Understanding by Design

Stage 3: Teaching for Understanding

presented by
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Teaching and Learning for Understanding

What does it mean to teach and learn for understanding?

We have found it useful to consider this question by examining three distinct, yet interrelated, learning goals: 1) acquisition of new information and skill, 2) making meaning of that content (i.e., coming to understand), and 3) transfer of one’s knowledge (i.e., applying one’s learning to new situations).

These three categories link directly to elements identified in Understanding by Design. In Stage 1 teachers specify the knowledge and skill that they intend students to acquire. They also decide upon the “big ideas” they want students to come to understand and develop essential questions to help students make meaning of those ideas. In Stage 2, teachers develop performance tasks requiring transfer as evidence that students understand and can apply their knowledge in authentic contexts.
What is Fair?

Who won this year’s 7th grade race around the campus?

Every year at Birdsong Middle School, there is an all-class race. Below are the results for the 7th grade (which is made up of four different classes of 7th grade). But there is a problem: no one agrees on who won! One person thinks Class C should win the trophy because they had the 1st runner overall in the race. Another person thinks Class D should win because they had 3 runners come in under 10th place. A third person says: just find the average. But a 4th person said: wait a minute – Class C had way more students in their class than Class D! Averages won’t be fair. A 5th person says: use the scoring system in Cross Country – just add up the place of finish of the top 5 and lowest total wins. A 6th person says – unfair! Some classes did well in the first few runners but poorly in the middle! Why should they win? Now, everyone is confused and arguing.

What is the most fair solution? Who should win the trophy? Your group, well-known in the school as a group of expert mathematicians (and widely known and respected for your sense of fairness) is being consulted as to who should win the trophy. What will you recommend and why?

<table>
<thead>
<tr>
<th>Class rank</th>
<th>Class A</th>
<th>Class B</th>
<th>Class C</th>
<th>Class D</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>4</td>
<td>6</td>
<td>1</td>
<td>2</td>
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<tr>
<td>2</td>
<td>9</td>
<td>7</td>
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<td>71</td>
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<td>73</td>
<td></td>
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<tr>
<td>20</td>
<td></td>
<td></td>
<td></td>
<td>74</td>
</tr>
</tbody>
</table>

Notes on the chart:
- The numbers in the chart, from 1 to 74 represent the place of finish of that runner. So, the overall race winner was from Class C, the number two runner overall was in Class D, etc.
- Class rank refers to the rank of finish place in that class, not the overall race. So, the first runner in class A was 4th overall in the race, the 2nd best runner in class A came in 9th overall, etc.
- The blanks reflect the fact that each of the 4 classes has a different number of students. Class D has 20 students, CLASS A has 19 students, etc.
Stage 3: Instruction and Learning Activities.

A = acquiring basic knowledge and skills  M = making meaning  T = transfer

MATHEMATICS Unit on Measures of Central Tendency

Essential Question: *What is fair - and how can mathematics help us answer the question?*

1. Introduce and discuss the essential question, first part - What is ‘fair’? What is ‘unfair’?  M

2. Introduce the 7th grade race problem. Which 7th-grade class section won the race? What is a fair way to decide? Small-group inquiry, followed by class discussion of answers.  M

3. Teacher informs students about the mathematical connections derived from the problem analysis, and lays out the unit and its culminating transfer task.  A

4. In small-group jigsaw, students share their answers to the INQUIRY sheet, then return to their team to generalize from all the small-group work. Discuss other examples related to the concept of “fairness” such as the following.  M
   - What is a fair way to rank many teams when they do not all play each other?
   - What is a fair way to split up limited food among hungry people of very different sizes?
   - When is it ‘fair’ to use majority vote and when is it not fair? What might be fairer?
   - Is it fair to have apportioned Representatives based on a state’s population, yet have two Senators from each state irrespective of their size? What might be fairer?
   - What are fair and unfair ways of representing how much money the “average” worker earns, for purposes of making government policy?

5. Teacher connects the discussion to the next section in the textbook - measures of central tendency (mean, median, mode, range, standard deviation).  A

6. Students practice calculating each type of measure.  A

7. Teacher gives quiz on mean, median, mode from textbook.  A

8. Teacher leads a review and discussion of the quiz results.  A M

9. Group task worked on in class: What is the fairest possible grading system for schools to use?  M T

10. Individuals and small teams present their grading policy recommendations and reasons.  M T

11. Culminating transfer task: Each student determines which measure (mean, median or mode) should be used to calculate their grade for the marking period and write a note to the teacher showing their calculations and explaining their choice.  T

12. Students write a reflection on the essential question.
## Stage 1 – Desired Results

<table>
<thead>
<tr>
<th>Established Goals</th>
<th>Transfer</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Students will know...</strong></td>
<td><strong>Students will be able to independently use their learning to...</strong></td>
</tr>
<tr>
<td><strong>What kinds of long-term, independent accomplishments are desired?</strong></td>
<td></td>
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</tbody>
</table>

<table>
<thead>
<tr>
<th>Meaning</th>
<th>Acquisition of Knowledge &amp; Skill</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>UNDERSTANDINGS</strong></td>
<td><strong>ESSENTIAL QUESTIONS</strong></td>
</tr>
<tr>
<td><em>Students will understand that...</em></td>
<td><em>Students will keep considering...</em></td>
</tr>
<tr>
<td><strong>What specifically do you want students to understand?</strong></td>
<td><strong>What thought-provoking questions will foster inquiry, meaning making, and transfer?</strong></td>
</tr>
<tr>
<td><strong>What inferences should they make?</strong></td>
<td></td>
</tr>
<tr>
<td><strong>Students will know...</strong></td>
<td><strong>Students will be skilled at...</strong></td>
</tr>
<tr>
<td><strong>What facts and basic concepts should students know and be able to recall?</strong></td>
<td><strong>What discrete skills and processes should students be able to use?</strong></td>
</tr>
</tbody>
</table>

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## Stage 2 – Evidence

<table>
<thead>
<tr>
<th>Coding</th>
<th>Evaluative Criteria</th>
<th>Assessment Evidence</th>
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</thead>
<tbody>
<tr>
<td></td>
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</tbody>
</table>

**Performance Task(s)**  
Students will show they really understand by...

**How will students demonstrate their understanding (meaning-making and transfer) through complex performance?**

Consider the six facets when developing assessments of understanding. Optional: Use the G.R.A.S.P.S. elements to frame an authentic context for the task(s).

**Other Evidence**  
Students will show they have achieved Stage 1 goals by...

What other evidence will you collect to determine whether Stage 1 goals were achieved?
Stage 3 – Learning Plan

What pre-assessments will you use to check students’ prior knowledge, skill levels and potential misconceptions?

Are all three types of goals (acquisition, meaning, and transfer) addressed in the learning plan?

Does the learning plan reflect principles of learning and best practices?

Is there tight alignment with Stages 1 and 2?

Is the plan likely to be engaging and effective for all students?

While detailed lesson plans are not expected here, you should include sufficient information so that another teacher who is familiar with the unit’s content could understand and follow the basic learning plan.

Optional: Use the column on the left to code your learning activities; e.g., their alignment with Stage 1 elements, T-M-A, or W.H.E.R.E.T.O.
## Stage 1 – Desired Results

### Established Goals

**National Driver Development Standards**

| G1 | Demonstrate a working knowledge of rules, regulations and procedures of operating an automobile |
| G2 | Use visual search skills to obtain correct information and make reduced-risk decisions for effective speed and position adjustments |
| G3 | Interact with other users within the Highway Transportation System by adjusting speed, space, and communications to avoid conflicts and reduce risk |
| G4 | Demonstrate balanced vehicle movement through steering, braking, and accelerating in a precise and timely manner throughout a variety of adverse conditions |

**Source:** American Driver & Traffic Safety Association

### Transfer

*Students will be able to independently use their learning to...*

- T1 drive courteously and defensively without accidents or needless risk.
- T2 anticipate and adapt their knowledge of safe and defensive driving to various traffic, road and weather conditions.

### Meaning

#### UNDERSTANDINGS

*Students will understand that...*

- **U1** Defensive driving assumes that other drivers are not attentive and that they might make sudden or ill-advised moves.
- **U2** The time needed to stop or react is deceptively small, thus requiring constant anticipation & attention.
- **U3** Effective drivers constantly adapt to the various traffic, road, & weather conditions.

#### ESSENTIAL QUESTIONS

*Students will keep considering...*

- **Q1** What must I anticipate and do to minimize risk and accidents when I drive?
- **Q2** What makes a courteous and defensive driver?

### Acquisition of Knowledge & Skill

*Students will know...*

- **K1** the driving laws of their state, province or country
- **K2** rules of the road for legal, courteous and defensive driving
- **K3** basic car features and functions

*Students will be skilled at...*

- **S1** procedures of safe driving under varied traffic, road & weather conditions
- **S2** signalling/communicating intentions
- **S3** quick response to surprises
- **S4** parallel parking
## Stage 2 – Evidence

<table>
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<tr>
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<th>Evaluative Criteria</th>
<th>Assessment Evidence</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td><strong>PERFORMANCE TASK(S)</strong></td>
<td><em>Students will show they really understand by...</em></td>
</tr>
<tr>
<td></td>
<td>1. <em>Task</em>: Drive locally (e.g., from home to school and back), with adult supervision. The goal is to demonstrate skillful, responsive, and defensive driving under real-world conditions.</td>
<td></td>
</tr>
<tr>
<td></td>
<td>2. <em>Task</em>: Same task as #1 but during rainy conditions.</td>
<td></td>
</tr>
<tr>
<td></td>
<td>3. <em>Task</em>: Same task as #1 but in rush hour traffic.</td>
<td></td>
</tr>
<tr>
<td></td>
<td>4. Booklet: Develop an illustrated booklet for other young drivers to help them understand the “big ideas” of safe and effective driving.</td>
<td></td>
</tr>
<tr>
<td></td>
<td><strong>OTHER EVIDENCE</strong></td>
<td><em>Students will show they have achieved Stage 1 goals by...</em></td>
</tr>
<tr>
<td></td>
<td>5. Self-assess your driving and parking in Tasks 1 - 3 in terms of <em>courteous &amp; defensive</em>. Discuss adjustments made.</td>
<td></td>
</tr>
<tr>
<td></td>
<td>6. Observation of student driver while using the simulator and while driving.</td>
<td></td>
</tr>
<tr>
<td></td>
<td>7. Written test required for getting a license.</td>
<td></td>
</tr>
<tr>
<td></td>
<td>8. Driving (road) test required for getting a license.</td>
<td></td>
</tr>
</tbody>
</table>

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Stage 3 – Learning Plan

Pre-assessment of driving knowledge, skill, understandings, and attitudes using surveys and simulators.

Learning Events

Driving instruction is geared toward developing increasing levels of autonomous proficiency (i.e., transfer). Whether beginning with the driving simulator in the classroom or to actual driving on roads, the following sequence (a gradual release of responsibility) is employed:

- The skill is introduced and modeled.
- It is practiced and applied with overt instructional guidance.
- It is practiced correctly and consistently without any prompting.
- It is applied correctly and consistently without any prompting.

Make meaning: Students are prompted to reflect upon and generalize about the driving experience. Written self-assessment is required after each virtual and real road experience. Expert driving is modeled via video and the driving instructor, and the driver generalizes about good vs. not so good driving.

Seperate skill development and real-world practice in:

- Wet Roads
- Dry Roads
- Darkness Daylight
- Highway
- City
- Country

Direct Instruction on key laws and rules of the road.

ACQUIRE SKILLS & FACTS and use them in context: Experience and equipping via direct instruction and video simulators is provided in terms of how to handle: Wet Roads, Dry Roads, Darkness Daylight, Highway, City, Country. Direct Instruction on key laws and rules of the road, and practice tests are used.

Separate skill development and real-world practice in:

- Use of Speed Controls & Instruments
- Starting, Moving and Stopping
- Reversing
- Parking
- Mirrors
- Signals
- Yellow, Red
- Emergency Stopping
- Weather Conditions
- Rules & Laws

Failure to check mirrors and peripheral vision
- not accurately responding during changes in road conditions
- not perceiving speed of oncoming cars during merges and turns

Pre-assessment of driving knowledge, skill, understandings, and attitudes using surveys and simulators.

Progress Monitoring

Car Check
Circles
Anticipation & Planning Ahead
Safety Checks
Pedestrian Crossings
Use of Speed Controls & Instruments
Highways
Other Traffic
Intersections
Emergency Stopping
Weather Conditions
Reversing
Parking
Security

Formative assessment and informal feedback by instructor as student tries to apply skills learned while driving off-road.

Look for these common misconceptions and skill deficits:

- Not accurately responding during changes in road conditions
- Not perceiving speed of oncoming cars during merges and turns
- Failure to check mirrors and peripheral vision
- Not accurately responding during changes in road conditions
- Not perceiving speed of oncoming cars during merges and turns

Student will be equipped for success at transfer, meaning-making, and acquisition by:

- Pre-assessment of driving knowledge, skill, understandings, and attitudes using surveys and simulators.
- Achievement of learning goals and objectives.
- Mastery of driving skills and rules of the road.
- Development of autonomous proficiency (transfer).
- Application of driving skills in real-world situations.
- Generalization of driving skills to different driving environments.
- Reflection upon and generalization about the driving experience.
- Mastery of key laws and rules of the road.
- Ability to handle different driving conditions.

Code Key: T = Transfer, M = Meaning-making, A = Acquisition
# Stage 1 – Desired Results

## Established Goals

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<thead>
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<tr>
<td>Students will understand that...</td>
<td>Students will keep considering...</td>
</tr>
<tr>
<td>- History consists of &quot;his&quot; story and &quot;her&quot; story.</td>
<td>- Whose &quot;story&quot; is it?</td>
</tr>
<tr>
<td>- There are often different perspectives on what happened in the past.</td>
<td>- How do we know what really happened in the past?</td>
</tr>
<tr>
<td>- One's experiences influence one's view of history. Race and gender influence historical interpretation.</td>
<td>- What roles do race and gender play in creating and interpreting history?</td>
</tr>
<tr>
<td>- Photographs can reveal but also mislead.</td>
<td>- What can a photograph tell us about a society?</td>
</tr>
<tr>
<td>- Critical reading and viewing is necessary to recognize incomplete or biased accounts of the past.</td>
<td>- How should we &quot;read&quot; an historical account, artifact or photograph? Can we trust them?</td>
</tr>
</tbody>
</table>

## Transfer

Students will be able to independently use their learning to...

- Recognize that history involves interpretation of past events, and that historical interpretations typically reflect a singular perspective, an incomplete account, or deliberate bias.
- Critically evaluate historical accounts.

## Meaning

<table>
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</tbody>
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## Acquisition of Knowledge & Skill

<table>
<thead>
<tr>
<th>Students will know...</th>
<th>Students will be skilled at...</th>
</tr>
</thead>
<tbody>
<tr>
<td>the basic history of early 20th-century Virginia, including the:</td>
<td>- describing and sequencing historical events</td>
</tr>
<tr>
<td>- decline of agricultural society</td>
<td>- comparing primary and secondary sources</td>
</tr>
<tr>
<td>- growth of industrialization</td>
<td>- interpreting ideas from different perspectives</td>
</tr>
<tr>
<td>- move from rural to urban society</td>
<td>- critically examining historical photographs</td>
</tr>
<tr>
<td>- impact of segregation (e.g., Jim Crow laws)</td>
<td>- conducting 4-part art criticism process</td>
</tr>
<tr>
<td>- impact of desegregation</td>
<td></td>
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</tbody>
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<tr>
<td></td>
<td></td>
<td>Students will show they really understand by...</td>
</tr>
<tr>
<td></td>
<td></td>
<td>(framed using GRASPS)</td>
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<tr>
<td></td>
<td></td>
<td>The Virginia Historical Society has invited you to prepare an exhibit to inform the public about significant transitions that occurred in early 20th-century Virginia society and show various points of view through which this history can be seen. The exhibit will be presented using historical photographs with commentaries.</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Your task is to choose two significant events or transition periods from early 20th-century Virginia.* Then, select several photographs that represent each event from two or more perspectives. Prepare a commentary for each selected photograph in which you explain:</td>
</tr>
<tr>
<td></td>
<td></td>
<td>1. the significance of the event shown (i.e., how it reveals an important transition occurring in early 20th-century Virginia); AND</td>
</tr>
<tr>
<td></td>
<td></td>
<td>2. the perspective or point of view of the photograph</td>
</tr>
<tr>
<td></td>
<td></td>
<td>* Students have access to archives of historical photos at the following websites:</td>
</tr>
<tr>
<td></td>
<td></td>
<td><a href="http://cass.etsu.edu/archives/photoapp.htm">http://cass.etsu.edu/archives/photoapp.htm</a></td>
</tr>
<tr>
<td></td>
<td></td>
<td><a href="http://www.vcdh.virginia.edu/afam/raceandplace/index.htm">http://www.vcdh.virginia.edu/afam/raceandplace/index.htm</a></td>
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<td></td>
<td>OTHER EVIDENCE  Students will show they have achieved Stage 1 goals by...</td>
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<tr>
<td></td>
<td></td>
<td>• Quizzes on historical facts and sequence of events</td>
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<tr>
<td></td>
<td></td>
<td>• “Reading” art and 4-part criticism worksheets</td>
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<tr>
<td></td>
<td></td>
<td>• Historical analysis sheet (perspectives)</td>
</tr>
<tr>
<td></td>
<td></td>
<td>• Series of journal entries - reflections on events/time periods from different perspectives (race, gender, economic status)</td>
</tr>
</tbody>
</table>

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<table>
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<tr>
<th>Stage 3 – Learning Plan</th>
</tr>
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<tbody>
<tr>
<td><strong>Coding</strong></td>
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<td><strong>Learning Events</strong></td>
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</table>

**Student will be equipped for success at transfer, meaning-making, and acquisition by...**

**INTERPRET PHOTOS**
Distribute letter from Historical Society (task 2) and rubric. Present photo collection. Present students with an engaging photo of people in early 20th century Virginia, depicting a certain event or time of social transition (ex. segregated restaurant/white patrons). Ask them to create a caption that might accompany the photo in a magazine of the time period. Students share their captions.

**M**
Lead a Socratic Seminar on a photo. In middle of seminar, present another photo showing same 'event' with different perspective (segregated restaurant/African-American patrons). Continue seminar, now comparing two photos.

**M**
Introduce a representative photo and one with another point of view. Lead students in 4-part art criticism process (describe, interpret, analyze, evaluate), which will get them into the history depicted, the human subject, what the photographer wanted us to see, ...

**T**
Complete Historical Analysis sheet (looking at stakeholders' perspectives and outcomes of event)

**M**
Compare and contrast photo with text information (Venn diagram - primary/secondary sources). Continue these comparisons with most photos.

**M**
Self-evaluation. Exhibit display ("gallery walk"). Analysis of peer's selections.

**M**
Daily journal entries. Prompt: Reflect on the event, considering different perspectives and your own personal connection. Share in small groups.

**ACQUIRE KNOWLEDGE ABOUT AND FOR THE UNIT**
Post and discuss essential questions and understandings.
Introduce Performance Task 1: Take a Walk in Someone Else’s Shoes. Discuss rubric.
Present and discuss exemplar for Task 2. Discuss rubric. Time to begin task.
Facilitate SQ3R of textbook (and/or other resource) information regarding topic.
Four Types of Goals

Consider these four goal types – **Knowledge** (K), **Skill** (S), **Understanding** (U), and **Transfer** (T) – for the same academic topic, to illustrate the value of these distinctions (i.e. to help you with your meaning-making).

**HISTORY**
Topic: *The Declaration of Independence*
• Know the names of the writers of the Declaration of Independence (K).
• Use your research skill to learn about one of the signers of the Declaration (S).
• Analyze the Declaration in terms of the historical context and its “audience” and “purpose” to develop a thesis. (U)
• Apply your analysis to role-play a signer of the Declaration in a simulated town meeting where you explain your decision to your townspeople and are prepared to respond to criticism of your stance. (T)

**WORLD LANGUAGE**
Topic: *Beginning Spanish*
• Know the most common phrases related to asking directions. (K)
• Use your emerging skill with the present tense (and your knowledge of common phrases) to translate simple teacher prompts that begin *Donde esta...?* (S)
• A student argues: “One past tense is enough, and it’s too hard to learn two! Why bother?” Write a letter, make a podcast, or create a YouTube video to explain why having different past tenses is needed for precise communication in Spanish. (U)
• Role play: You must ask about various trains that have departed and will soon depart, in a simulation of being in a crowded train station with little time. Some speakers will speak more quickly and idiomatically than others. (T)

**MATHEMATICS**
Topic: *Linear relationships in Algebra*
• Know the meaning of “slope” and that y=mx+b. (K)
• Graph various linear pairs. (S)
• Explain, in general terms, how linear relationships help anyone find the price point but are not likely to help you predict sales. (U)
• Use linear equations and real data to help you determine the price point for selling store-bought donuts and homemade coffee at athletic events in order to make a profit for a fundraiser. (T)
Stage 3: Instruction and Learning Activities.

A = acquiring basic knowledge and skills  M = making meaning  T = transfer

1. Begin with an entry question (Can the foods you eat cause zits?) to hook students into considering the effects of nutrition on their lives.  M
2. Introduce the essential questions and discuss the culminating unit performance tasks (Chow Down and Eating Action Plan).  M
3. Note: Key vocabulary terms are introduced as needed by the various learning activities and performance tasks. Students read and discuss relevant selections from the Health textbook to support the learning activities and tasks. As an on-going activity students keep a chart of their daily eating and drinking for later review and evaluation.  A
4. Present concept attainment lesson on the food groups. Then, have students practice categorizing pictures of foods accordingly.  M
5. Introduce the Food Pyramid and identify foods in each group. Students work in groups to develop a poster of the Food Pyramid containing cut-out pictures of foods in each group. Display the posters in the classroom or hallway.  A
6. Give quiz on the Food groups and Food Pyramid (matching format).  E
7. Review and discuss the nutrition brochure from the USDA. Discussion question: Must everyone follow the same diet in order to be healthy?  A  M
8. Working in cooperative groups, students analyze a hypothetical family’s diet (deliberately unbalanced) and make recommendations for improved nutrition. Teacher observes and coaches students as they work.  M  T
9. Have groups share their diet analyses and discuss as a class.  M
(Note: Teacher collects and reviews the diet analyses to look for misunderstandings needing instructional attention.)
10. Each student designs an illustrated nutrition brochure to teach younger children about the importance of good nutrition for healthy living and the problems associated with poor eating. This activity is completed outside of class.  M  T
11. Show and discuss the video, Nutrition and You. Discuss the health problems linked to poor eating.  A
12. Students listen to, and question, a guest speaker (nutritionist from the local hospital) about health problems caused by poor nutrition.  A
13. Students respond to written prompt: Describe two health problems that could arise as a result of poor nutrition and explain what changes in eating could help to avoid them. (These are collected and graded by teacher.)  A
14. Teacher models how to read and interpret food label information on nutritional values. Then, have students practice using donated boxes, cans and bottles (empty!).  A
15. Students work independently to develop the 3-day camp menu.  T
16. At the conclusion of the unit, students review their completed daily eating chart and self assess the “healthfulness” of their eating. Have they noticed changes? Improvements? Do they notice changes in how they feel and/or their appearance?  M  T
17. Students develop a personal “eating action plan” for healthful eating. These are saved and presented at upcoming student-involved parent conferences.  T
18. Conclude the unit with student self evaluation regarding their personal eating habits. Have each student develop a personal action plan for their “healthful eating” goal.  M  T
Coding Assessments Using A - M - T

Example - unit on Nutrition - grades 5-6

Performance Tasks:

**You Are What You Eat** - Students create an illustrated brochure to teach younger children about the importance of good nutrition for healthful living.  **A, M, T**

**Chow Down** - Students develop a 3-day menu for meals and snacks for an upcoming Outdoor Education camp experience. They write a letter to the camp director to explain why their menu should be selected (by showing that it meets the USDA Food Pyramid recommendations, yet tasty enough for the students).  **A, T**

Other Evidence:
(e.g., tests, quizzes, prompts, work samples, observations, etc.)

**Quiz 1** - the food groups and the USDA Food Pyramid  **A**

**Quiz 2** - read nutrition information on food labels  **A**

**Prompt** - Describe two health problems that could arise as a result of poor nutrition and explain how these could be avoided.  **A, M**

**Self Assessment** - To what extent are you “eat healthy” now (at the end of unit compared to the beginning)? What specific actions can you take to improve your nutrition?  **T**
Our challenge is to develop players that are:

**Technically and Tactically Sound, Composed, Creative Risk Takers**

They should “Own the Game” and are focused on solving the problems that the game presents, instead of primarily thinking about coach imposed solutions to the game.

**Evolving Coaches -> Evolving Players**

In order to affect change on the players a shift in coaching methodology may need to take place. The development of creative, intuitive players is greatly impacted by coaching style and demands. When conducting training sessions, there needs to be a greater reliance on game oriented training that is player centered and enables players to explore and arrive at solutions while they play. This is in contrast to the “coach centered” training that has been the mainstay of coaching methods over the years.

**Game Centered Training Defined**

“Game centered training” implies that the primary training environment is the game as opposed to training players in “drill” type environments. This is not to say that there is not a time for a more “direct” approach to coaching. At times, players need more guidance and direction as they are developing. However, if the goal is to develop creative players who have the abilities to solve problems, and interpret game situations by themselves, a “guided discovery” approach needs to be employed. This approach taps in to certain essentials that are always present within the team. Players want to play and enjoy playing the game first and foremost. Since the “game” is used in training, this allows for players to be comfortable with the pace, duration, and physical and mental demands that the game provides. The reason why the players play is because they enjoy the game. They have a passion for the game. This is where they find and express their joy and creativity.

**Drills**

Many “drills” are not realistic. Therefore, players find it difficult to transfer the things learned in “drill” environments to the game itself. This is not to say that “drills” that closely replicate one aspect of the game should not be used in training. Dynamic, demanding, “drill” environments, used at the beginning of the training times, often prepares the players to play the game as it breaks down the more complicated “picture” that the game provides in to manageable pieces. However, care must be given to making sure that the “drill” is active, and mirrors the demands found in the game.

**Continuous Play in Training**

Reflects the real game. Demands rhythm. The players can not go “all out” for an entire 90 minute stretch. They need to know how to control the rhythm of the game so that they can last the entire time. Demands focus. Players must stay focused for lengths of time, just like they need to do during the game.

In order to have continuous play during training, the coach must coach “in the flow” of the game, and not interrupt play with stoppages to make coaching points.
## Learning Goals and Teaching Roles

<table>
<thead>
<tr>
<th>Three Interrelated Learning Goals</th>
<th>ACQUIRE</th>
<th>MAKE MEANING</th>
<th>TRANSFER</th>
</tr>
</thead>
<tbody>
<tr>
<td>This goal seeks to help learners acquire factual information and basic skills.</td>
<td>This goal seeks to help students construct meaning (i.e., come to an understanding) of important ideas and processes.</td>
<td>This goal seeks to support the learner's ability to transfer their learning autonomously and effectively in new situations.</td>
<td></td>
</tr>
</tbody>
</table>

### Teacher Role/Instructional Strategies

#### Direct Instruction
In this role, the teacher's primary role is to inform the learners through explicit instruction in targeted knowledge and skills; differentiating as needed.

**Strategies include:**
- diagnostic assessment
- lecture
- advanced organizers
- graphic organizers
- questioning (convergent)
- demonstration/modeling
- process guides
- guided practice
- feedback, corrections,
- differentiation

#### Facilitative Teaching
Teachers in this role engage the learners in actively processing information and guide their inquiry into complex problems, texts, projects, cases, or simulations; differentiating as needed.

**Strategies include:**
- diagnostic assessment
- using analogies
- graphic organizers
- questioning (divergent) & probing
- concept attainment
- inquiry-oriented approaches
- Problem-Based Learning
- Socratic Seminar
- Reciprocal Teaching
- formative (on-going) assessments
- understanding notebook
- feedback/corrections
- rethinking and reflection prompts

#### Coaching
In a coaching role, teachers establish clear performance goals, supervise on-going opportunities to perform (independent practice) in increasingly complex situations, provide models and give on-going feedback (as personalized as possible). They also provide "just in time teaching" (direct instruction) when needed.

**Strategies include:**
- on-going assessment,
- providing specific feedback in the context of authentic application
- conferencing
- prompting self assessment and reflection

Note: Like the above learning goals, these three teaching roles (and their associated methods) work together in pursuit of identified learning results.
## Learning Goals and Student Actions

<table>
<thead>
<tr>
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<th>MAKE MEANING</th>
<th>TRANSFER</th>
</tr>
</thead>
<tbody>
<tr>
<td>In order to acquire knowledge and skills, learners need to:</td>
<td>In order to make meaning (i.e., come to an understanding) of important ideas and processes learners need to:</td>
<td>In order to develop the capacity to transfer their learning, students need to:</td>
<td></td>
</tr>
<tr>
<td>- listen, read, and view carefully</td>
<td>- listen, read, and view critically</td>
<td>- apply their learning in novel and increasingly complex situations.</td>
<td></td>
</tr>
<tr>
<td>- respond</td>
<td>- respond thoughtfully</td>
<td>- observe the results</td>
<td></td>
</tr>
<tr>
<td>- take notes</td>
<td>- take reflective notes</td>
<td>- listen to and act on feedback</td>
<td></td>
</tr>
<tr>
<td>- ask questions</td>
<td>- critically question</td>
<td>- engage in focused practice</td>
<td></td>
</tr>
<tr>
<td>- use mnemonics</td>
<td>- compare</td>
<td>- visualize performance</td>
<td></td>
</tr>
<tr>
<td>- link to prior knowledge</td>
<td>- make inferences</td>
<td>- re-try</td>
<td></td>
</tr>
<tr>
<td>- compare</td>
<td>- create analogies</td>
<td>- refine</td>
<td></td>
</tr>
<tr>
<td>- create non-linguistic representations</td>
<td>- make connections</td>
<td>- rethink action</td>
<td></td>
</tr>
<tr>
<td>- rehearse/practice</td>
<td>- create non-linguistic representations</td>
<td>- revise</td>
<td></td>
</tr>
<tr>
<td>- complete classwork and homework</td>
<td>- rehearse/practice mindfully</td>
<td>- reflect on performance</td>
<td></td>
</tr>
<tr>
<td>- self assess</td>
<td>- self assess</td>
<td>- employ productive habits of mind</td>
<td></td>
</tr>
<tr>
<td>- set learning goals</td>
<td>- reflect on their understanding</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>
What Is Exemplary Design for Learning?

1. Think back to your many prior experiences with well-designed learning, both in and out of school. What was the most well-designed learning experience you have ever encountered as a learner? What features of the design - not the teacher’s style or your interests - made the learning so engaging and effective? (Design elements include: challenges posed, sequence of activities, resources provided, assignments, assessments, groupings, site, accommodation of differences, teacher’s role, etc.).

2. In sharing your recollections and analyses with your colleagues, build a list of generalizations that follow from the accounts. What do well-designed learning experiences have in common? In other words, what must be built in “by design” for any learning experience to be maximally effective and engaging for students?

The best designs for learning...

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## Degree of Transfer Rubric

<table>
<thead>
<tr>
<th>Level</th>
<th>Description</th>
<th>Examples</th>
</tr>
</thead>
</table>
| 3     | THE GAME – The task is presented *without cues* as to how to approach or solve it, and may look unfamiliar or new. Success depends upon a creative adaptation of one’s knowledge, based on understanding the situation and the adjustments needed to achieve the goal - “far transfer.” No simple recall or “plugging in” will work, and the student who learned only by rote will likely not recognize how the task taps prior learning and requires adjustments. Not all students may succeed, therefore, and some may give up. | - In a writing class, students are given a quote that offers an intriguing and unorthodox view of a recently-read text, and are simply asked: “Discuss”  
- In a math class, students must take their knowledge of volume & surface area to solve a problem like: “What container shape permits the greatest volume of M & Ms to be packed in the least amount space for cost-effective and safe shipping?” |
| 2     | GAME-LIKE – The task is complex but is presented with sufficient clues/cues meant to *suggest* the approach or content called for (or to simplify/narrow down the options considerably). Success depends upon realizing which recent learning applies, and using it in a straightforward way – “near transfer.” Success depends on figuring out what kind of problem this is, and with modest adjustments using prior procedures and knowledge to solve it. | - Writing: same as above, but the directions include reminders of what a good essay should include, and what ideas and skills apply.  
- Mathematics: the above problem is more simplified and scaffolded, by the absence of a specific context, and through cues provided about the relevant procedures |
| 1     | DRILL – The task looks familiar and is presented with *explicit reference* to previously studied material and/or approaches. Minimal or no transfer is required. Success requires only that the student recognize, recall and plug in the appropriate knowledge/skill, in response to a familiar (though perhaps slightly different) prompt. Any transfer involves dealing with only altered variables or details different from those in the teaching examples; and/or in remembering which rule applies from a few obvious recent candidates. | - Writing: the prompt is a just like past ones, and the directions tell the student what to consider, and provide a summary of the appropriate process and format.  
- Mathematics: the student need only plug in the formulae for spheres, cubes, pyramids, cylinders, etc. to get the right answer to a de-contextualized problem. |
Ideas for Diagnostic (Pre-) Assessment

The following pre-assessment techniques provide efficient diagnostic checks of student prior knowledge and misconceptions. This information guides any differentiated instruction/assessment that may be needed.

K-W-L-S

Prior to the introduction of a new topic or skill, ask students what they already Know (or think they know) about the topic or skill. These are recorded on a board or chart paper under the “K” column. (Sometimes, students make statements that are incorrect or reveal misconceptions.)

Secondly, ask them what they Want to know (or what questions they have) about the topic/skill. These are recorded under the “W” column. (Their questions often reveal interests or “hooks” to the topic. In some cases, their questions reveal misconceptions that will need to be addressed.)

As the lesson or unit proceeds, Learnings are summarized and recorded in the “L” column as they occur. (This provides an opportunity to go back and correct any misconceptions that may have been initially recorded in the “K” column.)

Pre-Test (non-graded)

Give students a pre-test to check their prior knowledge of key facts and concepts. Use the results to plan instruction and selection of resources. (Make sure that students know that the results will not count toward final grades.)

Skills Check (non-graded)

Have students demonstrate their proficiency with a targeted skill or process. It is helpful to have a proficiency checklist or developmental rubric to use in assessing the degree of skill competence. Students can then use the checklist or rubric for on-going self assessment.

Web/Concept Map

Ask students to create a web or concept map to show the elements or components of a topic or process. This technique is especially effective in revealing whether students have gaps in their knowledge and the extent to which they understand relationships among the elements.

Misconception Check

Present students with common errors or predictable misconceptions regarding a designated topic, concept, skill or process. See if they are able to identify the error or misconception and explain why it is erroneous or flawed.

The misconception check can also be presented in the form of a true-false quiz, where students must agree or disagree with statements or examples.
Encouraging Self Assessment and Reflection

The following questions may be used as prompts to guide student self evaluation and reflection.

• What do you really understand about _________?
• What questions/uncertainties do you still have about _________?
• What was most effective in _________?
• What was least effective in _________?
• How could you improve__________?
• What would you do differently next time?
• What are you most proud of?
• What are you most disappointed in?
• How difficult was _________ for you?
• What are your strengths in _________?
• What are your deficiencies in _________?
• How does your preferred learning style influence _________?
• What grade-score do you deserve? Why?
• How does what you’ve learned connect to other learnings?
• How has what you’ve learned changed your thinking?
• How does what you’ve learned relate to the present and future?
• What follow-up work is needed?
• other: __________________________________________?
### Analytic Rubric for Graphic Display of Data

Name: ___________________________   Date: ______________

<table>
<thead>
<tr>
<th>weights –</th>
<th>title</th>
<th>labels</th>
<th>accuracy</th>
<th>neatness</th>
</tr>
</thead>
<tbody>
<tr>
<td>3</td>
<td>The graph contains a title that clearly and specifically tells what the data shows.</td>
<td>All parts of the graph (units of measurement, rows, etc.) are correctly labelled.</td>
<td>All data is accurately represented on the graph.</td>
<td>The graph is very neat and easy to read.</td>
</tr>
<tr>
<td>2</td>
<td>The graph contains a title that generally tells what the data shows.</td>
<td>Some parts of the graph are inaccurately labelled.</td>
<td>Data representation contains minor errors.</td>
<td>The graph is generally neat and readable.</td>
</tr>
<tr>
<td>1</td>
<td>The title does not reflect what the data shows OR the title is missing.</td>
<td>Only some parts of the graph are correctly labelled OR labels are missing.</td>
<td>The data is inaccurately represented, contains major errors, OR is missing.</td>
<td>The graph is sloppy and difficult to read.</td>
</tr>
</tbody>
</table>

**Goals/Actions:**

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[Statistics and Data Analysis in Education: A.M.T. - Teaching for Understanding]
### Analyzing Current Practices Against Best Learning Designs

**Expectations**

*To what extent does my/our designs...*

| • provide clear learning goals and performance expectations (i.e., no mystery for learners)? | 3 | 2 | 1 |
| • cast learning goals in terms of genuine/meaningful performance? | | | |
| • frame the work around genuine questions & meaningful challenges? | | | |
| • show models/exemplars of expected performance? | | | |

### Instruction

*To what extent does my/our teaching...*

| • provide targeted instruction and relevant resources to “equip” students for expected performance? | 3 | 2 | 1 |
| • use the textbook as one resource among many (i.e., the textbook is a resource, *not* the syllabus)? | | | |
| • help “uncover” important ideas/processes by exploring essential questions? | | | |

### Learning Activities

*To what extent does my/our learning activities...*

| • address individual differences (e.g., learning styles, skill levels, interests) through a variety of activities/methods (vs. “one size fits all”)? | 3 | 2 | 1 |
| • provide variety in work, methods and students have some choice (e.g., opportunities for both group and individual work)? | | | |
| • include inquiry/experiential opportunities to help students “make meaning” for themselves? | | | |
| • incorporate cycles of model-try-feedback-refine learning experiences? | | | |

### Assessment

*To what extent does my/our assessments...*

| • provide appropriate measures of all of the learning goals? | 3 | 2 | 1 |
| • ask students to demonstrate their understanding through “real world” applications? | | | |
| • provide on-going, timely, and descriptive feedback to learners? | | | |
| • include opportunities for trial and error, reflection and revision? | | | |
| • allow self-assessment by the learners? | | | |

### Sequence & Coherence

*To what extent does my/our designs...*

| • include pre-assessments to check for prior knowledge, skill level, and misconceptions? | 3 | 2 | 1 |
| • begin with a “hook” (e.g., immerse the learner in a genuine problem/issue/challenge)? | | | |
| • move back and forth from whole to part, with increasing complexity? | | | |
| • scaffold learning in “do-able” increments? | | | |
| • revisit important ideas/questions and allow learners to rethink and revise earlier ideas/work? | | | |
| • remain flexible (e.g., to respond to student needs; allow revisions to achieve goals)? | | | |