Lesson 05

Uncover the Language of Math

WITH ANN DECHENNE

Class Objectives

OBJECTIVE 4

Students will learn how to identify mathematical and general language to support students in the math classroom.

Academic Language but Daily Language?

Introduction

It is easy to understand why academic language and vocabulary are important, but daily language? What is that all about? As adults, we have a lot of life experience and learning compared to our students, and we have a lifetime of language stored in our brains.

Academic Language but Daily Language?

Introduction

As much as we feel we are aware of how we speak to the students, our knowledge pops out. Also, teenagers tend to be more literal in their language and thoughts, which can cause some mathematical mayhem.
More to come.:)

Academic Language but Daily Language?

Introduction

My grandparents played Bridge and Pinocle card games regularly, and my father had poker parties. A deck of cards was common in my household. Ask the students in your class how many know what a 'face' card is or a Joker. If you have language learners, it is likely that their country doesn't even have 52 cards in a standard card deck.

Academic Language but Daily Language?

Introduction

Pay close attention or audio record a class session on a pad or your cell phone, and listen to your language. Anything surprising? Students have a different language, just like you or I had a different language than our parents and grandparents. My grandmother called the sofa/couch a davenport, and I am not sure that word is used much anymore.

Academic Language but Daily Language?

Introduction

We will take a look at some examples. Let's quickly talk about the literal. I have a math friend whom I worked with. He was baffled when talking to students about shadows that ladders produce when against a building. This was a lesson focusing on angles. He finally realized the students thought the ladder was flush with the building. :)

Standards and Language

Knowing the language requirements of the standards will help orientate teachers when they are developing language-rich lessons.
Understanding what is being taught will help the students.

Oregon Math Standard
21:HS.NQ.A.2
CCSS: N/A

Example

Compare real numbers presented through different representations, including rational and irrational ones. Apply comparisons in authentic contexts.

Real Numbers, Representations, Rational, Irrational, Comparison, Authentic, Contexts

Explanation of previous slide.

Example

The words highlighted are the basic academic vocabulary that needs to be understood in order to work on the problems. Some words like compare, context, and authentic are often repeated and will be quickly learned, and irrational and Real Numbers may take time.

This vocabulary is part of the daily math teachers' vocabulary. As a math teacher, this is KNOWN. For students, it is not yet; it needs to be taught to move forward.

CCSS 7.G.B.4

Example +

Know the **formulas** for the **area** and **circumference** of a **circle** and use them to solve problems; give an **informal derivation** of the **relationship** between the **circumference** and **area** of a **circle**.

CCSS 7.G.B.4

Example +

Know the **formulas** for the **area** and **circumference** of a **circle** and use them to solve problems; give an **informal derivation** of the **relationship** between the circumference and area of a circle

ODE Math STandard 7.GM.B.3

Example

Understand the **relationship** between the **area** and **circumference** of **circles**. Choose and use the appropriate **formula** to solve problems with **radius, diameter, circumference,** and **area** of circles.

Explanation of previous slides.

Example +

Looking at both CCSS and ODE Math standards, you can see that they are similar. The nice thing about comparing them is that I, as a specialist looking, can pull out the language I would like to help the math teacher with. ODE's standard brings in a couple more terms like radius and diameter, and CCSS has the word derivation.

Whichever standard you use, the words will need to be taught.

Academic Language but Daily Language?

Example

A boat is 300 m from the base of a lighthouse. The angle of depression from the lighthouse to the boat is 41 degrees.

How tall is the lighthouse?

What is the distance from the boat to the top of the lighthouse?

Academic Language but Daily Language?

Example

Let's take a look at the language I pulled out of the questions.

m =meter

Students from other countries will be familiar with a meter, but it is hard to remember here in the US if you don't use it a lot.

You could quickly pull out a meter stick and give the students a visual measurement.

Academic Language but Daily Language?

Example

Base, depression, and degree all have multiple meanings, which can be confusing for all students, especially students who are learning English or on an IEP.

Also, base can be spelled bass, which obviously sounds the same but has a different meaning.

Angle, lighthouse, and **distance from**...can also be shown with a visual

Baseball card
Appreciated
Yearly
Value

Example

Write the equation for the price of a baseball card bought for 5 dollars in 2005 and has appreciated 5% yearly. Find the value of the card 25 years later.

Grows

Rate of

Example

A town of 3200 grows at a rate of 25% every year. Find the size of the city in 10 years.

Note: This lesson really is a cool learning tool. Can you see what may really trip up students?

Grows
Rate of

Town
City

Example

A **town** of 3200, grows at a rate of 25% every year. Find the size of the **city** in 10 years.

You may not have to define town and city but the change in reference may throw kids off. A population discussion might need to happen.

Class Recap

POINT 1

For students to comprehend what you want them to learn, they need to understand both the academic and the daily language used.

POINT 2

Pay attention to the words you use. So many words are a part of you, and you may not notice what you are saying.

POINT 3

Review the lessons you are giving. Where can you clarify things to assist with student comprehension?

Homework

Choose a standard, either CCSS Math or ODE Math, and complete the following:

- Identify the standard by the alpha-numeric identifier.
- Provide the text of the standard.
- List all identified academic language.

Additional Resources

https://www.oregon.gov/ode/educator-resources/standards/mathematics/Documents/1_2021%20Oregon%20Math%20Standards%20Crosswalk%20(v.5.2.1).pdf

Thank You

IF YOU HAVE ANY QUESTIONS PLEASE FEEL FREE TO CONTACT ME AT:

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