In 1956, Benjamin Bloom headed a group of educational psychologists. Together, they developed a classification of levels of thinking behaviors thought to be important in the processes of learning.

- Bloom and co. actually identified three domains of educational activities.
  - Cognitive: mental skills (Knowledge)
  - Affective: growth in feelings or emotional areas (Attitude)
  - Psychomotor: manual or physical skills (Skills)
- Best known is the Cognitive taxonomy as follows

## Knowledge
- observation and recall of information
- knowledge of dates, events, places
- knowledge of major ideas
- mastery of subject matter

## Comprehension
- understanding information
- grasp meaning
- translate knowledge into new context
- interpret facts, compare, contrast
- order, group, infer causes
- predict consequences

## Application
- use information
- use methods, concepts, theories in new situations
- solve problems using required skills or knowledge
Analysis

- seeing patterns
- organization of parts
- recognition of hidden meanings
- identification of components

Synthesis

- use old ideas to create new ones
- generalize from given facts
- relate knowledge from several areas
- predict, draw conclusions

Knowledge

Comprehension

Application

Analysis

Evaluation

Sample Unit: Space

Knowledge
- Cut out "space" pictures from a magazine. Make a display or a collage. List the names of the planets in our universe. List all the things an astronaut would need for a space journey.

Comprehension
- Make your desk into a spaceship. Make an astronaut for a puppet play. Use it to tell what an astronaut does. Make a model of the planets in our solar system.

Application
- Keep a diary of your space adventure (5 days). What sort of instruments would you need to make space music? Make a list of questions you would like to ask an astronaut.

Analysis
- Make an application form for a person applying for the job of an astronaut. Compare Galileo's telescope to a modern telescope.

Synthesis
- Write a newspaper report for the following headline: "Spaceship out of control." Use the SCAMPER strategy to design a new space suit. Create a game called "Space Snap." Prepare a menu for your spaceship crew. Design an advertising program for trips to the moon.

Evaluation
- Compare the benefits of living on Earth and the moon. You can take three people with you to the moon. Choose and give reasons. Choose a planet you would like to live on - explain why.

Webb's Depth of Knowledge

DOK 1: Recall and Reproduction

Recall or recognition of a fact, information (definitions, terms, dates, etc.), concept, or procedure
- Identify who, when, what where, and why
- Recall facts, terms, concepts, trends, generalizations and theories
- Use a variety of tools
- Recognize or identify specific information
- Identify specific information
- Define
- Describe (recall, recite or reproduce information)
- Identify purposes

DOK 2: Application of Skills and Concepts

Use of information, conceptual knowledge, following or selecting appropriate procedures, two or more steps with decision points along the way, routine problems, organizing/displaying data
- Describe or explain how or why
- Give an example
- Describe and explain issues and problems, purposes, patterns, sources, reasons, points of view or processes
- Compare
- Classify, sort items into meaningful categories
- Convert information from one form to another
### DOK 3: Strategic Thinking

Requires reasoning, developing a plan or sequence of steps to approach a problem; requires some decision making and justification; abstract and complex; often having more than one possible answer
- Use concepts to solve problems
- Use evidence to justify
- Propose and evaluate solutions to problems
- Recognize and explain misconceptions
- Cite evidence and develop a logical argument for concepts
- Reason and draw conclusions
- Disseminate among plausible answers
- Analyze similarities and differences in issues and problems
- Make connections across time and place to explain a concept or big idea
- Recognize and explain patterns
- Make and support decisions
- Evaluate effectiveness and impact

### DOK 4: Extended Thinking

An investigation or application to real work; requires time to research, think, and process multiple conditions of the problem or task non-routine manipulations, across disciplines/content areas/multiple sources
- Connect ideas and concepts within the content area or among content areas
- Examine and explain alternative perspectives across a variety of sources
- Describe and illustrate how common themes and concepts are found across time and place
- Make predictions with evidence as support
- Develop a logical argument
- Plan and develop solutions to problems
- Analyze and synthesize information from multiple sources
- Complex reasoning with planning, investigating or developing a product
- Apply and adapt information to real-world situations
- Participation in simulations and activities requiring higher-level thinking

### You Try!

- At your table, come up with a topic
- Describe an element of that topic that students should know and be able to do at EACH level of Bloom’s taxonomy or Webb’s DOK

### Affective Domain

#### Attitudes (cont.)

- **Organization**
  - Organizes values into priorities by contrasting different values, resolving conflicts between them, and creating an unique value system. The emphasis is on comparing, relating, and synthesizing values.
- **Internalizing values** (characterization)
  - Has a value system that controls their behavior. The behavior is pervasive, consistent, predictable, and most importantly, characteristic of the learner. Instructional objectives are concerned with the student’s general patterns of adjustment (personal, social, emotional).

### Psychomotor Domain

#### Skills

- **Perception**
  - The ability to use sensory cues to guide motor activity. This ranges from sensory stimulation, through cue selection, to translation.
- **Set**
  - Readiness to act. It includes mental, physical, and emotional sets. These three sets are dispositions that predetermine a person’s response to different situations (sometimes called mindsets).
- **Guided Response**
  - The early stages in learning a complex skill that includes imitation and trial and error. Adequacy of performance is achieved by practicing.
Mechanism
- This is the intermediate stage in learning a complex skill. Learned responses have become habitual and the movements can be performed with some confidence and proficiency.

Complex Overt Response
- The skillful performance of motor acts that involve complex movement patterns. Proficiency is indicated by a quick, accurate, and highly coordinated performance, requiring a minimum of energy. This category includes performing without hesitation, and automatic performance.

Adaptation
- Skills are well developed and the individual can modify movement patterns to fit special requirements.

Origination
- Creating new movement patterns to fit a particular situation or specific problem. Learning outcomes emphasize creativity based upon highly developed skills.

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Bloom’s Taxonomy Assessment

Read the statements on the next slide and decide what level of thinking from Bloom’s Cognitive taxonomy is required for the task stated.

1. Compare and contrast enrichment versus acceleration in terms of readiness, academic benefits, and social and emotional adjustment for precocious youth.
2. Explain what is meant by a melting pot philosophy.
3. What is the associative property of multiplication?
4. Solve the geometric proof by using the appropriate theorems.
5. Read and diagram the following sentences.
6. Generate a theory of adolescent purchasing practices by observing mall behaviors, questionnaires, and personal interviews.

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So What Do We Use This For?

- To write objectives
- To help us match objectives to assessment methods and instructional tasks

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What is an Objective?

- A statement of what we want students to know and be able to do.
- A teacher must be able to ASSESS the objective in some way.

Synonyms: Intended Learning Outcome, Achievement Target
The Backwards Design

1. Identify Desired Results

2. Determine Acceptable Evidence

3. Plan of Action

Why “backward”?

- The stages are logical but they go against habits
  - We’re used to jumping to lesson and activity ideas - before clarifying our performance goals for students
  - By thinking through the assessments upfront, we ensure greater alignment of our goals and means, and that teaching is focused on desired results

Prioritizing Desired Results

Worth being familiar with

Must know and be able to do

Enduring Understanding Big Idea

Stage 1: Identify Desired Results

Unpacking the Standards

Established Goals or Objectives

- What enduring understandings or big ideas do you want students to understand?
- What key knowledge, skills, and dispositions will students acquire as a result of this unit?

Knowledge:

Skills:

Dispositions:

STOP AND WORK

- Get out your core curriculum and find the Standards, Objectives, and Indicators that you want to teach for your TWS.
- Write them on your paper

“Big Ideas” are typically revealed via–

- Core concepts
- Focusing themes
- On-going debates/issues
- Insightful perspectives
- Illuminating paradox/problem
- Organizing theory
- Overarching principle
- Underlying assumption
Big Ideas: Examples

- Word are power.
- Reading is more than just the words on a page.
- Relationships between quantities can be represented by graphs, tables, and equations.
- Good vocal tone is a result of proper posture, breath control, and...
- Healthy nutrition practices influence all aspects of our lives.
- All life is interrelated as evidenced by the differences and similarities among species.

More Big Idea Examples

- Great artists often break with conventions to better express what they see and feel.
- Price is a function of supply and demand.
- Friendships can be deepened or undone by hard times.
- History is the story told by the “winners”
- $F = ma$ (weight is not mass)
- Math models simplify physical relations – and even sometimes distort relations – to deepen our understanding of them.
- The storyteller rarely tells the meaning of the story.

You’ve got to go below the surface...

to uncover the really ‘big ideas.’

Stage 1: Identify Desired Results

Unpacking the Core

Established Goals or Objectives

What enduring understandings or big ideas do you want students to understand?

What key knowledge, skills, and dispositions will students acquire as a result of this unit?

Knowledge:
Skills:
Dispositions:

STOP AND WORK

- What “Big Idea” are the listed standards, objectives, and indicators based on?
- Write your “Big Idea” for your TWS on your paper. Talk with your classmates about it.
Knowledge, Skills, and Dispositions

- What knowledge, skills, and dispositions follow from the “Big Ideas?”
- What “teachable chunks” can be described?

How Can I Tell What is Knowledge, Skills, and Dispositions?

- Knowledge – what we want students to know
- Skills – what we want students to be able to do
- Dispositions – the attitudes or feelings we want students to have about the concept.

Write as an Objective

1. Start with a verb
   - Use your list of Bloom’s or DOK verbs
2. Make sure each objective includes only one action and one content part

Stage 1: Identify Desired Results

Unpacking the Core

Established Goals or Objectives

- What enduring understandings or big ideas do you want students to understand?
- What key knowledge, skills, and dispositions will students acquire as a result of this unit?
- What can each goal or indicator be “chunked” into a teachable part?

Knowledge:
- Skills:
- Dispositions:

STOP AND WORK

- UNPACK each indicator from the core and write an objective using the Bloom’s verbs. Make sure each objective is chunked so that you can teach it in one lesson. Separate the objectives into Knowledge (things you want students to know), Skills (things you want students to do), and Dispositions (attitudes you want to foster). Also put the Bloom’s or DOK level in parentheses.

Unpack the Standard Assignment recap

- Identify all the core indicators you will cover.
- Specify the “Big Ideas” that students will acquire.
- Break out the Knowledge, Skills, and Dispositions in teachable chunks.
- Identify the depth of knowledge (Bloom’s or DOK)
- Rough draft due in class tomorrow so we can work on them.
- Also print off a copy of Mager and Gronlund objectives to bring with you tomorrow