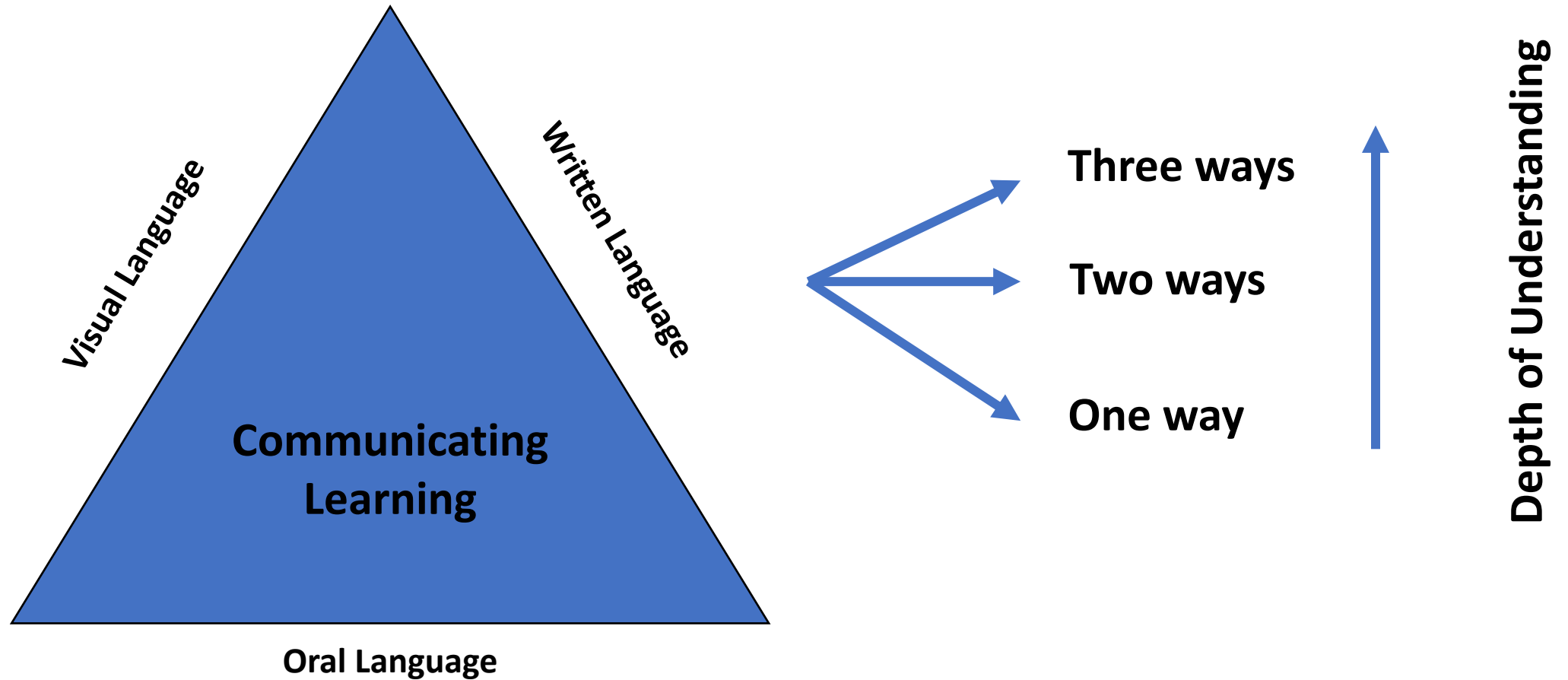


# Backward Design



Adapted from, McTigue, 2010

# How do students show what they know?

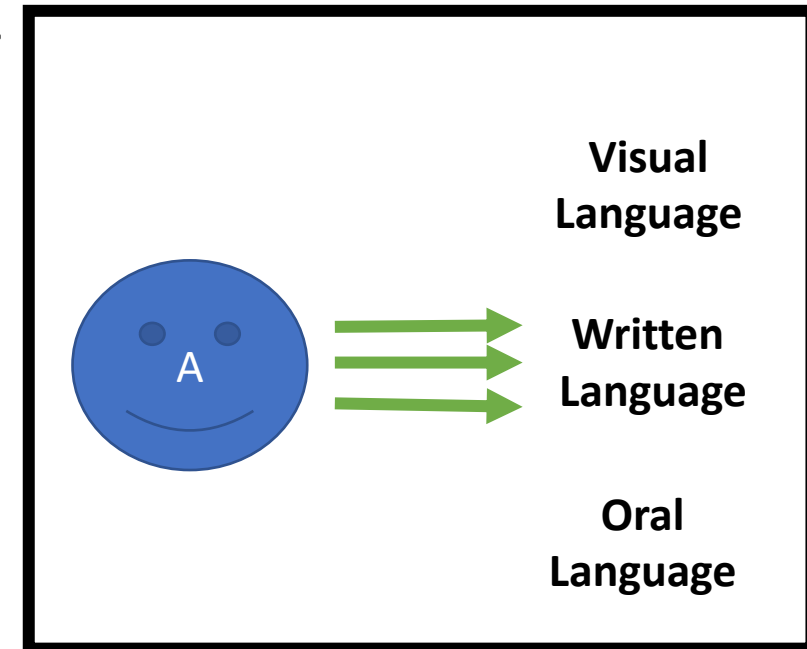
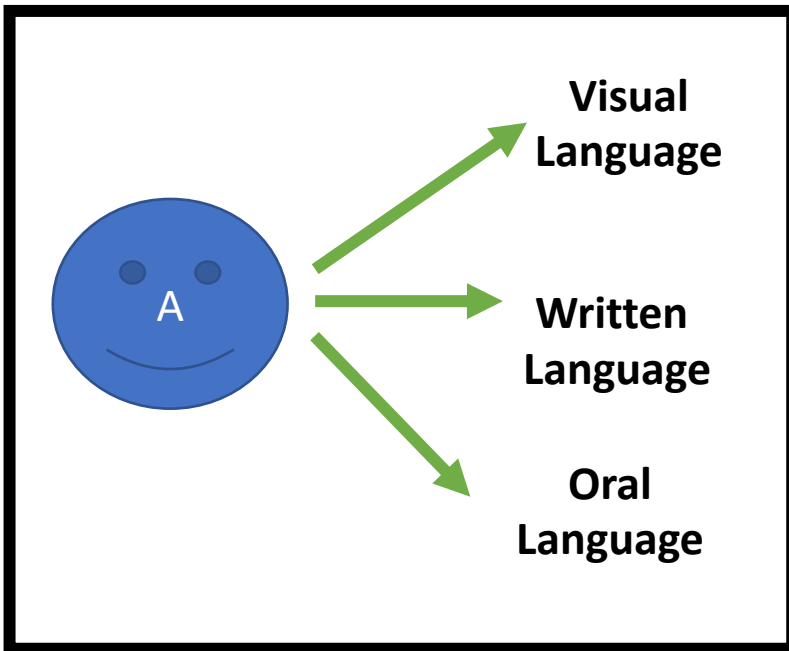


# All Languages (in literacy) are Treated Equal!

The **MORE WAYS** students can demonstrate learning, the deeper their understanding is

**Vs.**

The **NUMBER OF TIMES**, a student can show their learning in one way, the more fluent they become



# All Languages (in numeracy) are Treated Equal!

The **MORE WAYS** students can demonstrate learning, the deeper their understanding is

**Vs.**

The **NUMBER OF TIMES**, a student can show their learning in one way, the more fluent they become



Pictorial Language

Abstract Language

Concrete Language



Pictorial Language

Abstract Language

Concrete Language

# 1. Standards based vs. standardized curriculum

Kristine Nannini YoungTeacherLove

## Standards Based Grading

...helps teachers:

Give quality feedback

In the traditional grade book, Katie and her parents would see her grades and think she is getting by just fine.

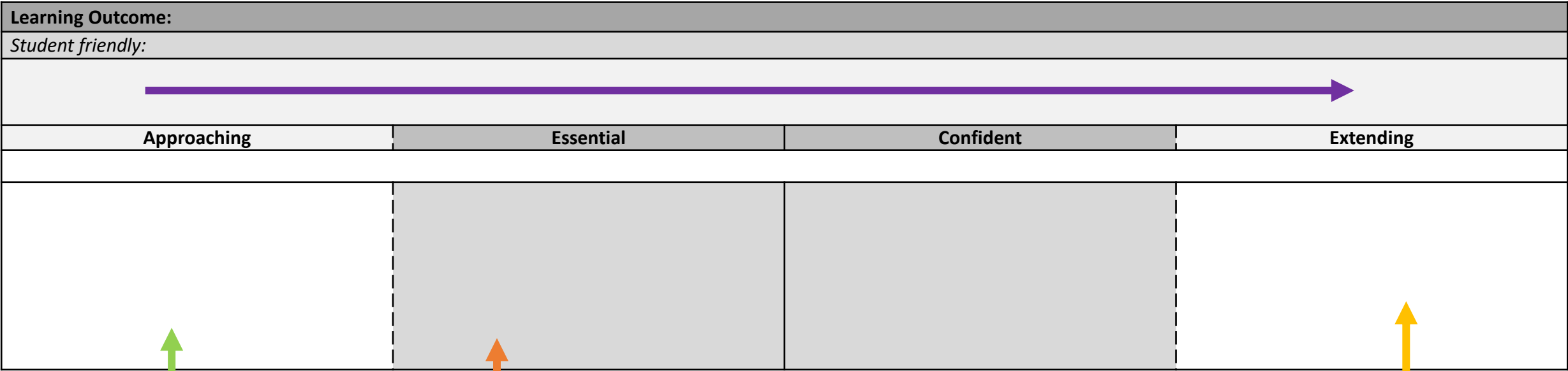
But standards based grading reveals that she has not completely mastered the standards.

Name	Homework	Quiz 1	Quiz 2	Chapter 2 Test
Katie	90%	88%	82%	80%
Joe	60%	75%	88%	70%
Sara	10%	90%	98%	100%
John	100%	50%	60%	54%

	Standard 1: Use parenthesis, brackets, or braces in numerical expressions, and evaluate expressions with these symbols.	Standard 2: Write simple expressions that record calculations with numbers, and interpret numerical expressions without evaluating them.	Standard 3: Generate two numerical patterns using two given rules. Identify apparent relationships between corresponding terms. Form ordered pairs consisting of corresponding terms from the two patterns, and graph the ordered pairs on a coordinate plane.
Name			
Katie	4	2	2
Joe	2	3	1

# Learning Continuums





1. Choose a Learning Standard and translate it into student friendly language



2. Start with determining the **most essential concept** of the standard and then **add on complexity**

3. Extend the grade level standard to include an **access point** and **challenge point**

# An Additive Continuum of Proficiency

	Approaching Grade Level	Grade Level Developing	Grade Level Confident	Extending Grade Level
Reporting Language	(Approaching)	Emerging	Developing	Extending
Grade Level Learning Standard	 Insufficient Evidence (IE) OR IEP Replacement Goal			
				
				

# Standards Based Grade Book (NGSS)

Learning Standard/ Performance Expectation													Evaluation				
													Total	Out of	%	Letter Grade	4-Point
Possible Evidence of Learning																	
Reporting Language	Approaching/ Access Point	Emerging/ Essential	Developing	Extending	Approaching/ Access Point	Emerging/ Essential	Developing	Extending	Approaching/ Access Point	Emerging/ Essential	Developing	Extending	Total	Out of	%	Letter Grade	4-Point
Evaluation	IE/IEP	2.5	3	4	IE/IEP	2.5	3	4	IE/IEP	2.5	3	4					
Student 1 (IEP)																	
Student 2																	
Student 3																	
Student 4																	
Student 5																	
Student 6																	

# Life Science 11 Standards Based Gradebook

	A	B	C	D	E	F	G	H	I	J	K	L	M	N	O	P	Q	R	S	T	U	V	W	X	Y	Z
1		<b>Content Goals</b>					<b>Curricular Competency Goals</b>															<b>Evaluation</b>				
2	Learning Standards	speciation					experience and interpret the local environment					seek and analyze patterns, trends, and connections in data, including describing relationships between					construct, analyze, and interpret graphs, models, and/or diagrams									
3	Possible Evidence of Learning																									
4	Reporting Language	Approaching/ Access Point	Emerging/ Essential	Developing	Confident	Extending	Approaching/ Access Point	Emerging/ Essential	Developing	Confident	Extending	Approaching/ Access Point	Emerging/ Essential	Developing	Confident	Extending	Approaching/ Access Point	Emerging/ Essential	Developing	Confident	Extending	Total	Out of	%	Letter Grade	4 - Point
5	4- Point	IE/IEP	2	3	3.5	4	IE/IEP	2	3	3.5	4	IE/IEP	2	3	3.5	4	IE/IEP	2	3	3.5	4	16	16			
6	Student 1 (IEP - Replacement Goals)	x					x					x					x					4	4		A (IEP)	4 (IEP)
7	Student 2	x	x				x	x				x	x				x	x				8	16	50	C-	2
8	Student 3	x	x	x			x	x	x			x	x				x	x	x			12	16	75	B	3
9	Student 4	x	x	x	x		x	x	x	x	x	x	x	x			x	x	x			14	16	88	A	3+
10	Student 5		x	x	x	x	x	x	x			x	x	x					x	x		IE	16	IE	IE	IE

## Backwards Design Planning

<b>Grade: 5</b>	<b>Subject Area: Science</b>	<b>Strand/Topic: Structure and Properties of Matter</b>
<b>Learning Standard:</b> 5-PS1-1. Develop a <b>model</b> to describe that <b>matter</b> is made of <b>particles</b> too small to be seen		<b>Unit Guiding Question(s):</b> How can I use a <b>model</b> to help me understand that some <b>matter</b> is made up of <b>particles</b> that are <b>too small to see</b> ?
<b>Content Vocabulary:</b> model, matter, particles, idea, bulk matter		<b>Skills Vocabulary:</b> create, build, change, solve a problem, observe
<b>Learning Goals</b>	<b>Curricular Language</b> What do Students need to Know and Do?	<b>Student Friendly Language</b>
<b>Science and Engineering Practices (skills)</b>	<b>Developing and Using Models</b> building and revising simple models and using models to represent events and design solutions. Use models to describe phenomena.	<ul style="list-style-type: none"> <li>• I can <b>create</b> and <b>improve</b> a <b>model</b></li> <li>• I can use a model to show an <b>idea</b></li> <li>• I can use a model to <b>solve a problem</b></li> </ul>
<b>Disciplinary Core Ideas (knowledge)</b>	<b>PS1.A: Structure and Properties of Matter</b> Matter of any type can be subdivided into particles that are too small to see matter still exists and can be detected by other means. A model showing that gases are made from matter particles that are too small to see and are moving freely around in space can explain many observations including the inflation and shape of a balloon and the effects of air on larger particles or objects.	<ul style="list-style-type: none"> <li>• I know that matter can be <b>broken apart</b> into tiny particles that are too small to see</li> <li>• I know that even if tiny <b>particles</b> are too small for my eyes to see, there are other ways to <b>observe</b> them</li> <li>• I know that a <b>model</b> is a way to <b>observe</b> tiny <b>particles</b> too small to see</li> <li>• I know some examples of <b>models</b> that can help me <b>observe</b> tiny <b>particles</b> that are too small to see</li> </ul>
<b>Crosscutting Concepts (understanding)</b>	<b>Scale, Proportion, and Quantity</b> Natural objects exist from the very small to the immensely large.	I understand that there are things that are very tiny and very large

# Standards Based Grade Book (NGSS)

Learning Standard/ Performance Expectation	5-PS1-1. Develop a <b>model</b> to describe that <b>matter</b> is made of <b>particles</b> too small to be seen												Evaluation				
	Science and Engineering Practices				Disciplinary Core Ideas				Crosscutting Concepts				Total	Out of	%	Letter Grade	4-Point
Possible Evidence of Learning																	
Reporting Language	Approaching/ Access Point	Emerging/ Essential	Developing	Extending	Approaching/ Access Point	Emerging/ Essential	Developing	Extending	Approaching/ Access Point	Emerging/ Essential	Developing	Extending	Total	Out of	%	Letter Grade	4-Point
Evaluation	IE/IEP	2.5	3	4	IE/IEP	2.5	3	4	IE/IEP	2.5	3	4		12			
Student 1 (IEP)	•				•				•	•			3	3*	100%	A*	4*
Student 2	•	•			•	•			•	•			7.5	12	63%	D	2.5
Student 3	•	•	•	•	•	•	•	•	•	•	•		11	12	92%	A-	3.67
Student 4			•	•	•	•	•		•	•			IE	12			
Student 5	•	•	•	•	•	•							IE	12			
Student 6	•	•	•		•	•	•	•	•	•	•	•	11	12	92%	A-	3.67

# Student 1 (IEP)

Next Generation Science Standards (NGSS)		
Subject Area: Science	Strand: Matter and Its Interactions	Grade: 5
<b>Performance Expectation: 5-PS1-1</b> Students can develop a model to describe that matter is made of particles too small to be seen		<b>Guiding Unit Question:</b> How do we know that something exists if we cannot see it?
<b>Unit Vocabulary (Content):</b> properties, structures, scale, proportion, quantity, models, particles, bulk matter,		<b>Unit Vocabulary (Skills):</b> make, observe



Foundations	Student Friendly Language	Access Point	Essential	Confident	Extend
<b>Science &amp; Engineering Practices</b>	I can make a model to help me understand an idea by:	following/ participating in creating a model	planning and creating a model	creating a model to solve a problem	Adjusting or revising a model I have created
<b>Disciplinary Core Ideas</b>	I know that matter is made up of particles that are too small to see by:  I know that models can help us see particles that are too small to see by:	describing what matter is  describing that there are different states of matter  describing examples of different kinds of matter in the world	describing what bulk matter is  describing that matter (that I can see) is made up of tiny particles (that are too small to see)  describing examples of models that help to observe particles that are too small to see	describing how collecting many tiny particles can help us observe how matter takes up space  describing which part of the model is bulk matter, and which part of the model is particles	describing the relationship between matter and particles  using the model to describe the relationship between matter and how particles move when they are collected
<b>Crosscutting Concepts</b>	I know that objects in the world can be very large and very small by:	describing objects in the world that are very small and very large	describing what microscopic and macroscopic is and examples of each in the world	describing what is similar and what is different between microscopic and macroscopic objects in the world	describing what scale is and how it helps us understand microscopic and macroscopic objects

**\*Description: can include but are not limited to written, oral, pictorial, and kinesthetic**

Student 2 – 63%

Next Generation Science Standards (NGSS)		
Subject Area: Science	Strand: Matter and Its Interactions	Grade: 5
<b>Performance Expectation: 5-PS1-1</b> Students can develop a model to describe that matter is made of particles too small to be seen		<b>Guiding Unit Question:</b> How do we know that something exists if we cannot see it?
<b>Unit Vocabulary (Content):</b> properties, structures, scale, proportion, quantity, models, particles, bulk matter,		<b>Unit Vocabulary (Skills):</b> make, observe



Foundations	Student Friendly Language	Access Point	Essential	Confident	Extend
<b>Science &amp; Engineering Practices</b>	I can make a model to help me understand an idea by:	following/ participating in creating a model	planning and creating a model	creating a model to solve a problem	Adjusting or revising a model I have created
<b>Disciplinary Core Ideas</b>	I know that matter is made up of particles that are too small to see by:  I know that models can help us see particles that are too small to see by:	describing what matter is  describing that there are different states of matter  describing examples of different kinds of matter in the world	describing what bulk matter is  describing that matter (that I can see) is made up of tiny particles (that are too small to see)  describing examples of models that help to observe particles that are too small to see	describing how collecting many tiny particles can help us observe how matter takes up space  describing which part of the model is bulk matter, and which part of the model is particles	describing the relationship between matter and particles  using the model to describe the relationship between matter and how particles move when they are collected
<b>Crosscutting Concepts</b>	I know that objects in the world can be very large and very small by:	describing objects in the world that are very small and very large	describing what microscopic and macroscopic is and examples of each in the world	describing what is similar and what is different between microscopic and macroscopic objects in the world	describing what scale is and how it helps us understand microscopic and macroscopic objects

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Student 3 – 92%

Next Generation Science Standards (NGSS)		
Subject Area: Science	Strand: Matter and Its Interactions	Grade: 5
<b>Performance Expectation: 5-PS1-1</b> Students can develop a model to describe that matter is made of particles too small to be seen		<b>Guiding Unit Question:</b> How do we know that something exists if we cannot see it?
<b>Unit Vocabulary (Content):</b> properties, structures, scale, proportion, quantity, models, particles, bulk matter,		<b>Unit Vocabulary (Skills):</b> make, observe



Foundations	Student Friendly Language	Access Point	Essential	Confident	Extend
<b>Science &amp; Engineering Practices</b>	I can make a model to help me understand an idea by:	following/ participating in creating a model	planning and creating a model	creating a model to solve a problem	Adjusting or revising a model I have created
<b>Disciplinary Core Ideas</b>	I know that matter is made up of particles that are too small to see by:  I know that models can help us see particles that are too small to see by:	describing what matter is  describing that there are different states of matter  describing examples of different kinds of matter in the world	describing what bulk matter is  describing that matter (that I can see) is made up of tiny particles (that are too small to see)  describing examples of models that help to observe particles that are too small to see	describing how collecting many tiny particles can help us observe how matter takes up space  describing which part of the model is bulk matter, and which part of the model is particles	describing the relationship between matter and particles  using the model to describe the relationship between matter and how particles move when they are collected
<b>Crosscutting Concepts</b>	I know that objects in the world can be very large and very small by:	describing objects in the world that are very small and very large	describing what microscopic and macroscopic is and examples of each in the world	describing what is similar and what is different between microscopic and macroscopic objects in the world	describing what scale is and how it helps us understand microscopic and macroscopic objects

**\*Description: can include but are not limited to written, oral, pictorial, and kinesthetic**

Student 3 – 92%

Next Generation Science Standards (NGSS)		
Subject Area: Science	Strand: Matter and Its Interactions	Grade: 5
<b>Performance Expectation: 5-PS1-1</b> Students can develop a model to describe that matter is made of particles too small to be seen		<b>Guiding Unit Question:</b> How do we know that something exists if we cannot see it?
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Foundations	Student Friendly Language	Access Point	Essential	Confident	Extend
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<b>Crosscutting Concepts</b>	I know that objects in the world can be very large and very small by:	describing objects in the world that are very small and very large	describing what microscopic and macroscopic is and examples of each in the world	describing what is similar and what is different between microscopic and macroscopic objects in the world	describing what scale is and how it helps us understand microscopic and macroscopic objects

**\*Description: can include but are not limited to written, oral, pictorial, and kinesthetic**

# Student 4 – IE

Next Generation Science Standards (NGSS)		
Subject Area: Science	Strand: Matter and Its Interactions	Grade: 5
<b>Performance Expectation: 5-PS1-1</b> Students can develop a model to describe that matter is made of particles too small to be seen		<b>Guiding Unit Question:</b> How do we know that something exists if we cannot see it?
<b>Unit Vocabulary (Content):</b> properties, structures, scale, proportion, quantity, models, particles, bulk matter,		<b>Unit Vocabulary (Skills):</b> make, observe



Foundations	Student Friendly Language	Access Point	Essential	Confident	Extend
<b>Science &amp; Engineering Practices</b>	I can make a model to help me understand an idea by:	following/ participating in creating a model	planning and creating a model	creating a model to solve a problem	Adjusting or revising a model I have created
<b>Disciplinary Core Ideas</b>	I know that matter is made up of particles that are too small to see by:  I know that models can help us see particles that are too small to see by:	describing what matter is  describing that there are different states of matter  describing examples of different kinds of matter in the world	describing what bulk matter is  describing that matter (that I can see) is made up of tiny particles (that are too small to see)  describing examples of models that help to observe particles that are too small to see	describing how collecting many tiny particles can help us observe how matter takes up space  describing which part of the model is bulk matter, and which part of the model is particles	describing the relationship between matter and particles  using the model to describe the relationship between matter and how particles move when they are collected
<b>Crosscutting Concepts</b>	I know that objects in the world can be very large and very small by:	describing objects in the world that are very small and very large	describing what microscopic and macroscopic is and examples of each in the world	describing what is similar and what is different between microscopic and macroscopic objects in the world	describing what scale is and how it helps us understand microscopic and macroscopic objects

Student 4 – with evidence  
 9.5/12  
 79%  
 3.2

**\*Description: can include but are not limited to written, oral, pictorial, and kinesthetic**

Student 5 – IE

Next Generation Science Standards (NGSS)		
Subject Area: Science	Strand: Matter and Its Interactions	Grade: 5
<b>Performance Expectation: 5-PS1-1</b> Students can develop a model to describe that matter is made of particles too small to be seen		<b>Guiding Unit Question:</b> How do we know that something exists if we cannot see it?
<b>Unit Vocabulary (Content):</b> properties, structures, scale, proportion, quantity, models, particles, bulk matter,		<b>Unit Vocabulary (Skills):</b> make, observe



Foundations	Student Friendly Language	Access Point	Essential	Confident	Extend
<b>Science &amp; Engineering Practices</b>	I can make a model to help me understand an idea by:	following/ participating in creating a model	planning and creating a model	creating a model to solve a problem	Adjusting or revising a model I have created
<b>Disciplinary Core Ideas</b>	I know that matter is made up of particles that are too small to see by:  I know that models can help us see particles that are too small to see by:	describing what matter is  describing that there are different states of matter  describing examples of different kinds of matter in the world	describing what bulk matter is  describing that matter (that I can see) is made up of tiny particles (that are too small to see)  describing examples of models that help to observe particles that are too small to see	describing how collecting many tiny particles can help us observe how matter takes up space  describing which part of the model is bulk matter, and which part of the model is particles	describing the relationship between matter and particles  using the model to describe the relationship between matter and how particles move when they are collected
<b>Crosscutting Concepts</b>	I know that objects in the world can be very large and very small by:	describing objects in the world that are very small and very large	describing what microscopic and macroscopic is and examples of each in the world	describing what is similar and what is different between microscopic and macroscopic objects in the world	describing what scale is and how it helps us understand microscopic and macroscopic objects

Student 5 – with evidence  
 9/12  
 75%  
 3.0

**\*Description: can include but are not limited to written, oral, pictorial, and kinesthetic**

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