

Shelley MOORE PH.D.



@tweetsomemoore



@fivemooreminutes



@fivemooreminutes



www.fivemooreminutes.com

www.blogsomemoore.com



How can we **inclusively plan** for, **teach**, and **assess** all students in a **diverse** classroom?

Session 1: Determining Learning Standards using Backwards Design

Session 2: Developing asset-based learning continuums

Session 3: Inclusive lesson design reflecting UDL

Session 4: Inclusive and standards-based assessment

Backwards Design Using Arizona Science Curriculum

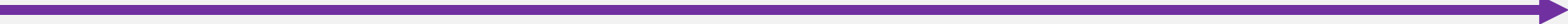
Grade:		Subject Area:	Strand/Topic:	
Learning Standard:		Teacher Provocation Questions:		Student Generated Questions
Key Vocabulary:				
Learning Goals	Possible Access Points (accessible version of grade level)	Curricular Language	Student Friendly Language	
Understandings				
Knowledge				
Skills				

Backwards Design Using Arizona Science Curriculum

Grade: 2		Subject Area: Science	Strand/Topic: Physical Science	
Learning Standard: Students develop an understanding of observable properties of matter and how changes in energy (heating or cooling) can affect matter or materials			Teacher Provocation Questions: What is matter ? How does energy change matter ?	Student Generated Questions
Key Vocabulary: matter, energy, change, heating, cooling, materials, affect, particles, move, object, force, closed system, transfer, scientists, observations, collect evidence, understand, theory, models, explain, science, solve problems, products, conversations, questions, positive, negative, gather, share, information, heat energy				
Learning Goals	Possible Access Points (accessible version of grade level)	Curricular Language	Student Friendly Language	
Knowledge	<ul style="list-style-type: none"> Solid, liquid, gas Fall, push, pull 	<ul style="list-style-type: none"> P1: All matter in the Universe is made of very small particles P2: Objects can affect other objects at a distance. P3: Changing the movement of an object requires a net force to be acting on it. P4: The total amount of energy in a closed system is always the same but can be transferred from one energy store to another during an event. 	<ul style="list-style-type: none"> I know that matter is made up of very tiny particles that are too small to see I know that objects affect each other, even if they are far away from each other I know that force changes how an object moves I know that the amount of energy in a closed system is always the same; I know that energy can be transferred 	
Understandings	<ul style="list-style-type: none"> Using senses, experiencing, drawing what you see 	<ul style="list-style-type: none"> U1: Scientists explain phenomena using evidence obtained from observations and or scientific investigations. Evidence may lead to developing models and or theories to make sense of phenomena. As new evidence is discovered, models and theories can be revised. U2: The knowledge produced by science is used in engineering and technologies to solve problems and/or create products. U3: Applications of science often have both positive and negative ethical, social, economic, and/or political implications. 	<ul style="list-style-type: none"> I understand that scientists make observations in the world and collect evidence to help them understand what is happening I understand that evidence helps develop theories and models to explain what is happening I understand that science is used to solve problems and create new products for the world I understand that science can lead to many conversations and questions about how it is used in both good (positive) and bad (negative) ways 	
Skills	<ul style="list-style-type: none"> Observe, participate, show 	<ul style="list-style-type: none"> 2.P1U1.1 Plan and carry out an investigation to determine that matter has mass, takes up space, and is recognized by its observable properties; use the collected evidence to develop and support an explanation. 2.P1U1.2 Plan and carry out investigations to gather evidence to support an explanation on how heating or cooling can cause a phase change in matter. 2.P4U1.3 Obtain, evaluate and communicate information about ways heat energy can cause change in objects or materials 	<ul style="list-style-type: none"> I can observe and collect evidence to learn more about matter; I can use my evidence to explain what I am learning I can collect evidence to explain how heating and cooling matter can change it I can gather and share information about how heat energy can change matter 	

Learning Continuums

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

Learning Outcome:			
Student friendly:			
			
Approaching (Access Point – 1)	Essential (2)	Confident (3)	Extending (4)


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**

Additive Learning Continuum: Arizona Science 2

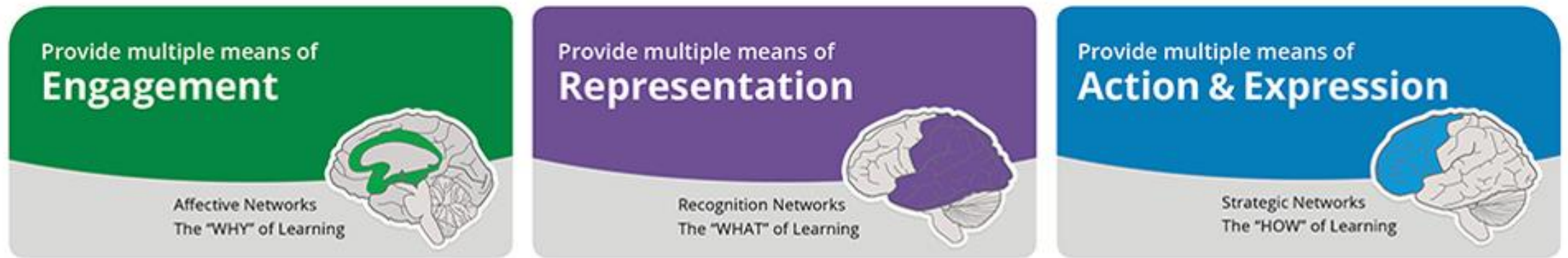
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GUIDING QUESTION: What is **matter**? How does **energy** change **matter**?

Approaching	Essential	Confident	Extending
			
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Universal Design for Learning: Lesson Design

Mini Lesson



Connecting Phase

Processing Phase

Transforming &
Personalizing Phase

Guiding Unit Question:

Lesson Goal(s):

Date

Connecting Activity:

Additional supports & strategies to ensure students meet the “ALL”

Mini Lesson:

Processing Task:



I need to...	I must...	I can...	I could...	I can try to...
Access	All	Most	Few	Challenge

Transforming & Personalizing Activity:

This is lesson creates evidence for:

Guiding Unit Question: How can I use a model to help me understand that some matter is made up of particles that are too small to see?

Lesson Goal(s): I know that everything is made of matter; I know that states of matter are solid, liquid, gas; I know that matter can be broken apart into tiny particles that are too small to see

Date

Connecting Activity: picture set
What do all these pictures have in common: states of matter

Additional supports & strategies to ensure all students meet the “ALL”
- Provide vocab list, sentence stems, options for verbal explanation

Mini Lesson: students watch a demonstration experiment (3 beakers)

Processing Tasks – graphic organizer connected to demonstration				
I need to...	I must...	I can...	I could...	I can try to...
Watch a science demonstration Draw what you observe and label it with vocab words	Label which beaker is solid, liquid, gas	Draw the arrangement of particles in each state of matter	Show how the particles move in each drawing	Explain how particles break down in this experiment (E.g., What did we do to the matter)
Access	All	Most	Few	Challenge

Transforming & Personalizing Activity: Exit Slip (post it notes or partner share)
What helped you to learn and feel successful today?

This is lesson creates evidence for: 5-PS1-1 (NGSS)

Evidence of Learning: Choose your Challenge

Start Here

Go as far as you can in the time allotted

Series Guiding Question: How can we inclusively plan for, teach and assess students in a diverse classroom?

- I **understand** that students are **diverse** and that planning for them requires **anticipating variability** rather than **homogeneity**
- I **know** that **Universal Design for Learning** is an **inclusive framework**, that relies on **Backwards Design**, which when used to design lessons, will increase opportunities for students to **engage, understand**, and show **evidence** of their learning
- I **can** design a lesson that incorporates UDL strategies that will increase opportunities for students to **engage, understand**, and show **evidence** of their learning
- I **am inclusive** and believe that **ALL** students, regardless of their **ability**, can **access grade level curriculum**

Task: Backwards Design Unit Planning		Time: Before the next session (Feb 19, 2024)	Supports & Strategies
I NEED to...	<ul style="list-style-type: none">• Identify the sub standards (lesson learning outcomes) in the unit that you want to target in a lesson• Ensure that the learning outcomes are in student friendly language		<ul style="list-style-type: none">• Choice of collaborative partner/group• Choice of curricular area to use• Choice of task challenge On Series Dashboard <ul style="list-style-type: none">• Access to session handouts• Access to examples• Access to planning template
I MUST ...	<ul style="list-style-type: none">• Design a lesson that includes the 3 phases of UDL lesson design – connect, process and transform & personalize		
I CAN ...	<ul style="list-style-type: none">• Scaffold the processing phases to include an access point and a scaffold that increases complexity and show allow student to choose their challenge		
I COULD ...	<ul style="list-style-type: none">• Redesign and provide graphic organizers for students that align with the UDL lesson phases		
I can TRY to...	<ul style="list-style-type: none">• Interview students and gather their feedback on what worked for them in the lesson and what didn't		



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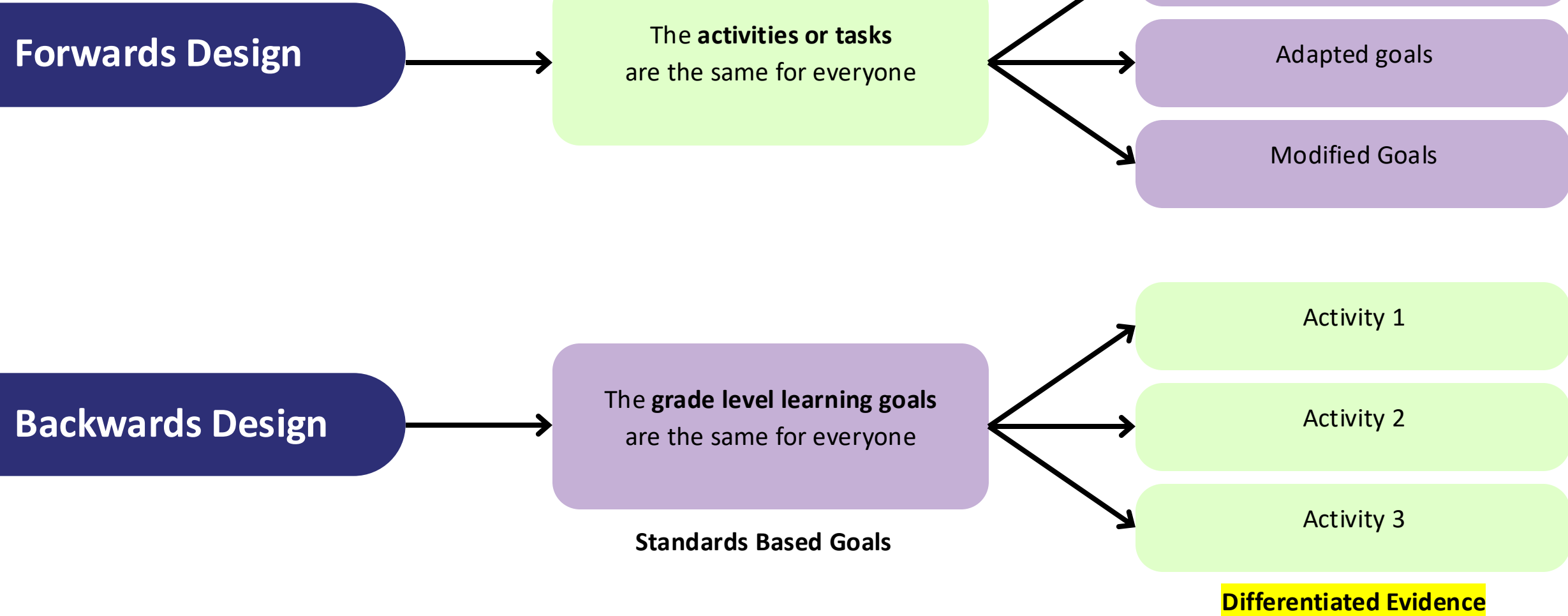
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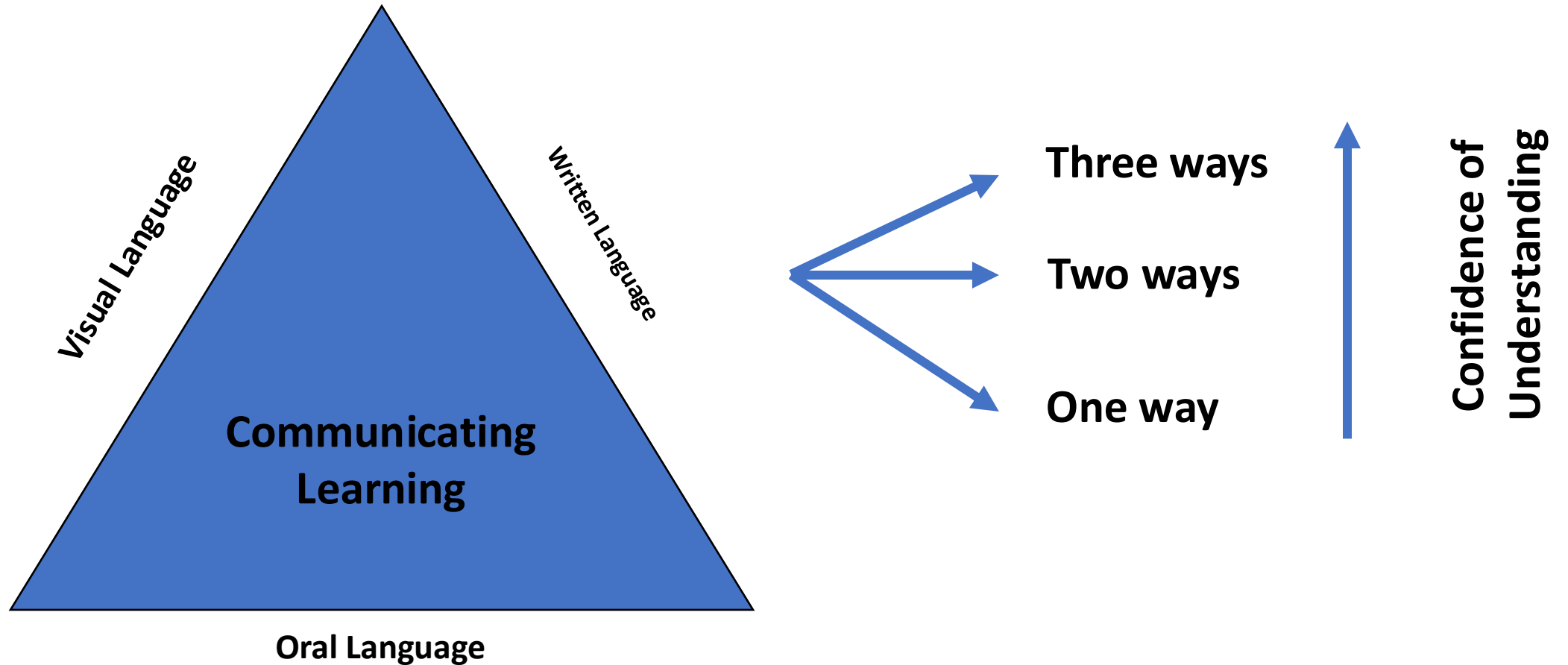
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Understanding by Design



How do we differentiate evidence?

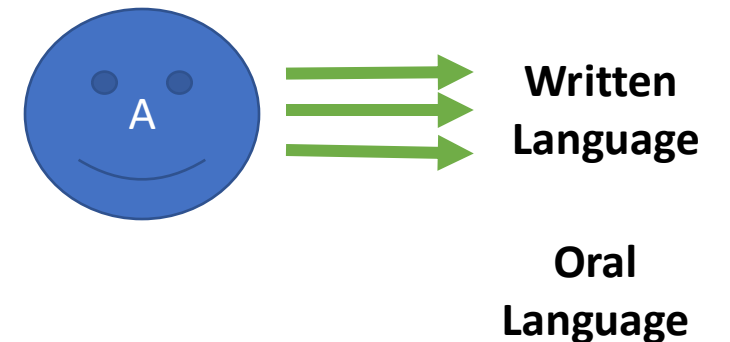
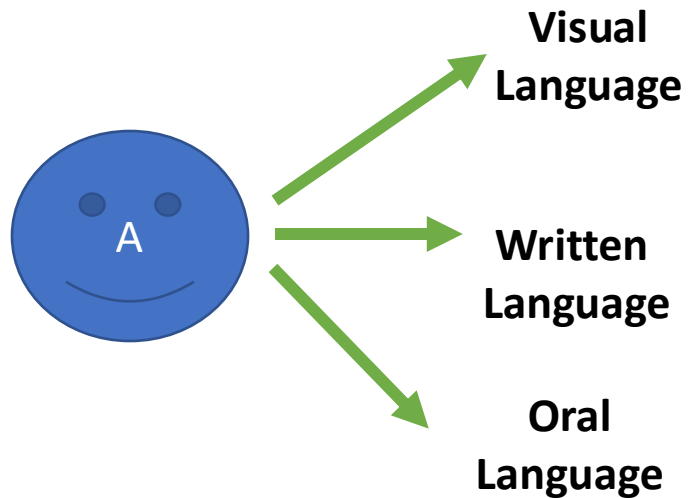


All Languages (in literacy) are Treated Equal!

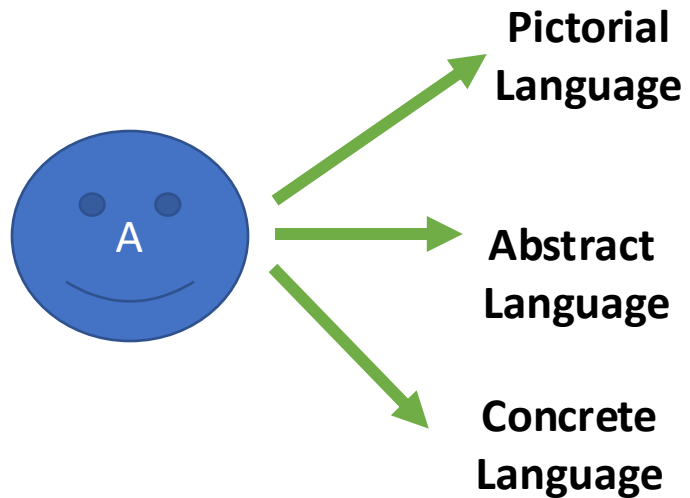
The **MORE WAYS** students can demonstrate learning, the deeper their understanding is

Vs.

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



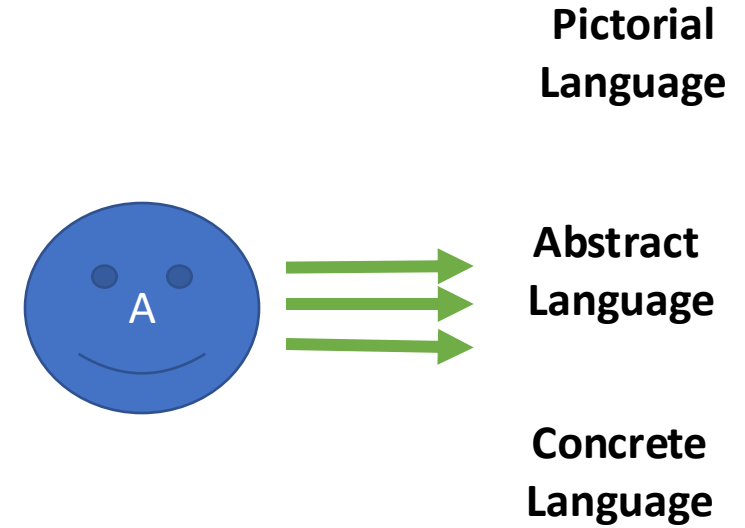
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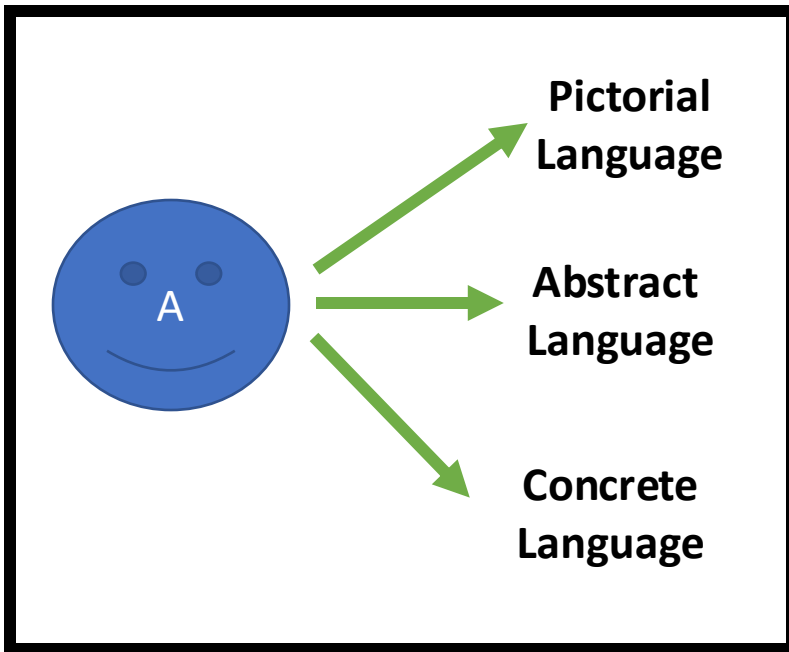
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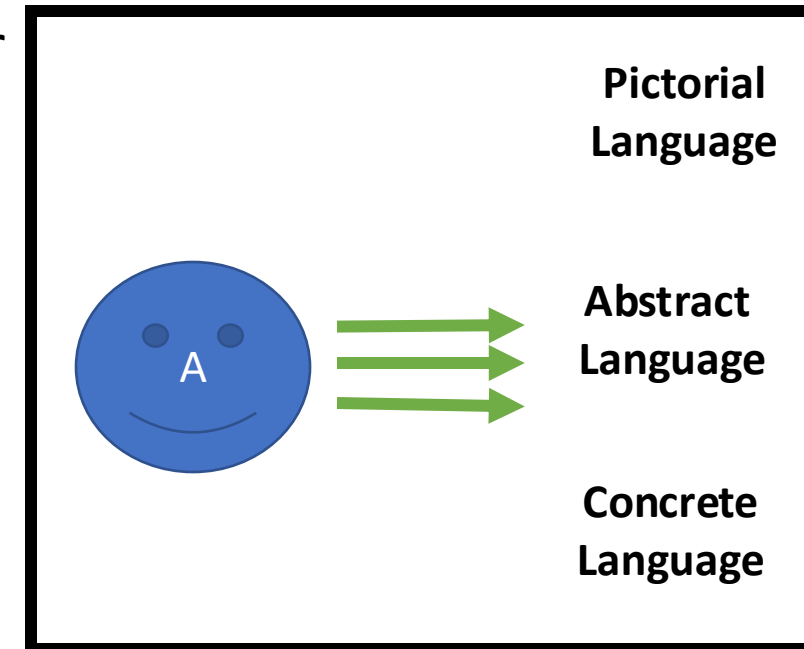
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The **grade level learning goals**
are the same for everyone



Math (K) Content

- Students know direct comparison measurement

ELA Content

- Students know language features, structures, and conventions including:
 - concepts of print
 - letter knowledge
 - letter formation
 - the relationship between reading, writing and oral language

Math (K) Curricular Competency

- I can estimate
- I can solve math problems by visualizing
- I can show my thinking in math by using symbols, pictures and objects
- I can connect what I am learning to interesting things in my life and the world

ELA (K) Curricular Competency

- I can understand different kinds of text by exploring it

Learning
Activities and Tasks

Differentiation of Evidence

Viewing and
showing

Listening and
speaking

Writing and
decoding

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Learning Activities and Tasks

Anchor Text: Can You See Me?

- **Activity:** Can you see me?
- **Activity:** Measurement O Rama
- **Activity:** What kind of box?

Differentiation of Evidence

viewing and
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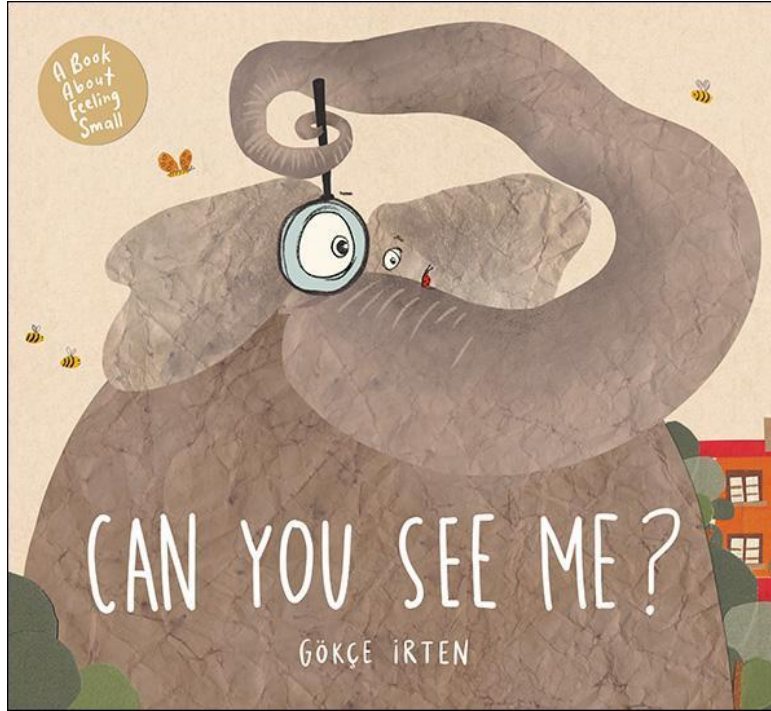
Listening and
speaking

writing and
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Backwards Design Using Arizona Math Curriculum

Grade: 5		Subject Area: Math		Strand/Topic: Number and Operations - Fractions	
Learning Standard: 5.NF.A Use equivalent fractions to add and subtract fraction			Unit Guiding Question(s): What is an equivalent fraction? How can we use equivalent fractions to add and subtract fractions?		Student Generated Questions:
Key Vocabulary: fraction, equivalent fraction, add, subtract, denominator, mixed number, strategies, understand, word problem, problem, solution, show my thinking, estimate, solve, pictorial, abstract, concrete					
Learning Goals	Possible Access Points (accessible version of grade level)	Curricular Language	Student Friendly Language		
			What do students need to know? (I know...)	What to students need to do? (I can...)	
5.NF.A.1	<ul style="list-style-type: none">AddingSubtractingSharingFractions with like denominatorsBenchmark fractions ½, ¼	Add and subtract fractions with unlike denominators (including mixed numbers) by replacing given fractions with equivalent fractions in such a way as to produce an equivalent sum or difference of fractions with like denominators	I know what a fraction is I know what a denominator is I know what an equivalent fraction is I know how to find an equivalent fraction I know why equivalent fractions can help me add and subtract fractions I know what a mixed number is I know how to turn a mixed number into a fraction	I can find an equivalent fraction I can use an equivalent fraction to add and subtract fractions when the denominators are not the same I can add and subtract fractions with there are mixed numbers	
5.NF.A.2	<ul style="list-style-type: none">Visual problems (not word based)Word problem that use indicators above	Solve word problems involving addition and subtraction of fractions referring to the same whole, including cases of unlike denominators by using a variety of representations, equations and visual models to represent the problem. Use benchmark fractions and number sense of fractions to estimate mentally and assess the reasonableness of answers	I know some strategies to help me understand word problems I know how to show my thinking in different ways I know what it means to estimate and how estimation help me understand and solve problems I know if a solution makes sense	I can solve word problems where I need to add and subtract fractions and the denominators are not the same I can show how I solve problems in different ways (pictorial, abstract, concrete) I can estimate to help me make sense of word problems I can think about the problem to see if a solution makes sense	



Project: Can you see me?

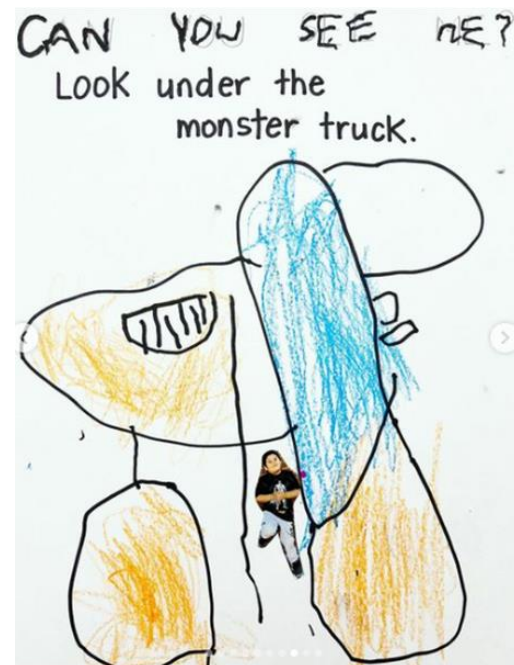
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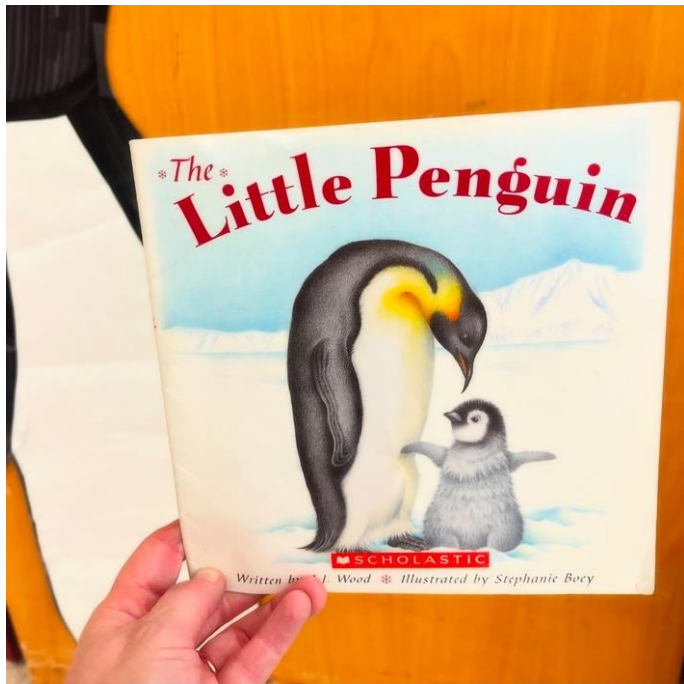


Listening and
speaking



writing and
decoding





Activity: What kind of box?

viewing and
showing



Listening and
speaking



writing and
decoding



Dear Shelley,
Here is what I discovered:

A SMALL box can
hold _____ child.

A MEDIUM box can
hold _____ children.

A LARGE box can hold
_____ children.

I think you should use a
box to ship the penguins.

ANOTHER TIP? _____

FROM _____

Dear Kindergarten,
Hello! I am a zoologist named Shelley and I
need to ship 6 emperor penguins to a new
zoo.

I heard you are BOXITECTS and ARCHITECTS
and I thought you would be perfect to
gather some information from.

I need you to do an experiment for me.

I heard that an emperor penguin is about
the size of a kindergarten child. But I have
no idea how big of a container I might need
in order to send our 6 emperor penguins!

Can you experiment and explore with some
boxes to ESTIMATE what size box I might
need? If you could send some pictures and
drawings that would be great!

Thank you!
Sincerely,
Shelley


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<ul style="list-style-type: none"> I know that everything is made of matter I know that states of matter are solid, liquid, gas I know that fall, push and pull are examples of forces 	<ul style="list-style-type: none"> I know that matter is made up of very tiny particles that are too small to see I know that objects affect each other, even if they are far away from each other 	<ul style="list-style-type: none"> I know that force changes how an object moves I know that the amount of energy in a closed system is always the same; I know that energy can be transferred 	<ul style="list-style-type: none"> I know how force influences an objects motions I know why the total amount of energy is the same in a closed system
<ul style="list-style-type: none"> I understand that using my senses can help me observe the world around me 	<ul style="list-style-type: none"> I understand that scientists make observations in the world and collect evidence to help them understand what is happening I understand that evidence helps develop theories and models to explain what is happening 	<ul style="list-style-type: none"> I understand that science is used to solve problems and create new products for the world I understand that science can lead to many conversations and questions about how it is used in both good (positive) and bad (negative)ways 	<ul style="list-style-type: none"> I understand that the scientific method is a framework for solving challenges in the world I understand that science creates a range of discussion which requires critical reflection in how it influences decision making and policies
<ul style="list-style-type: none"> I can observe, participate in activities to learn more about matter I can show my thinking using evidence 	<ul style="list-style-type: none"> I can observe and collect evidence to learn more about matter; I can use my evidence to explain what I am learning I can collect evidence to explain how heating and cooling matter can change matter 	<ul style="list-style-type: none"> I can gather and share information about how heat energy can change matter 	<ul style="list-style-type: none"> I can use molecular structures to explain how heat energy changes matter

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.

Traditional Grade Book

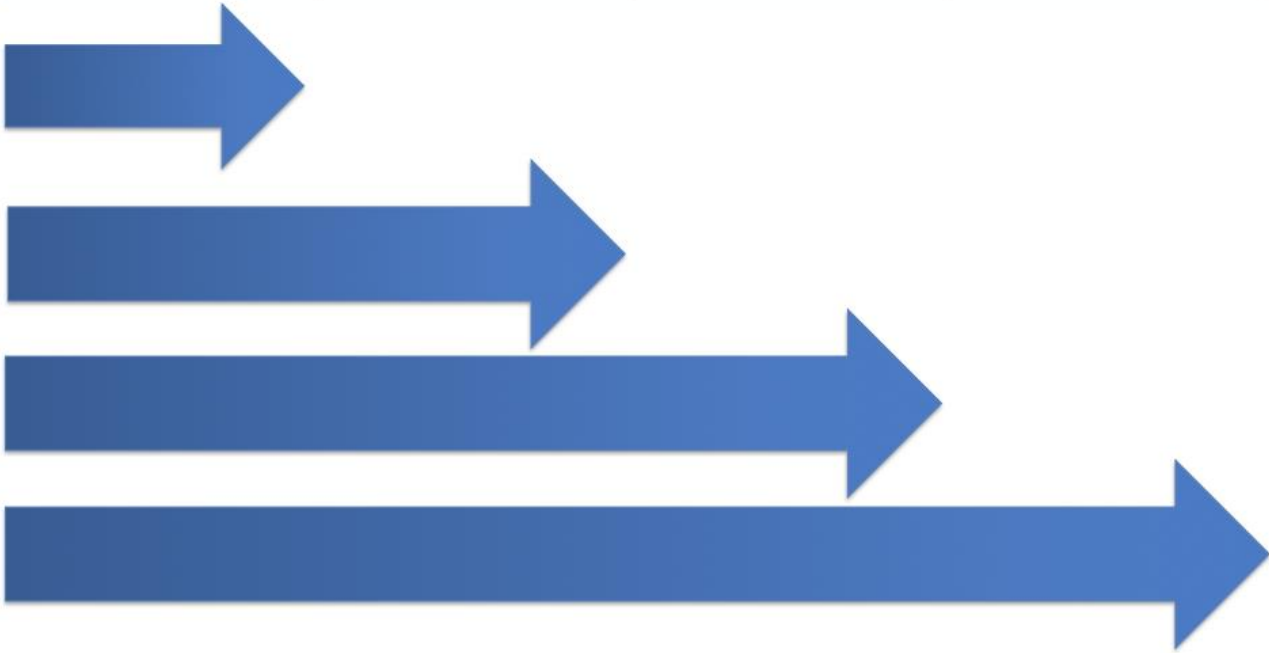
Name	Homework	Quiz 1	Quiz 2	Chapter 2 Test
Katie	90%	88%	82%	80%
Joe	60%	75%	88%	70%
Sara	10%	90%	98%	100%
John	100%	50%	60%	54%

Standards Based Grade Book

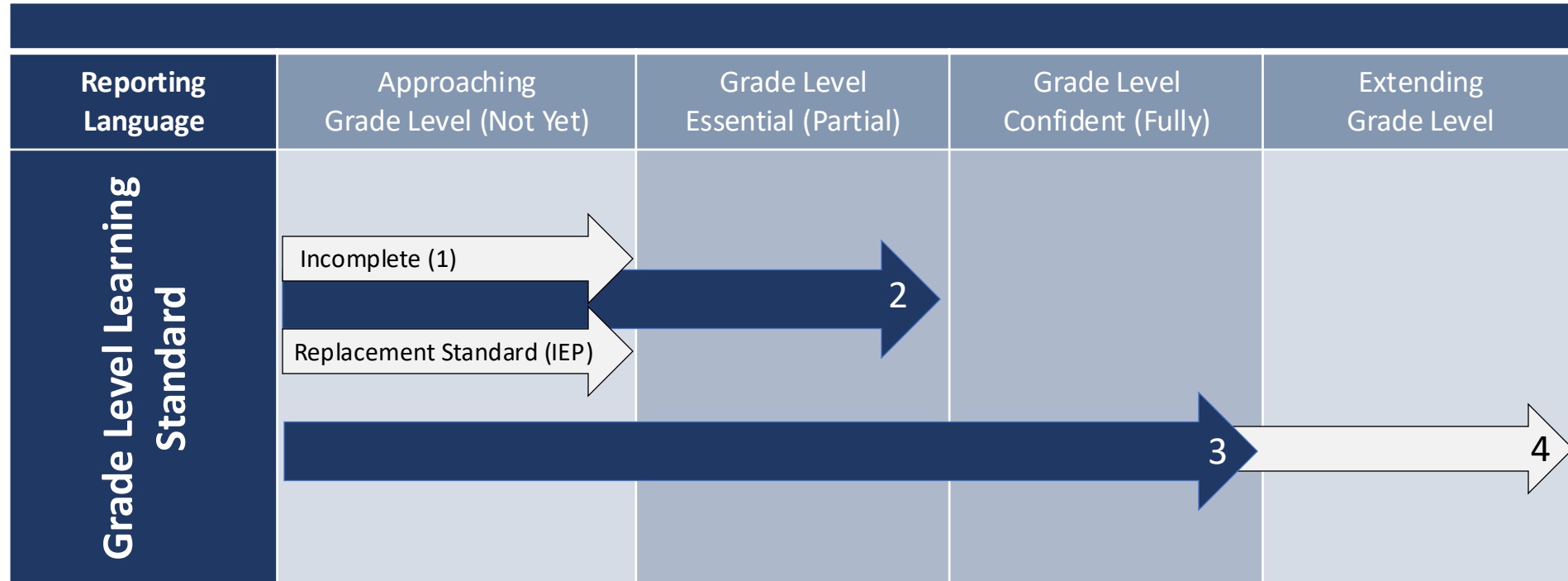
Name	Standard 1: Use parenthesis, brackets, or braces in numerical expressions, and evaluate expressions with these symbols.	Standard 2: Write simple expressions that record calculations with numbers, and interpret numerical expressions without evaluating them.	Standard 3: Generate two numerical patterns 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.
Katie	4	2	2
Joe	2	3	1

Scaffolded Curriculum: 4 Point Continuum

	Access Point	Grade level indicators		Challenge Point
Grade Level Learning Standard	Approaching	Essential	Confident	Extending



An Additive Continuum of Proficiency



Standards Based Grade Book																	
Learning Standard/ Performance Expectation													Evaluation				
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																	

Standards Based Grade Book (Arizona Science)

Learning Standard/ Performance Expectation	Students develop an understanding of observable properties of matter and how changes in energy (heating or cooling) can affect matter or materials												Evaluation				
	Knowledge (P1, P2, P3, P4)				Understandings (U1, U2, U3)				Skills (2.P1U1.1, 2.P1U1.2, 2.P1U1.3)				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					
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																	

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



Foundations	Student Friendly Language	Access Point	Essential	Confident	Extend
Science & Engineering Practices	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
Disciplinary Core Ideas	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
Crosscutting Concepts	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

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**

Standards Based Grade Book (NGSS)																	
Learning Standard/ Performance Expectation	5-PS1-1. Develop a model to describe that matter is made of particles 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					
Evaluation	IE/IE P	2	3	4	IE/IE P	2	3	4	IE/IE P	2	3	4		12			
Student 1 (IEP)	•				•				•	•			3	3*	100%	A*	4*
Student 2	•	•			•	•			•	•			6	12	50%	D	2
Student 3	•	•	•	•	•	•	•	•	•	•	•		11	12	92%	A-	3.67
Student 4			•	•	•	•	•		•	•			IE	12			
Student 5	•	•	•	•	•	•							IE	12			
Student 6	•	•	•		•	•	•	•	•	•	•	•	11	12	92%	A-	3.67



How can we **inclusively plan** for, **teach**, and **assess** all students in a **diverse** classroom?

Session 1: Determining Learning Standards using Backwards Design

Session 2: Developing asset-based learning continuums

Session 3: Inclusive lesson design reflecting UDL



Session 4: Inclusive and standards-based assessment



Final Reflections

What is one useful idea?

What is one thing you want to try?

What is a question that you have?

What is one thing you want to learn more about?

What is one thing you want to share with
someone who is not here today?



THANK YOU!!!

Shelley MOORE PH.D.



@tweetsomemoore



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