What to Expect

- **Definition of Differentiated Instruction**
- **Mastery, including EEK and KUD**
- **Assessment Principles and Ideas**
- **Tiering and More Assessment Ideas**
- **Designing Good Test Questions**
- **Affirmation and Provocation**

Assessment

Perspectives and Practicalities

[with emphasis on the Differentiated Classroom]

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Definition

Differentiating instruction is doing what's fair for students. It's a collection of best practices strategically employed to maximize students' learning at every turn, including giving them the tools to handle anything that is undifferentiated. It requires us to do different things for different students some, or a lot, of the time. It's whatever works to advance the student. It's highly effective teaching.

What is Mastery?

"Tim was so learned, that he could name a horse in nine languages; so ignorant, that he bought a cow to ride on."

Ben Franklin, 1750, *Poor Richard's Almanac*

"Understanding involves the appropriate application of concepts and principles to questions or problems posed."

-- Howard Gardner, 1991

"Real comprehension of a notion or a theory -- implies the reinvention of this theory by the student…True understanding manifests itself by spontaneous applications." -- Jean Piaget

From the Center for Media Literacy in New Mexico –

"If we are literate in our subject, we can:

<u>access</u> (understand and find meaning in),
<u>analyze</u>,
<u>evaluate</u>,
and <u>create</u>
the subject or medium."

From *Understanding By Design*
(Wiggins, McTighe)

The Six Facets of True Understanding:

Explanation
Interpretation
Application
Perspective
Empathy
Self-knowledge

"Look-fors" for Assessing
Insightful Student Responses

- **Other ways to look at and define the problem**
- **A potentially more powerful principle than the one taught or on the table**
- **The tacit assumptions at work that need to be made explicit**
- **Inconsistency in current versus past discussion**
- **Author intent, style, and bias**
- **Comparison and contrast, not just description**
- **Novel implications**
- **How custom and habit are influencing the views, discussion, or approach to the problem to date**

[From *Understanding By Design, p. 82, Wiggins and McTighe]*

Working Definition of Mastery
(Wormeli)

Students have mastered content when they demonstrate a thorough understanding as evidenced by doing something substantive with the content beyond merely echoing it. Anyone can repeat information; it's the masterful student who can break content into its component pieces, explain it and alternative perspectives regarding it cogently to others, and use it purposefully in new situations.

Non-Mastery…

- **The student can repeat the multiplication tables through the 12's (This is more about automacity – how automatic a student is when reciting the information or solutions. Automacity often comes with mastery but in and of itself, it is not mastery.)**

…and Mastery

- **The student can hear or read about a situation that requires repeated addition and identifies it as a multiplication opportunity, then uses multiplication accurately to shorten the solution process.**

Non-mastery…

- **A student prepares an agar culture for bacterial growth by following a specific procedure given to her by her teacher. She calls the experiment a failure when unknown factors or substances contaminate the culture after several weeks of observation.**

…and Mastery

- **A student accounts for potentially contaminating variables by taking extra steps to prevent anything from affecting an agar culture on bacterial growth she's preparing, and if accidental contamination occurs, she adjusts the experiment's protocols when she repeats the experiment so that the sources of the contamination are no longer a factor.**

Non-mastery…

- **The student uses primarily the bounce pass in the basketball game regardless of its potential effectiveness because that's all he knows how to do.**

…and Mastery

- **The student uses a variety of basketball passes during a game, depending on the most advantageous strategy at that moment in the game.**

Non-mastery…

- **The students can match each of the following parts of speech to its definition accurately: noun, pronoun, verb, adverb, adjective, preposition, conjunction, gerund, and interjection.**

…and Mastery

- **The student can point to any word in the sentence and explain its role (impact) in the sentence, and explain how the word may change its role, depending on where it's placed in the sentence.**

Choose the best assessment:

1. **On the sphere provided, draw a latitude/longitude coordinate grid. Label all major components.**
2. **Given the listed latitude/longitude coordinates, identify the countries. Then, identify the latitude and longitude of the world capitols and bodies of water that are listed.**
3. **Write an essay about how the latitude/longitude system came to be.**
4. **In an audio-visual presentation, explain how our system of latitude and longitude would need to be adjusted if Earth was in the shape of a peanut? (narrow middle, wider edges)**
5. **Create a collage or mural that represents the importance of latitude and longitude in the modern world.**

"The student will compare the United States Constitution system in 1789 with forms of democracy that developed in ancient Greece and Rome, in England, and in the American colonies and states in the 18th century."

--Virginia, Grade 12, United States and Virginia Government

Acceptable Evidence

- Spelling test non-example
- No echoing or parroting

- Elaboration
- Application
- Explanation
- Critique
- Analysis
- Creation

Consider:

In any situation in which you are not literally teaching the product, it's okay to give students choices in the products they will use to demonstrate mastery as long as you identify and hold students accountable for the same universal factors.

Rubric for the Historical Fiction Book Project – Holistic-style

4.0 Standard of Excellence:

- All material relating to the novel was accurate
- Demonstrated full understanding of the story and its characters
- Demonstrated attention to quality and craftsmanship in the product
- Product is a realistic portrayal of media used (examples: postcards look like postcards, calendar looks like a real calendar, placemats can function as real placemats)
- Writing is free of errors in punctuation, spelling, capitalization, and grammar
- Had all components listed for the project as described in the task

3.5, 3.0, 2.5, 2.0, 1.5, 1.0, .5, and 0 are awarded in cases in which students' projects do not fully achieve all criteria described for excellence. Circled items are areas for improvement.

E.E.K. a.k.a. K.U.D.

Essential and Enduring Knowledge (E.E.K.), concepts, and skills

Know, Understand, able to Do (K.U.D. or K.U.D.O.S.)

E.E.K. in Question Form

Essential questions are larger questions that transcend subjects, are usually interesting to ponder, and have more than one answer. They are often broken down into component pieces for our lessons. There are usually one to five essential questions per unit of study. Here's an example for a unit on the Reconstruction era following the Civil War:

EQ: "How does a country rebuild itself after Civil War?"

Potential focus areas to teach students as they answer the question:

State versus Federal government rights and responsibilities, the economic state of the country at the time, the extent of resources left in the country after the war, the role of the military and industry, the effects of grassroots organizations established to help, the influence of the international scene at the time, public reaction to Lincoln's assassination, state secession, southern and northern resentment for one another, fallout from the Emancipation Proclamation

K.U.D. (Samples)

Know -- A prepositional phrase consists of a preposition, modifiers, and the object of the preposition.

Understand -- Energy is transferred from the sun to higher order animals via photosynthesis in the plant (producer) and the first order consumers that eat those plants. These animals are then consumed by higher order animals. When those animals die, the energy is transferred to the soil and subsequent plant via scavengers and decomposers. It's cyclical in nature."

Do -- When determining a percentage discount for a market item, students first change the percentage into a decimal by dividing by one hundred, then multiply the decimal and the item price. This amount is subtracted from the list price to determine the new, discounted cost of the item."

To Get Guidance on What is Essential and Enduring, Consult:

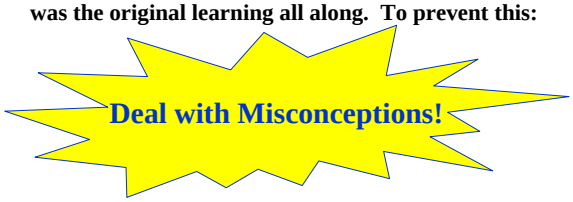
- standards of learning *(What skills and content within this standard will be necessary to teach students in order for them to demonstrate mastery of the standard?)*
- programs of study
- curriculum guides
- pacing guides
- other teacher's tests
- professional journals
- Mentor or colleague teachers
- textbook scope and sequence
- textbook end-of-chapter reviews and tests
- subject-specific on-line listservs
- professional organizations
- quiet reflection

Don't take time to assess unless you are going to take action with what you discover.

MEMORY (Continued)

Avoid Confabulation

The brain seeks wholeness. It will fill in the holes in partial learning with made-up learning and experiences, and it will convince itself that this was the original learning all along. To prevent this:



Consider:

- The Latin root of assessment is, "assidere," which means, "to sit beside."
- From Assessment expert, Doug Reeves:

"Too often, educational tests, grades, and report cards are treated by teachers as autopsies when they should be viewed as physicals."

Feedback vs Assessment

Feedback: Telling a person what they did – no evaluative component

Assessment: Gathering data in order to make a decision

***Greatest Impact on Student Success*:**

Formative feedback

Pre-Assessments

Used to indicate students' readiness for content and skill development. Used to guide instructional decisions.

Formative Assessments

These are in-route checkpoints, frequently done. They provide ongoing and clear feedback to students and the teacher, informing instruction and reflecting subsets of the essential and enduring knowledge. They are where successful differentiating teachers spend most of their energy – assessing formatively and providing timely feedback to students and practice.

Sample Formative Assessments

Topic: Verb Conjugation

Sample Formative Assessments:

- Conjugate five regular verbs.
- Conjugate five irregular verbs.
- Conjugate a verb in Spanish, then do its parallel in English
- Answer: Why do we conjugate verbs?
- Answer: What advice would you give a student learning to conjugate verbs?
- Examine the following 10 verb conjugations and identify which ones are done incorrectly.

Sample Formative Assessments

Topic: Balancing Chemical Equations

Formative Assessments:

- Define reactants and products, and identify them in the equations provided.
- Critique how Jason calculated the number of moles of each reactant.
- Balance these sample, unbalanced equations.
- Answer: What do we mean by balancing equations?
- Explain to your lab partner how knowledge of stoichiometric coefficients help us balance equations
- Prepare a mini-poster that explains the differences among combination, decomposition, and displacement reactions.

Summative Assessments

These are given to students at the end of the learning to document growth and mastery. They match the learning objectives and experiences, and they are negotiable if the product is not the literal standard. They reflect most, if not all, of the essential and enduring knowledge. They are not very helpful forms of feedback.

Tips for Planning Assessments

- **Correlate all formal assessments with objectives.**
- **While summative assessments may be large and complex, pre-assessments usually are not.**
- **Get ideas for pre- and formative assessments from summative assessments.**
- **Spend the majority of your time designing/emphasizing formative assessments and the feedback they provide.**

Tips for Planning Assessments – Planning Sequence

- **Design summative assessments first, then design your pre- and formative assessments.**
- **Give pre-assessments several days or a week PRIOR to starting the unit.**
- **Design your lesson plans AFTER reviewing pre-assessment data.**

How do we know an assessment assesses what we want it to assess?

- We do the task ourselves, then circle the portions of our responses that elicit the essential and enduring knowledge.
- We read the essential and enduring knowledge, then check off on the assessment where demonstration of that knowledge is required.
- We ask someone else to compare the lesson's essential and enduring knowledge to the assessment to make sure they're in sync.

Evaluating the Usefulness of Assessments

- What are your essential and enduring skills and content you're trying to assess?
- How does this assessment allow students to demonstrate their mastery?
- Is every component of that objective accounted for in the assessment?
- Can students respond another way and still satisfy the requirements of the assessment task? Would this alternative way reveal a student's mastery more truthfully?
- Is this assessment more a test of process or content? Is that what you're after?

Don't Confuse Correlation with Causation

- Correlation -- If teachers use best practices, students will learn and increase the likelihood of good performance on state tests.
- Causality -- Because we have state tests, our students are learning at high levels.

Don't Confuse Correlation with Causation

"It would be ludicrous to practice the doctor's physical exam as a way of becoming fit and well. The reality is the opposite: If we are physically fit and do healthy things, we will pass the physical. The separate items on the physical are not meant to be taught and crammed for; rather, they serve as indirect measures of our normal healthful living. Multiple-choice answers correlate with more genuine abilities and performance; yet mastery of those test items doesn't cause achievement."

-- P. 132, *Understanding By Design*

Clear and Consistent Evidence

We want an accurate portrayal of a student's mastery, not something clouded by a useless format or distorted by only one opportunity to reveal understanding.

Differentiating teachers require accurate assessments in order to differentiate successfully.

Be Substantive – Avoid Fluff

Fluff Assignment:

Make an acrostic poem about chromatography using each of its letters.

Substantive Assignment:

Explain how chromatography paper separates colors into their component colors, and identify one use of chromatography in a profession of your choosing.

Be Substantive – Avoid Fluff

Fluff Assignment:

Define the terms, "manifest destiny" and "imperialism" and use them properly in a sentence.

Substantive Assignment:

Identify one similarity and one difference between the concepts of manifest destiny and imperialism, then explain to what extent these two concepts are alive and well in the modern world.

Great differentiated assessment is never kept in the dark.

"Students can hit any target they can see and which stands still for them."

-- Rick Stiggins, Educator and Assessment expert

If a child ever asks, "Will this be on the test?".....we haven't done our job.

Successful Assessment is Authentic in Two Ways

- The assessment is close to how students will apply their learning in real-world applications.
- The assessment must be authentic to how students are learning.

Successful Assessments are Varied and They are Done Over Time

- Assessments are often snapshot-in-time, inferences of mastery, not absolute declarations of exact mastery
- When we assess students through more than one format, we see different sides to their understanding. Some students' mindmaps of their analyses of Renaissance art rivals the most cogent, written versions of their classmates.

Potential distractions on assessment day:

growling stomach, thirst, exhaustion, illness, emotional angst over: parents/friends/identity/tests/college/politics/birthday/sex/blogs/parties/sports/projects/homework/self-esteem/acne/holiday/report cards/future career/money/disease

It's reasonable to allow students every opportunity to show their best side, not just one opportunity.

Student Self-Assessment Ideas

- Make the first and last task/prompt/assessment of a unit the same, and ask students to analyze their responses to each one, noting where they have grown.
- Likert-scale surveys ("Place an X on the continuum: Strongly Disagree, Disagree, 'Not Sure, Agree, Strongly Agree) and other surveys. Use "smiley" faces, symbols, cartoons, text, depending on readiness levels.
- Self-checking Rubrics
- Self-checking Checklists
- Analyzing work against standards
- Videotaping performances and analyzing them
- Fill in the blank or responding to self-reflection prompts (see examples that follow)
- Reading notations (see examples that follow)

Student Self-Assessment Ideas

- "How Do I Know I Don't Understand?" Criteria: Can I draw a picture of this? Can I explain it to someone else? Can I define the important words and concepts in the piece? Can I recall anything about the topic? Can I connect it to something else we're studying or I know?

  [Inspired by Cris Tovani's book, *I Read It, But I Don't Get It,* Stenhouse, 2001]
- Asking students to review and critique previous work
- Performing in front of a mirror

Student Self-Assessment Ideas: Journal Prompts

I learned that….
I wonder why...
An insight I've gained is…
I've done the following to make sure I understand what is being taught…
I began to think of...
I liked…
I didn't like…
The part that frustrated me most was…
The most important aspect/element/thing in this subject is….
A noticed a pattern in….
I know I learned something when I…
I can't understand...
I noticed that...
I was surprised...
Before I did this experience, I thought that….
What if...
I was confused by...
It reminds me of...
This is similar to….
I predict…
I changed my thinking about this topic when…
A better way for me to learn this would be…
A problem I had and how I overcame it was…
I'd like to learn more about…

Additional Differentiated Instruction Strategies

- **Use Interactive Notebooks: Students record information and skills they learn, then make personal responses to their learning, followed by teachers responding to students' explorations. The notebook contains everything that is "testable" from the lessons, including handouts, charts, graphics, discussion questions, essays, and drawings. In addition to teachers' insights into students' thinking, the notebooks provide students themselves with feedback on their own learning.**

  ***Notebook Know-How* by Aimee Bruckner (2005) (www.stenhouse.com)**
  http://interactivenotebook.jot.com/WikiHome
  www.historyalive.com (from the Teachers' Curriculum Institute)
  http://pages.prodigy.net/wtrucillo/interactive_notebook

Portfolios

Portfolios can be as simple as a folder of collected works for one year or as complex as multi-year, selected and analyzed works from different areas of a student's life. portfolios are often showcases in which students and teachers include representative samples of students' achievement regarding standards and learning objectives over time. They can be on hardcopy or electronic, and they can contain non-paper artifacts as well. They can be places to store records, attributes, and accomplishments of a student, as well as a place to reveal areas in need of growth. They can be maintained by students, teachers, or a combination of both. Though they are stored most days in the classroom, portfolios are sent home for parent review at least once a grading period.

Guiding Questions for Rubric Design:

- Does the rubric account for everything we want to assess?
- Is a rubric the best way to assess this product?
- Is the rubric tiered for this student group's readiness level?
- Is the rubric clearly written so anyone doing a "cold" reading of it will understand what is expected of the student?
- Can a student understand the content yet score poorly on the rubric? If so, why, and how can we change the rubric to make sure it doesn't happen?

Guiding Questions for Rubric Design:

- Can a student understand very little content yet score well on the rubric? If so, how can we change that so it doesn't happen?
- What are the benefits to us as teachers of this topic to create a rubric for our students?
- How do the elements of this rubric support differentiated instruction?
- What should we do differently the next time we create this rubric?

"Metarubric Summary"

To determine the quality of a rubric, examine the:

- Content -- Does it assess the important material and leave out the unimportant material?
- Clarity -- Can the student understand what's being asked of him, Is everything clearly defined, including examples and non-examples?
- Practicality -- Is it easy to use by both teachers and students?
- Technical quality/fairness -- Is it reliable and valid?
- Sampling -- How well does the task represent the breadth and depth of the target being assessed?

(p. 220). Rick Stiggins and his co-authors of Classroom Assessment for Student Learning (2005)

Designing a Rubric

1. Identify the essential and enduring content and skills you will expect students to demonstrate. Be specific.
2. Identify what you will accept as acceptable evidence that students have mastered content and skills. This will usually be your summative assessments and from these, you can create your pre-assessments.
3. Write a descriptor for the highest performance possible.

Holistic or Analytic?

Task: Write an expository paragraph.

- Holistic: One descriptor for the highest score lists all the elements and attributes that are required.
- Analytic: Create separate rubrics (levels of accomplishment with descriptors) within the larger one for each subset of skills, all outlined in one chart. Examples for the paragraph prompt: Content, Punctuation and Usage, Supportive Details, Organization, Accuracy, and Use of Relevant Information.

Holistic or Analytic?

Task: Create a drawing and explanation of atoms.

- Holistic: One descriptor for the highest score lists all the features we want them to identify accurately.
- Analytic: Create separate rubrics for each subset of features –
  - Anatomical Features: protons, neutrons, electrons and their ceaseless motion, ions, valence
  - Periodic Chart Identifiers: atomic number, mass number, period
  - Relationships and Bonds with other Atoms: isotopes, molecules, shielding, metal/non-metal/metalloid families, bonds – covalent, ionic, and metallic.

Designing a Rubric

4. Determine the label for each level of the achievement. Consider using three, four, or six levels instead of five.

Examples of successful rubric descriptor labels:

- Proficient, capable, limited, poor
- Sophisticated, mature, good, adequate, developing, naïve
- Exceptional, strong, capable, developing, beginning, emergent
- exceeds standard, meets standard, making progress, getting started, no attempt
- exemplary, competent, satisfactory, inadequate, unable to begin effectively, no attempt

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Designing a Rubric

Caution: Descriptor terms need to be parallel; it's important to keep the part of speech consistent. Use all adjectives or all adverbs, not a mixture of parts of speech.

Example of Poorly Done Scale:

Top, adequately, average, poorly, zero

Designing a Rubric

5. "Test drive" the rubric with real student products. Remember, there is no perfect rubric.

- Alternative: Focus on the highest performance descriptor, writing it out in detail, then indicate relative degrees of accomplishment for each of the other levels. For example, a 3.5 out of a 5.0 rubric would indicate adequate understanding but with significant errors in some places. The places of confusion would be circled for the student in the main descriptor for the 5.0 level.

Scale: Criteria:				

Scale refers to the numerical or one-word rating such as 4,3,2,1 or "Proficient, adequate, limited, poor." Criteria refers to the areas of assessment, such as craftsmanship, accuracy of information, reasoning skills, preparation, and presentation.

Samples of Tiered Tasks

Grade Level Task:

- **Draw and correctly label the plot profile of a novel.**

Advanced Level Tasks:

- **Draw and correctly label the general plot profile for a particular genre of books.**
- **Draw and correctly label the plot profile of a novel and explain how the insertion or deletion of a particular character or conflict will impact the profile's line, then judge whether or not this change would improve the quality of the story.**

Samples of Tiered Tasks

Early Readiness Level Tasks:

- **Draw and correctly label the plot profile of a short story.**
- **Draw and correctly label the plot profile of a single scene.**
- **Given a plot profile of a novel, correctly label its parts.**
- **Given a plot profile with mistakes in its labeling, correct the labels.**

Tiering

Common Definition -- Adjusting the following to maximize learning:

- **Readiness**
- **Interest**
- **Learning Profile**

Rick's Preferred Definition:

-- **Changing the level of complexity or required readiness of a task or unit of study in order to meet the developmental needs of the students involved (Similar to Tomlinson's "Ratcheting")**

Scaffolding -- Providing extended and direct support to students, then slowly pulling pieces of this support away until the student is autonomous regarding the skill or content

Tiering – Changing the level of complexity or required readiness of a task or unit of study in order to meet the developmental needs of the students involved

Tiering Assessments

Example -- Graph the solution set of each of the following:

1. $y > 2$ 2. $6x + 3y \leq 2$ 3. $-y < 3x - 7$

2. $6x + 3y \leq 2$
$3y \leq -6x + 2$
$y \leq -2x + 2/3$

x	y
0	2/3
3	-5 2/3

Given these two ordered pairs, students would then graph the line and shade above or below it, as warranted.

Tiering Assessments

For *early* readiness students:

- **Limit the number of variables for which student must account to one in all problems. (y > 2)**
- **Limit the inequality symbols to, "greater than" or, "less than," not, "greater then or equal to" or, "less than or equal to"**
- **Provide an already set-up 4-quadrant graph on which to graph the inequality**
- **Suggest some values for x such that when solving for y, its value is not a fraction.**

Tiering Assessments

For *advanced* readiness students:

- **Require students to generate the 4-quadrant graph themselves**
- **Increase the parameters for graphing with equations such as: $-1 \leq y \leq 6$**
- **Ask students what happens on the graph when a variable is given in absolute value, such as: $|y| > 1$**
- **Ask students to graph two inequalities and shade or color only the solution set (where the shaded areas overlap)**

Tiering Assessments -- Advice

- **Begin by listing every skill or bit of information a student must use in order to meet the needs of the task successfully. Most of what we teach has subsets of skills and content that we can break down for students and explore at length.**

Tiering Assessments -- Advice

- **Tier tasks by designing the full-proficiency version first, then design the more advanced level of proficiency, followed by the remedial or early-readiness level, as necessary.**

Tiering Assessments -- Advice

- **Respond to the unique characteristics of the students in front of you. Don't always have high, medium, and low tiers.**

Tiering Assessments -- Advice

- **Don't tier every aspect of every lesson. It's often okay for students to do what everyone else is doing.**

Tiering Assessments -- Advice

- **When first learning to tier, stay focused on one concept or task.**

To Increase (or Decrease) a Task's Complexity, Add (or Remove) these Attributes:

- **Manipulate information, not just echo it**
- **Extend the concept to other areas**
- **Integrate more than one subject or skill**
- **Increase the number of variables that must be considered; incorporate more facets**
- **Demonstrate higher level thinking, i.e. Bloom's Taxonomy, William's Taxonomy**
- **Use or apply content/skills in situations not yet experienced**
- **Make choices among several substantive ones**
- **Work with advanced resources**
- **Add an unexpected element to the process or product**
- **Work independently**
- **Reframe a topic under a new theme**
- **Share the backstory to a concept – how it was developed**
- **Identify misconceptions within something**

To Increase (or Decrease) a Task's Complexity, Add (or Remove) these Attributes:

- **Identify the bias or prejudice in something**
- **Negotiate the evaluative criteria**
- **Deal with ambiguity and multiple meanings or steps**
- **Use more authentic applications to the real world**
- **Analyze the action or object**
- **Argue against something taken for granted or commonly accepted**
- **Synthesize (bring together) two or more unrelated concepts or objects to create something new**
- **Critique something against a set of standards**
- **Work with the ethical side of the subject**
- **Work in with more abstract concepts and models**
- **Respond to more open-ended situations**
- **Increase their automacity with the topic**
- **Identify big picture patterns or connections**
- **Defend their work**

- **Manipulate information, not just echo it:**
  - **"Once you've understood the motivations and viewpoints of the two historical figures, identify how each one would respond to the three ethical issues provided."**
- **Extend the concept to other areas:**
  - **"How does this idea apply to the expansion of the railroads in 1800's?" or, "How is this portrayed in the Kingdom Protista?"**
- **Work with advanced resources:**
  - **"Using the latest schematics of the Space Shuttle flight deck and real interviews with professionals at Jet Propulsion Laboratories in California, prepare a report that…"**
- **Add an unexpected element to the process or product:**
  - **"What could prevent meiosis from creating four haploid nuclei (gametes) from a single haploid cell?"**

- **Reframe a topic under a new theme:**
  - **"Re-write the scene from the point of view of the antagonist," "Re-envision the country's involvement in war in terms of insect behavior," or, "Re-tell Goldilocks and the Three Bears so that it becomes a cautionary tale about McCarthyism."**
- **Synthesize (bring together) two or more unrelated concepts or objects to create something new:**
  - **"How are grammar conventions like music?"**
- **Work with the ethical side of the subject:**
  - **"At what point is the Federal government justified in subordinating an individual's rights in the pursuit of safe-guarding its citizens?"**

The Equalizer

(Carol Ann Tomlinson)

Foundational ---------- Transformational
Concrete ---------- Abstract
Simple ---------- Complex
Single Facet/fact ---------- Multi-Faceted/facts
Smaller Leap ---------- Greater Leap
More Structured ---------- More Open
Clearly Defined ---------- Fuzzy Problems
Less Independence ---------- Greater Independence
Slower ---------- Quicker

Frank William's Taxonomy Examples

- **In four minutes, give me as many different equations as you can that use exponents only and to which the answer is 12.**
- **Categorize the given set of objects in at least three ways, with no one category consisting of less than three objects. Once completed, re-categorize the objects in at least three new ways.**
- **Design a simple or complex machine that replicates the motions of an insect's appendages.**
- **Take any idea you've heard today and make it better.**

William's Taxonomy

Fluency
Flexibility
Originality
Elaboration
Risk Taking
Complexity
Curiosity
Imagination

William's Taxonomy Examples (in Sequence Order)

- **Choose one of the simple machines we've studied (wheel and axle, screw, wedge, lever, pulley, and inclined plane), and list everything in your home that uses it to operate, then list at least two items in your home that use more than one simple machine in order to operate.**
- **Design a classification system for the items on your list.**
- **Define life and non-life.**
- **What inferences about future algae growth can you make, given the three graphs of data from our experiment?**

William's Taxonomy Examples (in Sequence Order)

- **Write a position statement on whether or not genetic engineering of humans should be funded by the United States government.**
- **Analyze how two different students changed their lab methodology to prevent data contamination.**
- **What would you like to ask someone who has lived aboard the International Space Station for three months about living in zero-gravity?**
- **Imagine building an undersea colony for 500 citizens, most of whom are scientists, a kilometer below the ocean's surface. What factors would you have to consider when building and maintaining the colony and the happiness of its citizens?**

Cubing

Ask students to create a 3-D cube out of foam board or posterboard, then respond to one of these prompts on each side:

Describe it, Compare it, Associate it, Analyze it, Apply it, Argue for it or against it.

We can also make higher and lower-level complexity cubes for varied groups' responses.

R.A.F.T.S.

R = Role, A = Audience, F = Form, T = Time/Topic, S = Strong Adverb or Adjective (to set tone)

Students take on a role, work for a specific audience, use a particular form to express the content, and do it within a time reference, such as pre-Civil War, 2025, or ancient Greece.

Sample assignment chosen by a student:

A candidate for the Green Party (role), trying to convince election board members (audience) to let him be in a national debate with Democrats and the Republicans. The student writes a speech (form) to give to the Board during the Presidential election in 2004 (time). Within this assignment, students use arguments and information from this past election with third party concerns, as well as their knowledge of the election and debate process. Another student could be given a RAFT assignment in the same manner, but this time the student is a member of the election board who has just listened to the first student's speech.

R.A.F.T.S.

Raise the complexity: Choose items for each category that are farther away from a natural fit for the topic . Example: When writing about Civil War Reconstruction, choices include a rap artist, a scientist from the future, and Captain Nemo.

Lower the complexity: Choose items for each category that are closer to a natural fit for the topic. Example: When writing about Civil War Reconstruction, choices include a member of the Freedmen's Bureau, a southern colonel returning home to his burned plantation, and a northern business owner

Learning Menus

Similar to learning contracts, students are given choices of tasks to complete in a unit or for an assessment. "Entrée" tasks are required, they can select two from the list of "side dish" tasks, and they can choose to do one of the "desert" tasks for enrichment.
(Tomlinson, *Fulfilling the Promise of the Differentiated Classroom,* 2003)

Tic-Tac-Toe Board

Geometry	**Summarize (Describe)**	**Compare (Analogy)**	**Critique**
A Theorem			
An math tool			
Future Developments			

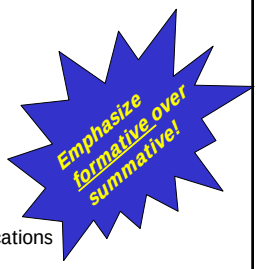
Change the Verb

Instead of asking students to *describe* how FDR handled the economy during the Depression, ask them to *rank* four given economic principles in order of importance as they imagine FDR would rank them, then ask them how President Hoover who preceded FDR would have ranked those same principles differently.

Analyze…	**Construct…**
Revise…	**Rank…**
Decide between…	**Argue against…**
Why did…	**Argue for…**
Defend…	**Contrast…**
Devise…	**Develop…**
Identify…	**Plan…**
Classify…	**Critique…**
Define…	**Rank…**
Compose…	**Organize…**
Interpret…	**Interview…**
Expand…	**Predict…**
Develop…	**Categorize…**
Suppose…	**Invent…**
Imagine…	**Recommend…**

Vary the Assessment Formats

- Skill demonstrations
- Portfolios
- Writings and Compositions
- Reflective analysis
- Artistic – Fine and Performing
- Short
- Tests and quizzes
- Projects
- Oral presentations
- Real-life and Alternative Applications
- Group tasks and activities
- Problem-solving
- Laboratory experiments



Summarization Pyramid

_____

_____

_____

_____

_____

_____

Great prompts for each line: *Synonym, analogy, question, three attributes, alternative title, causes, effects, reasons, arguments, ingredients, opinion, larger category, formula/sequence, insight, tools, misinterpretation, sample, people, future of the topic*

One-Word Summaries

"The new government regulations for the meat-packing industry in the 1920's could be seen as an opportunity…,"

"Picasso's work is actually an argument for…."

"NASA's battle with Rockwell industries over the warnings about frozen temperatures and the O-rings on the space shuttle were trench warfare…."

Basic Idea: Argue for or against the word as a good description for the topic.

Questions to Consider when Tiering Assessments

- **Are we supposed to hold them accountable for everything?**
- **Are we just taking things off their plate, and is that okay?**
- **How do we assign equitable grades when we tier?**
- **When we tier, are we just saying that we're making things easier or harder?**
- **Do we let all students try the more complex assessments if they want to do so, even if they're not ready?**
- **Do we let advanced students "get by" by doing less complex work occasionally? Can students occasionally negotiate the level at which they are asked to perform?**
- **How do I manage the classroom when I'm tiering?**

Designing Good Test Prompts

Question #13: What is the best way to describe the Renaissance Age?

A. all of the below accept “d”
B. a period in which all the great artists lived
C. an age of widespread feudalism and rampant religious “correctness”
D. an age that turned scientific and artistic pursuits toward mankind instead of the church
E. an age of rebirth
F. none of the above

Use a Variety of Prompts

Mix traditional and not-so-traditional questions and prompts.

- Traditional items include: matching, true/false, fill in the missing word, multiple choice, definition, essay, and short answer.
- Not-so-Traditional items include: analogies, drawings, diagrams, analyzing real-life applications, critiquing others’ performance or responses, demonstration or performance, integrating more than one topic, exclusion brainstorming, deciphering content clues that, when put together, reveal a secret message or conclusion.

Use a Variety of Prompts

Turn more traditional test questions into innovative versions. For example, “Define the Latin word root, terra,” can become: “In the spaces below, write what you think each real or nonsense word basically means:

- Terratempo -- _____
- Zotox -- _____
- Noveloc -- _____
- Lithjector -- _____
- Sophipsychia -- _____

Include items in which students must generate information or purposefully manipulate information.

Forced Choice vs Constructed Response

- Forced choice items are questions and prompts that require students to choose from responses provided by the teacher such as true/false, matching, and multiple choice items. The student does not need to generate the information himself.
- Constructed response items are questions and prompts in which students must generate the information themselves and apply it in the manner in which it is requested. Examples of constructed responses include opportunities to interpret graphs, short essays, short answer, drawing, making analogies, mindmaps, or flowcharts.

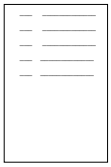
Make It Efficient for Students

- Provide a “T” or an “F” for students to circle on True/False questions. This way there are no questions about how to interpret sloppily formed T’s and F’s, and it’s not as tiring.

Make It Efficient for Students

- For matching activities, write the definitions on the left or at the top and list the words from which they are to match their answers on the right or the bottom.

Matching Problem:
(Tiring/Confusing)



Solution:
(Preferred/Efficient)

Make It Efficient for Students

- Keep matching items on the same page. Flipping pages back and forth gets confusing.
- Keep matching item portions of tests to about eight items or less. Beyond eight, it becomes a bit of an endurance test.

Make It Efficient for Students

- Keep the blanks in Fill-in-the-blank items close to the end of the sentence or stem. This prevents reading comprehension issues. In addition, any omitted words that students have to figure out such as we might use in a cloze or fill-in-the-blank exercise should be significant (p. 221, Taylor and Nolen)
- Highlight key words such as three, most, least, and not so students don't lose sight of the expectation while forming a response. ***This isn't making it easier; it's making sure the student reveals what he knows.***

Include Common Errors in Choices

Multiple-Choice Items: Include Common Errors to Diagnose Learning Problems

1. 1.2 + .23 = _____

a. 3.5

b. .35

c. 1.43

d. 14.3

One to Keep, One to Grade
(Immediate Feedback)

Name: _____	**Name:** _____
Date: _____	**Date:** _____
1) A B C D E ____	**1) A B C D E ____**
2) A B C D E ____	**2) A B C D E ____**
3) A B C D E ____	**3) A B C D E ____**
4) A B C D E ____	**4) A B C D E ____**
5) A B C D E ____	**5) A B C D E ____**

Avoid Confusing Negatives

- Avoid using response choices that are likely to lead to students stumbling over wording or logic: "All of the above except C and E," "Which of these is NOT associated with…," and, "None of these." Any errors on these items are related more to reading, logical thinking, and worrisome nerves than students' understanding of content.
- Note: In the last two years of high school, dealing with such negative responses is less confusing, and can reveal accurate information about our students' understanding of topics.

Make Prompts Clear

"The less students have to guess the more they can achieve."

(Dr. W. James Popham, *Test Better, Teach Better)*

- Inappropriate Test Prompt:
  - "Describe the Renaissance"

Appropriate Test Prompt: "In 250 to 400 words, describe the rise of intellectual life during the Renaissance. Include in your discussion of that rise a brief statement of the impact of any five of the following events and people:

- translating the Bible to English
- the development of the Gutenberg Press
- Leonardo da Vinci or any one of the inventors/artists of the period
- Shakespeare, Cervantes and any one of the author/poets of the period,
- the works of any one of the Humanist philosophers (Machiavelli and Thomas More, among others)
- the Reformation
- European exploration and expansion to the rest of the world (Cortez, Magellan, Pizarro, the Mayflower)

This essay is worth 30 points. Each of the five aspects whose impact on intellectual life you describe successfully is worth 5 points. The remaining 5 points will be earned by following proper essay format, including a well-crafted introduction and conclusion. This should take no more than 30 minutes."

Reconsider Timed-Tests

"Timed tests are great underminers… no one professionally would ever try to collapse their knowledge into one hour of intense performance."

-- Author and Grading expert, Ken O'Connor

Put some fun into your test questions

Not-much-fun: "A community playground needs enough small gravel to fill the swing set area with dimensions, 40' X 65' X 1', how many cubic feet of gravel will they need to purchase?"

Fun: "Abdul is building a rectangular, practice hockey rink for his championship-winning, Mighty Anoles, hockey team. How much water must he pour into the containing walls and then freeze, if the frozen ice is 1.5 times the volume of the liquid water, and the dimensions are 100' X 50' X 2'?"

Fun: On an anatomy test: "Did you find the Humerus in this test-erus?" "This is just the tibia the iceberg," and, "Grades will be announced to-marrow."

Put some fun into your test questions

Not-much-fun: "Describe the main character of the novel."

Fun: "Create the lyrics to two verses of a Green Day song that accurately portray what the main character is feeling during this chapter."

Not-much-fun: "For what did Frederick Douglas fight?"

Fun: "Give two similarities and two differences between the civil rights policies of our current President and the principles put forth by Frederick Douglas."

Keep it Short

Two or three will do.

"If I had more time,
I would have written less."
-- Pascal

Consider one-page writings
over multi-page writings.

Make All True/False Statements One or the Other

Poorly worded:

"True or False: We are able to breathe on earth because plants produce oxygen and we exhale carbon dioxide."

Well-worded:

"True or False: The only factor impacting our ability to breathe on earth is the abundance of oxygen-producing plants located here."

Don't Give Away the Answer

Unsucessful test prompt:

The picture above depicts an example of an:
- A. peninsula
- B. guyot
- C. plateau
- D. estuary

Successful test Prompt:

The picture above depicts an example of:
- A. a peninsula
- B. a guyot
- C. a plateau
- D. an estuary

Make Sure Questions Assess What you Want to Assess

- Carlo had three oranges.
- The U.S. government has $83,000,000 to spend on military planes. Each one costs $11,000,000. If they want to buy seven of them, will they have enough money?
- If shirts are normally $14.95, but today they are 30% off and the state sales tax is 5%, will you be able to buy three of them with the $36 in your wallet?

Format tests efficiently for grading

- Ask students to record their answers on an answer sheet.
- Make multiple-choice, matching, or true/false questions have responses that create a pattern when recorded.

  Examples: "dabadadabadaba" "TFFTTFFFT"
  Non-example: "TFTFTFTFTFTF"

Use Smaller, Multiple Tests over Time instead of Large, One-Shot Tests

- That one day of the testing can have a zillion factors negatively impacting students' performances.
- The more curriculum we put on a test, the less reliable the grade from that test is in providing specific feedback to students and teachers regarding its content.
- If students are asking us to hurry up and give them the test before they forget the material, are we teaching for long-term learning?

Two Special Questions

1. "What did you think would be asked on this test but was not?" and as appropriate, provide the follow-up prompt: "How would you answer that question?"
2. Include a question that at first read sounds reasonable, but upon closer examination, is impossible to answer.

Tier Questions as Warranted

- Level 1 Test, Level 2 Test
- Record objectives being assessed at the top of each version
- Provide one large test with all the questions, then circle the particular questions you want individual students to answer.
- Consider how to sequence test items:
  - 'Start with relatively easier questions early in the testing sequence then get progressively more difficult?
  - 'Mix up the challenge index by placing test items requiring complex responses early in the test and spacing them evenly throughout the test, rather than lumping them all at the end?

Reminders

- Increasing or decreasing vigor in testing does not mean changing the number of tests, test items, or the difficulty of test items. It refers to increasing or decreasing the complexity or challenge of the required responses – tiering.
- Make sure assessment formats don't impede students' successful demonstration of mastery.
- Level assessments for students' readiness. Students won't learn any faster or better by being pushed to respond to assessments that are not geared for their developmental level.
- Design tests so we can get feedback to students in a timely manner.
- No "frowny faces" next to low grades.
- Consider focusing on only two areas in written assessments.

"I was put on earth by God
in order to accomplish a certain number of things…
right now I am so far behind…
I will never die!"

-Calvin and Hobbes