Character Education: Doing the Right Thing When No One is Looking

From the day your child is born you must teach him to do things. Children today love luxury too much. They have detestable manners, flout authority, have no respect for their elders. They no longer rise when their parents and teachers enter the room. What kind of awful creatures will they be when they grow up?

- Socrates, 399 B.C.

Maximize Student Achievement through Cutting-Edge Differentiated Instruction Strategies
- Build Student Responsibility and Intrinsic Motivation
- Implement Integrated, Interdisciplinary Thematic Instruction
- Increase Student Understanding and Retention of New Learning
- Promote the Latest Ideas in Critical Thinking
- Help Students Process New Information More Effectively

Learn Classroom Management Techniques to Organize Differentiated Instruction More Efficiently
- Implement an Outstanding Interdisciplinary Model to Build Academic and Research Skills
- Incorporate the Latest Ideas from Brain Research

Make Connections between the Academic Curriculum and the World of Work for Service-Learning

Integrate formative, summative, diagnostic and prescriptive assessments to guide individual RTI

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Dr. T. Roger Taylor, Phi Delta Kappa Educator of the Year, chosen BEST OF THE BEST by the Sloan-Kettering L.D.E.A. Fellows Program, DISTINGUISHED LECTURER for the Association for Supervision and Curriculum Development (ASCD), author of over 8,000 integrated, interdisciplinary, thematic units, spends over 220 days a year doing professional development across the United States and World-wide. Dr. Taylor is recognized as one of the most sought-after experts in the areas of interdisciplinary, integrated curriculum, differentiated instruction, standards-based, problem/project-based curricula, gifted education, critical thinking skills, character education, multiple intelligence, school-to-career education, standards-based assessment and brain-based learning. He has helped thousands of school districts apply local and state standards to their curricula so that, “teachers are teaching students to learn rather than teaching for the test.” In his 40 years as a classroom teacher, administrator, professor, and internationally known educational consultant, Roger has established an Web site with thousands of units that K-12 teachers may download for instruction and lesson planning. The units are written based on the AHA! (Analyzing Human Activities) model he created. This unique model, validated by Stanford University, includes specific application of the most recent brain research, multiple intelligences and constructivist hands-on project-centered learning in alignment with state defined benchmarks and standards. Over 37,500 teachers have attended Dr. Taylor’s summer weeklong differentiated curriculum-writing workshops where they create integrated, interdisciplinary, thematic units for their students. The best of these curriculum units are available on his Web site.

All of the research-based strategies in the ASCD book, What Works, are integrated into each lesson plan. All eight of Howard Gardner’s (Harvard University) Multiple Intelligences and the 13 principles of learning from Pi Lambda Theta must be included in each lesson before they are published online at Dr. Taylor’s Web site, Curriculum Design Online. The six levels of E. Paul Torrance’s Divergent Thinking Skills for Creative Production are integrated into each lesson plan. Dr. Taylor’s unique character education / ethics strategies, based on Kohlberg, Gilligan and Coles, are woven into each lesson strand. Finally, Dr. Taylor’s I-Search / Research strategies are integrated into the units so that every child, as a result of differentiated instruction, becomes a “creator and producer” of an original product.

In addition, Roger has assisted school districts throughout the United States with incorporating professional learning teams to address the latest standards-based curriculum alignment. Roger specializes in differentiated curriculum design for special needs “at-risk” learners and highly gifted students, and is a specialist in creating smaller learning communities for meeting the needs of today’s young people. School districts, universities, state departments, educational service centers, and professional educational organizations continue to engage Roger as a featured keynoter because of his ability to present research-based information in a humorous and entertaining manner. Topics that Dr. Taylor presents are: differentiated instruction, standards-based, problem/project based curricula, closing the achievement gap, alternative strategies for high at-risk students, critical thinking skills, character education focusing on Kohlberg’s Theory of Moral Development, the socio-emotional needs of at-risk students, creativity, school-to-career connections, applying standards to the curriculum and his own integrated, interdisciplinary AHA! Model for curriculum development. Roger is a popular “back to school” keynoter because of his ability to “motivate with meaningful information” and set a positive tone for the return to school. Whether it is presenting to educators in a district-wide institute as a “sage on the stage” or working with small teams of teachers as a “guide on the side.” Roger’s impact on teachers, students and the school district itself has proven to elevate the teaching skills of veteran teachers as well as new teachers and motivate students to learn skills and content using his AHA! Model. His unique I-Search/Research approach has been used successfully by thousands of teachers and students. This model is a perfect foundation for diagnostic and prescriptive Response to Intervention (RTI).

In the Chicago area, Dr. Taylor served as Director of the Area Service Center for Educators of Gifted Children and served on the Executive Board for the National Association for Gifted Children for over ten years. Thousands of gifted programs and gifted children have directly benefited from Roger’s expertise. In addition to curriculum development focusing on integrated, interdisciplinary learning, Roger focuses on gifted program planning, identification, staff development training, and curriculum development for “mainstream” and “pull-out” program models. He has traveled internationally to train educators to incorporate his unique and highly successful model for inclusion of special needs learners. Many community colleges and universities are using Dr. Taylor’s curriculum not only for school to career connections but also to strengthen the academic teaching strategies of their professors.

Dr. Taylor has given keywords, workshop sessions, and motivational speeches for such organizations as the Association of California School Administrators, Indiana Association for Elementary School Principals, Kentucky Association for Secondary School Administrators, The National Council for Teachers of Mathematics, The Ohio Psychologists and Counselors Association, ASCD Middle School Consortium, British Columbia Primary Teachers Association, Association for Childhood Education Int’l (ACEI), the International Reading Association, National Association for Gifted Children (NAGC), Association for Supervision of Curriculum and Development (ASCD), and was named by the Institute for Development of Educational Activities, Inc. (I.D.E.A.) as one of the BEST OF THE BEST during its 25th year celebration. Many educational and service groups have duly recognized Dr. Taylor. The Jaycees named him as one of the “Outstanding Young Men of America” and his name has been added to “Who’s Who in America,” “The International Who’s Who of Intellectuals,” “Who’s Who in the World,” and “Who’s Who in American Education.”

The AHA! Model for creating integrated, interdisciplinary, thematic curriculum units is being used by teachers all over the world and has proven to raise achievement test scores while preserving the excitement and joy of authentic teaching and learning. He has been a featured consultant with the Bureau of Education and Research (BER) for 24 years, a featured speaker and keynoter for the National Differentiated Instruction Conferences sponsored by Staff Development for Educators (SDE) and a TEACHER for PRIMARY, ELEMENTARY, MIDDLE SCHOOL and HIGH SCHOOL students, as well as educators of all ages, for 42 years.

Through the National School Conference Institute (NSCI), Dr. Taylor conducted eight 85-minute programs on the topic of integrated, interdisciplinary curriculum to serve at risk children and highly gifted students. These programs were broadcasted in real time via satellite. He also appeared on a special program focusing on the topic of Best Practices in Teaching and Learning that was televised on The Learning Channel. Roger has traveled to England, Japan, Germany and Saudi Arabia to work with teachers and administrators working for the Department of Defense. In American Schools abroad, he has presented major keynotes and sessions at conferences in Rome, Nairobi, Athens, Nice, Bali, and (most recently) worked with teachers at the Soto Grande International School in Spain.
The Year 1908

What a difference a century makes! Here are some of the US statistics for 1908:

**Two of 10** US adults couldn't **read or write**. Only **6 percent** of all Americans had graduated high school.

The **average** life expectancy in the US was **47 years**.

Only **14 percent** of the homes in the US had a **bathtub**.

The **average wage** in the US was **22 cents an hour**.

More than **95 percent** of all **births** in the US took place at home.

Most **women** only washed their hair **once a month**, and used **borax or egg yolks** for shampoo.

**Ninety percent** of all **US physicians** had no college education. Instead, they attended medical schools, many of which were condemned in the press and by the government as "substandard."

**Marijuana, heroin, and morphine** were all available **over the counter** at corner drugstores. According to one pharmacist, "Heroin clears the complexion, gives buoyancy to the mind, regulates the stomach and bowels, and is, in fact, a perfect guardian of health."

*From: 1899 to 2008 TO: 21st Century*

**AN INDUSTRIAL SOCIETY**
**AN INFORMATION SOCIETY**
**A CENTRALIZED SOCIETY**
**A DECENTRALIZED SOCIETY**
**A NATIONAL ECONOMY**
**PART OF AN INTEGRATED GLOBAL ECONOMY**
**FORCED TECHNOLOGY**
**HIGH TECH/HIGH TOUCH**
**TOP-DOWN SOCIETY**
**BOTTOM-UP SOCIETY**
**NORTH**
**SOUTH**
**INSTITUTIONAL HELP**
**SELF HELP**
**PHYSICS**
**BIOLOGY**
**EITHER/OR**
**MULTIPLE-OPTION**
**REPRESENTATIVE DEMOCRACY**
**PARTICIPATORY DEMOCRACY**
**A MANAGERIAL SOCIETY**
**AN ENTREPRENEURIAL SOCIETY**
**INSTITUTIONAL MEDICINE**
**PERSONAL RESPONSIBILITY**
**SICKNESS-ORIENTATION**
**WELLNESS-ORIENTATION**
**HIERARCHIES**
**NETWORKING**
**SHORT TERM**
**LONG TERM**
**PRINTING**
**TELECOMMUNICATIONS**
**BROADCASTING**
**NARROW/CASTING**
**DEPARTMENT-CHAIN STORES**
**BOUTIQUES**
**FAMILY AS BASIC UNIT**
**INDIVIDUAL AS BASIC UNIT**
**PARTY POLITICS**
**ISSUE POLITICS**
**NON-RENEWABLE RESOURCES**
**RENEWABLE RESOURCES**
**MYTH OF THE MELTING POT**
**CELEBRATION OF CULTURAL DIVERSITY**
**MATERIAL PRODUCTIVITY**
**KNOWLEDGE PRODUCTIVITY**
**HIRED LABOR**
**CONTRACT LABOR**
**LEFT VS. RIGHT POLITICS**
**POLITICS OF THE RADICAL CENTER**
**CONQUERORS OF NATURE**
**PARTNERSHIP WITH NATURE**
**VERTICAL SOCIETY**
**HORIZONTAL SOCIETY**
DIFFERENTIATED LEARNING STYLES / TEACHING STYLES TEST
FOR DIAGNOSTIC AND PRESCRIPTIVE LEARNING

Circle A, B, or C for the description that is **most** like you. Mark only one letter for each question.

1. I remember best...  
   - A. names  
   - B. faces  
   - C. both names and faces.

2. I prefer to have things explained to me...  
   - A. with words  
   - B. by showing them to me  
   - C. both ways

3. I prefer classes...  
   - A. with one assignment at a time  
   - B. where I work on many things at once  
   - C. both ways

4. I prefer...  
   - A. multiple choice tests  
   - B. essay tests  
   - C. both kinds of tests

5. I am...  
   - A. not good at body language, I prefer to listen to what people say  
   - B. good at body language  
   - C. sometimes good, but other times not good

6. I am...  
   - A. not good at thinking of funny things to say and do  
   - B. good at thinking of funny things to say and do  
   - C. sometimes good

7. I prefer classes...  
   - A. where I listen to the “experts”  
   - B. in which I move around and try things  
   - C. where I listen and also try things

8. I decide what I think about things...  
   - A. by looking at the facts  
   - B. based on my experience  
   - C. both ways

9. I tend to solve problems...  
   - A. with a serious, business-like approach  
   - B. with a playful approach  
   - C. with both approaches

10. I like...  
    - A. to use proper materials to get jobs done  
    - B. to use whatever is available to get jobs done  
    - C. a little of both

11. I like my classes or work to be...  
    - A. planned so I know exactly what to do  
    - B. open with opportunities for changes as I go along  
    - C. both planned and open to changes

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12. I am...
   A. never inventive
   B. very inventive
   C. occasionally inventive

13. I prefer classes when I am expected...
   A. to learn about things I can use in the future
   B. to learn things I can use right away
   C. both kinds of classes

14. I...
   A. would rather not guess or play hunches
   B. like to play hunches and guess
   C. sometimes make guesses and play hunches

15. I like to express feelings and ideas...
   A. in plain language
   B. in poetry, song, dance, art
   C. both ways

16. I get insights from poetry, symbols, etc...
   A. rarely
   B. usually
   C. sometimes

17. I prefer...
   A. solving one problem at a time
   B. solving more than one problem at a time
   C. both equally

18. I respond more to people when...
   A. they appeal to my logical side, my intellect
   B. when they appeal to my emotional side, my feelings
   C. both ways

19. I prefer to learn...
   A. the well-established parts of a subject
   B. about the unclear parts, the hidden possibilities
   C. both ways

20. I prefer...
   A. analytic reading, taking ideas apart and thinking about them separately
   B. creative reading, putting a lot of ideas together
   C. both kinds of reading

21. I prefer...
   A. to use logic in solving problems
   B. to use "gut feelings" in solving problems
   C. both equally

22. I prefer...
   A. to analyze problems by reading and listening to experts
   B. to see and imagine things when I solve problems
   C. to do both.

23. I'm very good at...
   A. explaining things with words
   B. explaining things with hand movements and actions
   C. both
24. I learn best from teachers who...
   A. explain with words
   B. explain with movement and actions
   C. have no preference

25. When I remember or think about things, I do so best with...
   A. words
   B. pictures and images
   C. both equally well

26. I prefer to...
   A. examine something that is finished and complete
   B. organize and complete something that is unfinished
   C. do both

27. I enjoy...
   A. talking and writing
   B. drawing and manipulating (handling) things
   C. both equally

28. I am...
   A. easily lost in finding directions
   B. good at finding directions
   C. not bad in finding directions, but not really good either

29. I am...
   A. primarily intellectual
   B. primarily intuitive
   C. equally intellectual and intuitive

30. I prefer to learn...
   A. details and specific facts
   B. from a general overview, to look at the whole picture
   C. both ways equally

31. I read...
   A. for specific details and facts
   B. for main ideas
   C. for both equally

32. I learn and remember...
   A. only those things specifically studied
   B. details and facts in the environment not specifically studied
   C. have noticed no difference in these areas

33. I like to read...
   A. realistic stories
   B. fantasy stories
   C. no preference

34. I feel it is more fun to...
   A. plan realistically
   B. dream
   C. both equally fun

35. I...
   A. prefer total quiet when reading or studying
   B. prefer music while reading or studying
   C. listen to music only when reading for enjoyment, not when studying

36. I would like to write...
   A. non-fiction books
   B. fiction books
   C. no preference
37. If seeking mental health counseling, I would prefer...
   A. the confidentiality of individual counseling
   B. group counseling and sharing of feelings with others
   C. no preference for group over individual counseling

38. I enjoy...
   A. copying and filling in details
   B. drawing my own images and ideas
   C. both equally

39. It is more exciting...
   A. to improve something
   B. to invent something
   C. both are exciting

40. I prefer to learn...
   A. by examining
   B. by exploring
   C. both ways equally

41. I prefer...
   A. algebra (word problems)
   B. geometry (visual problems)
   C. both equally

42. I am skilled in...
   A. sequencing ideas
   B. showing relationships among ideas
   C. both equally

43. I prefer...
   A. dogs
   B. cats
   C. both equally

44. I ...
   A. use time to organize myself and my personal activities
   B. have difficulty in pacing my personal activities to time limits
   C. pace personal activity to time limits easily

45. I have...
   A. almost no mood changes
   B. frequent mood changes
   C. few mood changes.

46. I am...
   A. almost never absent-minded
   B. frequently somewhat absent-minded
   C. occasionally absent-minded

47. I am strong...
   A. in recalling verbal materials (names, dates)
   B. in recalling spatial material
   C. equally strong in both

48. I am skilled in...
   A. the statistical, scientific prediction of outcomes
   B. the prediction of outcomes
   C. equally strong in both

49. I prefer...
   A. outlining over summarizing
   B. summarizing over outlining
   C. equally skilled in both
50. I prefer...  
A. verbal instructions  
B. demonstrations  
C. no real preference  

YOUR STYLE OF LEARNING AND THINKING: RIGHT, LEFT, OR WHOLE BRAIN DOMINANT

LEFT (A's)______ RIGHT (B's)______ WHOLE BRAIN (C's)______

1. Compute your B score minus your A score. It can be a minus or plus.
2. If your C score is 15 or higher, divide your B minus A score by 3. Round your score to the nearest number. The answer will be your score. It can be a minus or plus number. ___________________
   OR
   If your C score is from 9 to 14, divide your B minus A score by 2. The answer will be your score. It can be a minus or plus answer. ___________________
   OR
   If your C score is less than 9, do not divide at all. Your B minus A score is your answer. ___________________

PLOT YOUR SCORE BELOW

-40... -10 -9 -8 -7 -6 -5 -4 -3 -2 -1 0 +1 +2 +3 +4 +5 +6 +7 +8 +9 +10...+40

A score of 0 = Whole brain dominance / (Christopher Robin)  
A score of -1 to -6 = Whole brain dominance favoring the left / (Eeyore)  
A score of +1 to +6 = Whole brain dominance favoring the right / (Piglet)  
A score of -7 or lower = Left brain dominance / (Owl)  
A score of +7 or higher = Right brain dominance / (Pooh)

DO NOT THEN TRAIN YOUTH TO LEARNING BY FORCE AND HARSHNESS: BUT DIRECT THEM TO DO IT BY WHAT AMUSES THEIR MINDS. 
SO THAT YOU MAY BE BETTER ABLE TO DISCOVER WITH ACCURACY THE PECULIAR BENT OF THE GENIUS OF EACH.  
...PLATO
TEACHING TECHNIQUES FOR BRAIN COMPATIBILITY

For Concrete Sequential Use:
A score of -7 or lower (OWL)
1. Workbooks or lab manuals
2. Lectures accompanied with overhead transparencies, drawings, or models; demonstration teaching
3. Hands-on materials (paint, frogs, plastic or wood models, apparatus, etc.)
4. Field trips
5. Programmed instruction or computer-assisted instruction.

AND EXPECT STUDENTS TO:
1. Follow step-by-step directions exactly
2. Use various drill techniques to practice what they have learned
3. Give correct answers available from text

For Abstract Random Use:
A score of +7 or higher (POOH)
1. Movies and filmstrips
2. Group discussions among students
3. Lecture with discussion of material presented
4. Television
5. Short reading assignments which act as springboards for class activities

AND EXPECT STUDENTS TO:
1. Listen, learn from, and respond to fellow students
2. Be aware of color, sounds and moods in their environment
3. Observe body language, listen for intonation and reflect upon these in connection with the message given

For Abstract Sequential Use:
A score of -1 to -6 (EEYORE)
1. Instructional CD-ROMs
2. Audio tapes
3. Extensive textbook reading assignments
4. Slides
5. Lecture

AND EXPECT STUDENTS TO:
1. Be able and willing to read large amounts of material
2. Be able to conceptualize ideas and convey them either orally or in writing
3. Be able to concentrate on an idea without being distracted by environmental activities or inner feelings

For Concrete Random Use:
A score of +1 to +6 (PIGLET)
1. Games or simulations
2. Independent study projects
3. Optional reading assignments
4. Brief mini-lectures
5. Problem solving activities

AND EXPECT STUDENTS TO:
1. Frame hypotheses, develop alternative solutions and test them
2. Be able to solve problems with limited information or data provided
3. Experiment with ideas and material through application.
CHARACTERISTICS OF EXTREME NEUROLOGICAL POLARITY THAT CREATE HIGH AT-RISK BEHAVIOR

BORED WITH ROUTINE TASKS, REFUSES TO DO ROTE HOMEWORK

DIFFICULT TO GET HIM/HER TO MOVE INTO ANOTHER TOPIC

IS SELF-CRITICAL, IMPATIENT WITH FAILURES

IS CRITICAL OF OTHERS, OF THE TEACHER

OFTEN DISAGREES VOCALLY WITH OTHERS, WITH THE TEACHER

MAKES JOKES OR PUNS AT INAPPROPRIATE TIMES

EMOTIONALLY SENSITIVE—MAY OVERREACT, GET ANGRY EASILY OR READY TO CRY IF THINGS GO WRONG

NOT INTERESTED IN DETAILS; HANDS IN MESSY WORK

REFUSES TO ACCEPT AUTHORITY; NONCONFORMING, STUBBORN

TENDS TO DOMINATE OTHERS

<table>
<thead>
<tr>
<th>Extreme OWL (Less than -20)</th>
<th>Extreme POOH (More than +20)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Persistent sad, anxious or “empty” mood</td>
<td>Abnormal or excessive elation</td>
</tr>
<tr>
<td>Feelings of hopelessness, pessimism</td>
<td>Unusual irritability</td>
</tr>
<tr>
<td>Feelings of guilt, worthlessness, helplessness</td>
<td>Decreased need for sleep</td>
</tr>
<tr>
<td>Loss of interest or pleasure in hobbies and activities that were once enjoyed, including sex</td>
<td>Grandiose notions</td>
</tr>
<tr>
<td>Decreased energy, fatigue, being “slowed down”</td>
<td>Increased talking</td>
</tr>
<tr>
<td>Difficulty concentrating, remembering, making decisions</td>
<td>Racing thoughts</td>
</tr>
<tr>
<td>Insomnia, early-morning awakening, or oversleeping</td>
<td>Increased sexual desire</td>
</tr>
<tr>
<td>Appetite and/or weight loss or overeating and weight gain</td>
<td>Markedly increased energy</td>
</tr>
<tr>
<td>Thoughts of death or suicide; suicide attempts</td>
<td>Poor judgment</td>
</tr>
<tr>
<td>Restlessness, irritability</td>
<td>Inappropriate social behavior</td>
</tr>
<tr>
<td>Persistent physical symptoms that do not respond to treatment, such as headaches, digestive disorders, and chronic pain</td>
<td>ADD / ADHD Behavior</td>
</tr>
</tbody>
</table>

Amphetamines

| Speed, Ice, Glass, Crystal, Crank, Pep Pills, Uppers, Cocaine, Ritalin, Caffeine & Nicotine | Methamphetamine, Rohypnol (Roofies), Morphine, marijuana/hashish, Xanax / Sarax / Ativan, Thorazine, Alcohol, Quaaludes & Codine |

Tranquilizers / Barbiturates
Differentiating The Curriculum: Rigor, Relevance & Relationships
Using an Integrated, Interdisciplinary, Thematic, Standards-based Approach

Big Idea

Taylor Interdisciplinary Model
Analyzing Human Activities:
AHA

*Pupil Performance Outcomes
*Mastery Learning / Assessment Based
*Portfolio/Authentic Assessment
*Multiple Intelligences
*Inclusion / Developmentally Appropriate
*Higher Order Thinking Skills

*Character/Ethics Education
*Cooperative Learning
*Teaching/Learning Styles
*Project Based Learning
*Creative Problem Solving
*Gifted/Talented Education

ACADEMIC

1. Bloom
debono’s CoRT

2. F. Williams
Costa / paul

3. DeBono
S.O.I. (Guilford/Meeker)

MORAL/ETHICAL/PHIL

Kohlberg
Gilligan: In a Different Voice

Self Esteem
Group Dynamics
Leadership

Phil. for Kids (Lipman)
Great Books of the Western World

CREATIVITY

Torrence

1. Learn Intellectual Ambiguity
2. Develop Creative Risk Taking
3. Learn to accept open ended thinking with no closure

1. Develop Intellectual Rigor
2. Learn Task Commitment
3. Demand Project Completion with Closure

*C-Pupil Performance Outcomes
*C-Mastery Learning / Assessment Based
*C-Portfolio/Authentic Assessment
*C-Multiple Intelligences
*C-Inclusion / Developmentally Appropriate
*C-Higher Order Thinking Skills

I-SEARCH

Using an Integrated, Interdisciplinary, Thematic, Standards-based Approach

1. Develop Intellectual Rigor
2. Learn Task Commitment
3. Demand Project Completion with Closure

1. Learn Intellectual Ambiguity
2. Develop Creative Risk Taking
3. Learn to accept open ended thinking with no closure

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TAYLOR’S HUMAN CONNECTION MODEL
Analyzing Human Activities: AHA!
An Interdisciplinary Model for Integrated Curriculum
Universal Themes:

Critical Thinking Skills
- Creative/Analytic Reasoning
- Ethical/Philosophical Reasoning
- Productive/Creative Reasoning

Analyzing Human Activities: AHA!

- Cause and Effect
- Celebration of Pluralism
- Change and Continuity
- Citizenship
- Community
- Culture
- Equal Opportunity
- Freedom and Justice
- Government and Authority
- Human Rights
- Independence and Interdependence
- Moral, Ethical, and Spiritual Behavior
- Peace
- Scarcity and Choice
- Stewardship of Natural & Human Resources
- Survival Issues and Future Alternatives
Taylor’s CONSTRUCTIVIST-PROJECT CENTERED LEARNING

Research Finding: Student achievement rises when teachers ask questions that require students to apply, analyze, synthesize, and evaluate information in addition to simply recalling facts. ASCD-Marzano

Teaching for Mastery
How We Learn...

- 10% OF WHAT WE READ,
- 20% OF WHAT WE HEAR,
- 30% OF WHAT WE SEE,
- 50% OF WHAT WE BOTH SEE AND HEAR,
- 70% OF WHAT WE DISCUSS WITH OTHERS,
- 80% OF WHAT WE EXPERIENCE PERSONALLY,
- 95% OF WHAT WE TEACH TO SOMEONE ELSE

(DEWEY, GLASSER, HUNTER, BLOOM, GOODLAD, GARDNER, STALLINGS, ETC.)
Multiple Intelligences Product Grid

This product grid categorizes different products under separate headings according to research from Howard Gardner’s multiple-intelligences theory. Many are listed in more than one column and would look different according to which approach is taken by the student. These groupings appeal to student interests and strengths. This increases their involvement and the quality of the final product and makes it easier to determine that students have completed tasks that are measurable and demonstrable.

<table>
<thead>
<tr>
<th>Linguistic</th>
<th>Logical / Mathematical</th>
<th>Spatial</th>
<th>Bodily / Kinesthetic</th>
<th>Musical</th>
<th>Interpersonal</th>
<th>Intrapersonal</th>
<th>Naturalist</th>
</tr>
</thead>
<tbody>
<tr>
<td>Advertisements</td>
<td>Advertisements</td>
<td>Animated Movie</td>
<td>Calligraphy</td>
<td>Audio-Video Tape</td>
<td>Advertisement</td>
<td>Bulletin Board</td>
<td>Artifact Collecting</td>
</tr>
<tr>
<td>Annotated/Biblio.</td>
<td>Annotated Bibliography</td>
<td>Art Gallery</td>
<td>Charades</td>
<td>Choral Reading</td>
<td>Animated Movie</td>
<td>Bulletin Board</td>
<td>Diorama</td>
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<tr>
<td>Bulletin Board</td>
<td>Chart</td>
<td>Bulletin Board</td>
<td>Collage</td>
<td>Fairy Tale</td>
<td>Chart</td>
<td>Collection</td>
<td>Field Study</td>
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<tr>
<td>Code</td>
<td>Code</td>
<td>Bumper Sticker</td>
<td>Costumes</td>
<td>Film</td>
<td>Comic Strip</td>
<td>Field Trip</td>
<td></td>
</tr>
<tr>
<td>Comic Strip</td>
<td>Collage</td>
<td>Cartoon</td>
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<td>Instrumental</td>
<td>Diary</td>
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<td>Diorama</td>
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<td>Poem</td>
<td>Film</td>
<td>Original Song</td>
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<td>Song</td>
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<td>Sound</td>
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<td>Mobile</td>
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<tr>
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<td>Podcast</td>
<td>Map with Legend</td>
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<td>Musical Instruments</td>
<td>Musical Instruments</td>
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</tr>
</tbody>
</table>
1. The central hub denotes various levels of thinking.
2. For each level, a set of process verbs is suggested to stimulate thought.
3. The outer section lists possible outcomes if products or projects are desired.
Frank Williams Higher Order Thinking Skills

| 1. Paradoxes                          | Common notion not necessarily true in fact  
|                                      | Self-contradictory statement or observation  |
| 2. Attributes                        | Inherent properties  
|                                      | Conventional symbols or identities  
|                                      | Ascribing qualities  |
| 3. Analogies                         | Situations of likeness  
|                                      | Similarities between things  
|                                      | Comparing one thing to another  |
| 4. Discrepancies                     | Gaps of limitations in knowledge  
|                                      | Missing links in information  
|                                      | What is not known  |
| 5. Provocative Questions             | Inquiry to bring forth meaning  
|                                      | Incite knowledge exploration  
|                                      | Summons to discovering new knowledge  |
| 6. Examples of Change                | Demonstrate the dynamics of things  
|                                      | Provide opportunities for making alterations, modifications, or substitutions  |
| 7. Examples of Habit                 | Effects of habit-bound thinking  
|                                      | Building sensitivity against rigidity in ideas and well-tried ways  |
| 8. Organized Random Search           | Using a familiar structure to go at random to build another structure  
|                                      | An example from which new approaches occur at random  |
| 9. Skills of Search                  | Search for ways something has been done before (historical search)  
|                                      | Search for the current status of something (descriptive search)  
|                                      | Set up an experimental situation and search for what happens (experimental search)  |
| 10. Tolerance for Ambiguity          | Provide situations which puzzle, intrigue, or challenge thinking  
|                                      | Pose open-ended situations which do not force closure  |
| 11. Intuitive Expression             | Feeling about things through all the senses  
|                                      | Skill of expressing emotion  
|                                      | Be sensitive to inward hunches or nudges  |
| 12. Adjustment to Development        | Learn from mistakes or failures  
|                                      | Develop from rather than adjust to something  
|                                      | Developing many options or possibilities  |
| 13. Study Creative People and Process | Analyze traits of eminently creative people  
|                                      | Study processes which lead to problem solving, invention, incubation, and insight  |
| 14. Evaluate Situations              | Deciding upon possibilities by their consequences and implications  
|                                      | Check or verify ideas and guesses against the facts  |
| 15. Creative Reading Skill           | Develop a mind-set for using information that is read  
|                                      | Learning the skill of generating ideas by reading  |
| 16. Creative Listening Skill         | Learning the skill of generating ideas by listening  
|                                      | Listen for information allowing one thing to lead to another  |
| 17. Creative Writing Skill           | Learning the skill of communicating ideas in writing  
|                                      | Learning the skill of generating ideas through writing  |
| 18. Visualization Skill              | Express ideas in visual forms  
|                                      | Illustrating thoughts and feelings  
|                                      | Describing experiences through illustrations  |

www.aps.edu/aps/gifted/williams.html
I–SEARCH INDEPENDENT RESEARCH PROJECTS
FOR GIFTED AND TALENTED STUDENTS

State each research project with an *investigative focus* and a "hands–on" *product* to show research outcome.

(If writing curriculum for inclusion, design one I-Search project for **Gifted and Talented** learners and a concrete operational project for **special learners or Students on IEPs**.)

1. **PARADOXES:**
   Common notion not necessarily true in fact.
   Self-contradictory statement or observation.

2. **ATTRIBUTES:**
   Inherent properties.
   Conventional symbols or identities.
   Ascribing qualities

3. **ANALOGIES:**
   Situations of likeness.
   Similarities between things.
   Comparing one thing to another.

4. **DISCREPANCIES:**
   Gaps of limitations in knowledge.
   Missing links in information.
   What is not known.

5. **PROVOCATIVE QUESTIONS:**
   Inquiry to bring forth meaning.
   Incite knowledge exploration.
   Summons to discovering new knowledge.

6. **EXAMPLES OF CHANGE:**
   Demonstrate the dynamics of things.
   Provide opportunities for making alterations, modifications, or substitutions.

7. **EXAMPLES OF HABIT:**
   Effects of habit-bound thinking.
   Building sensitivity against rigidity in ideas and well-tried ways.

8. **ORGANIZED RANDOM SEARCH:**
   Use familiar structure to go at random to build another structure.
   An example from which new approaches occur at random.

9-18 can be found in the writing template at www.rogertaylor.com
I–SEARCH INDEPENDENT RESEARCH PROJECTS
FOR GIFTED AND TALENTED STUDENTS

1. **PARADOXES:**
Chivalry is considered one of the highest forms of social behavior. Why then did it develop in a time considered barbaric by modern standards? Create your own modern rules of chivalry. Compare and contrast with those of the Arthurian legends.

2. **ATTRIBUTES:**
Research modern social systems that have feudal characteristics. Create a presentation outlining one of these systems.

3. **ANALOGIES:**
King Arthur’s character can be found in many works of literature. Through research, choose a character from Modern literature, movies, comics, etc. that is like Arthur. Write an essay or create a presentation that answers the question, “How is ____________ like King Arthur?”
Example: How is Luke Skywalker like King Arthur?

4. **DISCREPANCIES:**
Many scholars have tried to answer the question of King Arthur’s true existence. Chose a point of view, real man or myth. Write an essay and prepare an oral defense of your point of view.

5. **PROVOCATIVE QUESTIONS:**
Women and their role in society began to change with the introduction of the Code of Chivalry and Courtly Love. Write and produce a short scene of Courtly Love demonstrating the power of women. Then do the same scene as if in modern times.

6. **EXAMPLES OF CHANGE:**
Writing instruments have undergone tremendous changes over the centuries since the Middle Ages. Create a power point presentation outlining the major changes in writing instruments over the ages.

7. **EXAMPLES OF HABIT:**
In the movie “The Name of the Rose,” the monks were responsible for copying great works of literature and scientific information. Works that directly conflicted with the religious teachings of the day were copied with poisonous ink. The result was death to anyone who read these writings.
Research articles from the modern arguments of science versus religion. (i.e. the debate on evolution vs. creationism.) Form a panel and role-play the differing opinions being debated today. You will need a moderator and a format for the discussion.

8. **ORGANIZED RANDOM SEARCH:**
Medieval music tells us a lot about the people and their culture. If music defines the time, then what does the music of today say about your generation? Search for themes in today’s music, which will tell future generations about the beginning of the 21st century.
You are creating a time capsule with music of your choice. Remember you are defining your generation with your choices. What do you want the future generations to understand about growing up now? Be prepared to defend your choices.

9. **SKILLS OF SEARCH:**
Today we are being faced with diseases and infections that are immune to modern medical treatments. Search for diseases that existed in the middle ages. What measures were taken to help curb the spread of these diseases? What were the results of these outbreaks? How do we handle outbreaks of viruses now? What parallels can you draw between diseases and their treatments now and in the Middle Ages? Present your findings and document your research.

Download the complete unit at www.rogertaylor.com
# Analyzing Human Activities: I-Search / Research

## Student Performance Contract and Assessment

**Name of Researcher______________________**  
**Grade level_______**

**Class / Home Group_______________________**  
**Date_______________**

### INTER-INTRADISCIPLINARY AREAS OF STUDY (Check ALL that apply)

- Literature / Language Arts  
- Science  
- Technology  
- Personal / Social Development  
- Music  
- Art  
- Social Studies / History  
- Mathematics  
- Foreign Language  
- Vocational / Technical  
- School to Career  
- Prescriptive RTI

**Brief Description of the CONTENT of the I-Search____________________________**

**Beginning Date____**  
**Ending Date____**  
**Number of Days____**

### OBJECTIVES (Content to be learned)

1. __________________________________________________________
2. __________________________________________________________
3. __________________________________________________________
4. __________________________________________________________

### ACTIVITIES (Briefly list what the researcher will do/did to accomplish these objectives. Underline any activity that you consider to be especially unique and / or creative.)

1. __________________________________________________________
2. __________________________________________________________
3. __________________________________________________________
4. __________________________________________________________

### RESOURCES NECESSARY FOR COMPLETION OF PROJECT

(Reference books, Films, People, etc.)

1. __________________________________________________________
2. __________________________________________________________
3. __________________________________________________________
4. __________________________________________________________

### PRODUCT (Briefly describe any projects, stories, plays, filmstrips, etc. that resulted from this study. Attach samples, if available.)

1. __________________________________________________________
2. __________________________________________________________
3. __________________________________________________________
4. __________________________________________________________

---

**STUDENT SELF-ASSESSMENT**

- 1-2-3-4-5-6-7
- On Time____
- Neat____
- Mechanics/Grammar____
- Indepth____
- Unique____
- Complete____

---

**TEACHER ASSESSMENT**

- 1-2-3-4-5-6-7
- On Time____
- Neat____
- Mechanics/Grammar____
- Indepth____
- Unique____
- Complete____

---

**STUDENT Grade_____**  
**Peer Grade_____**  
**Teacher Grade_____**

---

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Analyzing Human Activities: I-Search / Research

PEER ASSESSMENT GRID

Name of Presenter_______________________________________    Date___________     Assessment Summary

I-Search Project Name______________________________

1. Presenter was well organized and made a strong **impact** with craftsmanship.
   Impact refers to the success of the work given the purposes and goals. Was the desired result achieved?
   Was the problem solved? Was the audience engaged and informed? Did the presentation persuade? Did the presentation open minds to new possibilities? Was new knowledge created? In sum: **Was the work effective?**

   Craftsmanship refers to the overall polish and rigor of the work’s form or appearance. Was the presentation organized? Was the argument justified? Was the product clear? Did the presentation build and flow smoothly?
   Was the dance graceful? Did the poem scan properly? Was the proof logical? Was there a clear voice in the writing? Did the form follow function? In sum: **Was the performance or product of high quality?**

2. Presenter used effective multimedia and kept me interested and focused with the process and products of the presentation.
   Process and products refer to the quality of the procedures and manner of presentation, prior to and during performance. Was the student careful? Was the speaker using apt tools of engagement? Was proper procedure followed? Was the speaker mindful of and responsive to the audience in preparation and delivery? Did the reader employ unique strategies? Did we/the Search team work efficiently? In sum: **Was the performer methodical and interesting?**

3. Presenter used material not already taught in class and/or textbook, and showed a degree of mastery learning.
   Degree of mastery refers to the relative complexity or maturity of the knowledge employed: Was the student’s approach insightful? Did the work display unusual or mature expertise? Did the student avoid naïve misconceptions? Were the most powerful concepts and skills available employed? In sum: **Was the work sophisticated?**

4. Presenter's content was accurate and meaningful.
   Appropriateness of content refers to the correctness of the ideas, skills, or materials used: Was the work accurate?
   Was the product on the topic? Were the proposals supported by appropriate data? Were the facts and arguments of the product appropriate? Was the hypothesis plausible and on target? In sum: **Was the content valid?**

Add all 4 assessment criteria and divide this sum by 4 to calculate the numerical summary.

5. One thing that might have improved this presentation is _______________________________

   Add each class member’s numerical summary and divide this sum by the total number of students in your class. This number goes in the assessment summary box and is then transferred to the I-Search Contract.

6. One thing I liked best was ________________________________
AHA! # ________________

LESSON PLAN UNIT TITLE: ________________________________________________________________

Week of ________________________________________________________

State / District Curriculum Alignment: PUPIL PERFORMANCE STANDARDS / OUTCOMES

1. STANDARD / BENCHMARK / OUTCOME:

________________________________________________________________________________________

2. ESSENTIAL QUESTION / UNIVERSAL THEME:

________________________________________________________________________________________

Assigned Text / Database: _________________________________________________________________

Multi-Media / Films / Web Sites: ___________________________________________________________

Math / Science / Humanities Link: __________________________________________________________

Other Readings / Assignments: _____________________________________________________________

Resource Teachers / Speakers: _____________________________________________________________

Multicultural / ESL / Bilingual Link: _________________________________________________________

Career / Technical Link: _________________________________________________________________

1. Anchoring Activity / Anticipatory Set: ______________________________________________________

   Brainstorming: AHA! # _____ ____________________________________________________________

   Viewpoint: AHA! # _____ ______________________________________________________________

   KNOWLEDGE: AHA! # _____ Hardware / Software Needed ______________________________________

   (Scaffold / Tier 1)

Time Needed ______ Presentation/Direct Instruction Time _______________ Textbook Pages ________

Short-term / Formative Assessment / RTI ______________________________________________________

JOURNAL ASSIGNMENT: ________________________________________________________________

HOME LINK: ____________________________________________________________

_____________________________________________________________________________________

--------------------------------------------------------------------------------------------
2. **Involvement:** AHA! 

Conscious Self-Deceit: AHA! 

**COMPREHENSION:** Hardware / Software needed

(Scaffold / Tier I)

<table>
<thead>
<tr>
<th>Time Needed</th>
<th>Presentation/Direct Instruction Time</th>
<th>Textbook Pages</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

Homework & Guided Practice:

*Short-term / Cumulative Assessment (Diagnostic RTI)*

| 3. **Anchoring Activity / Anticipatory Set:** |

Forced Association / Metaphoric Reasoning: AHA! 

**APPLICATION:** Hardware / Software needed

(Scaffold / Tier II)

<table>
<thead>
<tr>
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<th>Presentation/Direct Instruction Time</th>
<th>Textbook Pages</th>
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</tr>
</tbody>
</table>

*Short-term / Formative Assessment / Rubric for Product*

| 4. **Anchoring Activity / Anticipatory Set:** |

Reorganization / Synectics: AHA! 

**HIGHER ORDER THINKING SKILLS (HOTS):** Hardware / Software needed

(Scaffold / Tier III)

<table>
<thead>
<tr>
<th>Student Product: Cooperative Team and/or Individual</th>
</tr>
</thead>
</table>

*Summative / Formal Assessment*

| 5. **Moral / Ethical / Philosophical Dilemma:** |

| 6. **I-Search / Independent Projects** (See AHA! I-Search Format):

(Use in place of teacher anchoring activity and/or at the beginning or end of the lesson) |
### FIGURE 1.3

**Categories of Instructional Strategies That Affect Student Achievement**

<table>
<thead>
<tr>
<th>Category</th>
<th>Ave. Effect Size (ES)</th>
<th>Percentile Gain</th>
<th>No. of ESs</th>
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<tr>
<td>Summarizing and note taking</td>
<td>1.00</td>
<td>34</td>
<td>179</td>
<td>.50</td>
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<tr>
<td>Reinforcing effort and providing recognition</td>
<td>.80</td>
<td>29</td>
<td>21</td>
<td>.35</td>
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<tr>
<td>Homework and practice</td>
<td>.77</td>
<td>28</td>
<td>134</td>
<td>.36</td>
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<td>Nonlinguistic representations</td>
<td>.75</td>
<td>27</td>
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<td>Cooperative learning</td>
<td>.73</td>
<td>27</td>
<td>122</td>
<td>.40</td>
</tr>
<tr>
<td>Setting objectives and providing feedback</td>
<td>.61</td>
<td>23</td>
<td>408</td>
<td>.28</td>
</tr>
<tr>
<td>Generating and testing hypotheses</td>
<td>.61</td>
<td>23</td>
<td>63</td>
<td>.79</td>
</tr>
<tr>
<td>Questions, cues, and advance organizers</td>
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## Principles Guiding Future Planning

**Curriculum for the year 2008 and Beyond**

<table>
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<th>Curriculum Philosophy</th>
<th>SA</th>
<th>Philosophy</th>
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<td>1</td>
<td>2</td>
</tr>
</tbody>
</table>

1. A balanced core of COMMON LEARNINGS ensures that all students are challenged with learning experiences judged most appropriate to their future levels.

2. The curriculum is organized on an INTERDISCIPLINARY basis to ensure deeper understanding of complex issues and acknowledge the connectedness” of things.

3. The curriculum is designed to ensure that students are ACTIVELY INVOLVED in the learning process and increasingly assume more responsibility for their learning.

4. The curriculum avoids student TRACKING plans that deny any student access to a substantive program of electives or general education.

5. Instruction focuses on developing student proficiency in CRITICAL THINKING, problem solving, creative thinking, and application skills.

6. Assessment of STUDENT PERFORMANCE produces evidence of the most significant learnings and de-emphasizes isolated behavior samplings found in standardized tests.

7. Instructional materials, teaching strategies, and the school’s culture recognizes and respects STUDENT DIVERSITY.

8. Careful delineation of topics to be taught is based on helping students “Learn How To Learn,” acquire and process information, and understand that “LESS IS MORE.”

9. Key elements of the core curriculum center are organized around fundamental SOCIETAL CONCERNS such as civic competence, international perspective in students, world peace and the environment.

SA = Strongly Agree

SD = Strongly Disagree

N = Never

A = Always

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Learning Principles

<table>
<thead>
<tr>
<th>SD</th>
<th>Curriculum Philosophy</th>
<th>SA</th>
<th>N</th>
<th>Level of Implementation</th>
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<tr>
<td>1</td>
<td>Learning needs to be activity based.</td>
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<td>Learning needs to include cooperative learning opportunities.</td>
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<td>Learning is dependent on situations that are meaningful to the child.</td>
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<td>4</td>
<td>Learning needs to address attitudes and values.</td>
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<td>Learning needs to encompass the use of literature.</td>
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<td>6</td>
<td>Learning needs to develop critical thinking skills.</td>
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<td>7</td>
<td>Learning is affected by developmental stages.</td>
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<td>8</td>
<td>Learning is affected by evaluation strategies.</td>
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<td>9</td>
<td>Learning is dependent on developing communication skills.</td>
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<td>10</td>
<td>Learning is reinforced through integrated experiences.</td>
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<td>11</td>
<td>Learning needs to be promoted without gender bias.</td>
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</tbody>
</table>
DIVERGENT QUESTIONING MODELS:

1. BRAINSTORMING MODEL

Brainstorm all of the ________________.
Brainstorm as many ________________as you can think of.
How many ways can you come up with ________________?

2. VIEWPOINT MODEL

How would this look to a ________________?
What would a _______mean from the viewpoint of a _________?
How would ________________view this?

3. INVOLVEMENT MODEL / PERSONIFICATION

How would you feel if you were ________________?
If you were a ________________what would you (see, taste, smell, feel)?

4. CONSCIOUS SELF-DECEIT MODEL / “WHAT IF” QUESTIONS

Suppose you could have anything you wanted.
What ideas could you produce if this were true? ________________
You can have all of the ______ in the world. How could you use it to _____?
You have been given the power to _______. How will you use it?

5. FORCED ASSOCIATION MODEL / TEACHING WITH ANALOGIES

How is ________________like ________________?
Get ideas from ________________to improve ________________.
I only know about ________________. Explain ________________to me.

6. REORGANIZATION / SYNECTICS MODEL

What would happen if ________________were true?
Suppose ________________(happened), what would be the consequences?
What would happen if there were no ________________?
1. **Brainstorming**

- Brainstorm all of the ____________.
- Brainstorm as many__________as you can think of.
- How many ways can you come up with______________?

This type of question asks for the generation of a large number of responses and helps to develop fluent thinking. Maintain the basic rules of “brainstorming” while using this model in order to insure freedom of expression. These rules are:

1. Defer verbal or non-verbal criticism of ideas.
2. Strive for quantity.
3. Strive for ‘far out’ or ‘wild’ ideas.
4. Maintain process long enough to produce a large quantity of ideas.

Use the quantity model beyond the first rush of ideas. Long periods of silence do not indicate that the thinking has stopped. The most productive ideas come after the initial burst of ideas. So allow enough time for the second burst of ideas, or the third…or the…

- Sounds you hear from a given moment
- Things made more beautiful by age
- Things that sparkle under an evening sky
- Things that are lighter than a watch spring
- Things that crumble in your hand
- List of things that harmonize
- Things you like to touch
- Mysterious things
- “Squashy” Things
- Sounds of a department store
- Wet things
- Things that chill
- Twilight colors
- Morning things
- Beautiful things
- Sour things
- Purple things
- Words that begin with “SP”
- Things to do when you retire
- Things that are attracted by a magnet
- Happy things
- Things that hurt
- Things you love
- Found in twos
- Things that reflect
- Subtle things
- Birds
2. VIEWPOINT

☆ How would this look to a _________________.
What would a _____mean from the viewpoint of a ______?
☆ How would _________________view this?

This type of question asks students to look at characters, events, and objects from various points of view. The student steps outside of himself and is asked to react like someone or something else.

Deeper and more empathetic understandings result when we become conscious of the various viewpoints we could take toward a given situation.

The Bumble Bee

The bumble bee, according to aeronautical science, can't fly.
The ratio of his wingspan to the size of his body makes flying totally impossible.
The bumble bee, which is ignorant of such technical matters, goes on flying anyway;
The fool didn't know it couldn't be done, so he went ahead and did it!

“Come to the edge.”
“We can’t. We’re afraid”
“Come to the edge.”
“We can’t. We will fall.”
“Come to the edge.”
And they came.
And he pushed them.
And they flew.

(Guillaume Apollinaire 1880—1918)
French Poet, Philosopher
3. INVOLVEMENT/PERSOONIFICATION

☆ How would you feel if you were__________?
☆ If you were a__________what would you (see, taste, smell, feel)?
☆ You are a______________. Describe how it feels.

1. Choose a number. How would you feel when divided, added, subtracted and multiplied?
2. How would you feel if you were an atom being split?
3. How would you feel if you were an electron speeding from generators to outlets?
4. How would you feel if you were an old pair of jogging shoes?
5. How would you feel if you were the lung of a chain smoker, an Olympic swimmer, a city dweller, a farmer?
6. How would you feel if you were a gentle wind?
7. How would you feel if you were a piece of driftwood?
8. How would you feel if you were a sponge resting on a kitchen counter?
9. How would you feel if you were a dandelion spore in flight?
10. How would you feel if you were an eraser on a pencil?
11. How would you feel if you were a broken hobby horse being thrown away?
4. CONSCIOUS SELF DECEIT / “WHAT IF” QUESTIONS

★ Suppose you could have anything you wanted.
What ideas could you produce if this were true?

★ You can have all of the ___________ in the world.
How could you use it to ___________?

★ You have been given power to ________________.
How will you use it?

By using this type of question, you ask the students to imagine that something is true or did happen which is not true or did not happen and to consider the consequences.

Some examples of these questions are:
What would happen if ________________?
Suppose you woke up one morning to find that you were the strongest person in the world?
Suppose people were only 5” tall. What are the things that might happen?
What would happen if the pilgrims landed at “San Francisco Rock” instead of Plymouth Rock?
What would happen if snow were green?
What would happen if pigs could fly?
What would happen if you grew to be 10 feet tall?
What would happen if there were no more schools?
What would happen if there were no music in the world?
What would happen if there were no more Saturdays?
What would happen if there were no food left in the world to eat?
What would happen if up and down were reversed?
What would happen if Lake Michigan were moved to Arizona?
What would happen if you had 4 hands and arms?
What would happen if all books were suddenly burned?
Suppose you could have $1,000,000. What would you do?
What would you make smaller? Larger?

Just suppose it was 2500 A.D. What kind of class newspaper would you publish?
You have just been given a magic wand that will change the size of things in the world.
You have been given the power to make PEACE throughout the WORLD. How will you use this power?
Suppose left and right were reversed. What are all the things that might happen?
5.** FORCED ASSOCIATION**

- This type of thinking requires metaphorical reasoning and analogies.
- Remote associates brought together may create truly original thinking.
- This is also teaching by parable.

1. How is gravitation like eating hamburgers?
2. How is a contour map like flying a kite?
3. How is an eclipse of the sun like a chocolate covered peanut?
4. How is a constitutional amendment like a chemical reaction?
5. How is your name like you?
6. What animal is like a loaf of bread?
7. How is the sun like a mother?
8. How is poetry like the formation of a tornado?
9. How is a comma like the abolition of slavery?
10. How is a triangle like the force of a magnet?
11. How is the Civil War like an ash tray?
12. How is frost like friendship?
13. How are mammals like computing a problem?
14. How is a salt shaker like a telescope?
15. How is a beaver chewing on a log like a typewriter?
16. How can a fire extinguisher give us ideas for solving this problem?
17. What ideas can we get from biology to work on the problem of lunchroom disturbances?
18. What is deeper, a hole or loneliness?
19. Which is quicker, a rare horse or gossip?
20. What animal is like a parachute?
6.  REORGANIZATION/SYNECTICS

What would happen if __________ were true?

Suppose __________ (happened), what would be the consequence?

What would happen if there were no __________?

This type of question asks the student to describe the consequences of a strange or unusual condition.

Through changing the facts, the questions ask that the world be viewed “as the world is not”. The emphasis is on the restructuring of reality by taking into account an unusual situation.

What would happen if . . .

- you were one inch tall?
- your eye balls were on your fingers?
- we didn’t have books?
- light could not be reflected?
- the sky was void of stars?
- everyone looked alike?

- the South won the Civil War?
- there was no poverty?
- there wasn’t a number system?
- all the circles were replaced by squares?
- there were no assembly lines?
- all the maps and globes disappeared?
- there was no sickness?
Maslow’s Hierarchy of Needs

1. Emotional Needs
   - Love
   - Security
   - Belongingness
   - Adventure
   - Success
   - Contribution
   - Participation

2. Physical Needs
   - Food
   - Fresh Air
   - Sunshine
   - Sleep – rest
   - Cleanliness
   - Body Care
   - Shelter
   - Fresh Water

3. Intellectual Concerns
   - Readiness
   - Competencies
   - Diversity
   - Balance
   - Questions
   - Resolution
   - Quest
   - Freedom
   - Independence
   - Risk
   - Ordering
   - Data
High scores on Standard IQ tests have never been accurate predictors of high achievement. Of the many psychologists who have searched for a more meaningful theory of intelligence, Howard Gardner, Ph.D., a professor at Harvard’s Graduate School of Education, came up with one of the most popular ideas. His multiple-intelligence theory divided intellectual capacity into eight areas, and he found physiological evidence that each “intelligence” exists in a distinct area of the brain. Gardner believes each person is born with a unique combination of strengths and weaknesses in these eight areas, but that all of them can be more fully developed through education. He has recently added two additional intelligences to his theory. His research continues to challenge educators to rethink intelligence.

1. Linguistics
2. Logical/Mathematical
3. Musical
4. Bodily/Kinesthetic
5. Spatial
6. Interpersonal
7. Intrapersonal
8. Naturalist
9. (Existentialist/Spiritual)
10. (Sexual)
## Lesson Planning Ideas
### Verbal/Linguistic Intelligence

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<th>PRACTICAL ARTS &amp; P.A.</th>
<th>FINE ARTS</th>
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<tbody>
<tr>
<td>Play &quot;What's My Line?&quot; with figures from history</td>
<td>Write a series of story problems for others to solve</td>
<td>Teach &quot;concept mapping&quot; to help remember content</td>
<td>Write a humorous story using science vocabulary/formulas</td>
<td>Read &amp; learn stories, myths, &amp; poetry from other cultures</td>
<td>Give verbal explanation of gymnastic routines</td>
<td>Listen to a piece of music &amp; make up a story about it</td>
</tr>
<tr>
<td>Debate important issues &amp; decisions from the past</td>
<td>Explain how to work a problem to others while they follow along doing it</td>
<td>Write a sequel/next episode to a story or play</td>
<td>Create a diary on &quot;The Life of a Red Blood Cell&quot; (from the cell's perspective!)</td>
<td>Hold a &quot;Countries of the World&quot; spelling &amp; pronunciation bee</td>
<td>Write instructions for the use &amp; care of machines in industrial technology</td>
<td>Verbally describe an object while a partner draws it</td>
</tr>
<tr>
<td>Create limericks about key historical events</td>
<td>Make up puns using math vocabulary, terms, concepts, &amp; operations</td>
<td>Create crossword puzzles/word jumbles for vocabulary words</td>
<td>Write steps used in an experiment so someone else can do it</td>
<td>Keep an &quot;Insights from other Cultures for Us&quot; log</td>
<td>Tell another how to run a word processing program - then do it</td>
<td>Tell a partner the steps to a dance while they perform it</td>
</tr>
<tr>
<td>Study poetry from different periods of history</td>
<td>Solve problems with a partner - one solves &amp; one explains the process</td>
<td>Play &quot;New Word for the Day&quot; - learn a new word &amp; use it frequently during the day</td>
<td>Make up an imaginary conversation between different parts of the body</td>
<td>Study a road map &amp; give verbal instructions to get someplace</td>
<td>Pretend you're a radio sportscaster - describe a game in process</td>
<td>Turn a Greek/Shakespearian tragedy into a situation comedy</td>
</tr>
<tr>
<td>Compile a note book of story jokes</td>
<td>Create poems telling when to use different math operations</td>
<td>Practice impromptu speaking &amp; writing</td>
<td>Give a speech on &quot;Ten steps for healthful living&quot;</td>
<td>Learn basic conversation in several foreign languages</td>
<td>Play &quot;Recipe Jeopardy&quot; - make questions for answers given</td>
<td>Describe an emotion/mood &amp; play music it suggests</td>
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## Lesson Planning Ideas

### Musical/Rhythmic Intelligence

(a.k.a. auditory/vibrational intelligence)

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<th>PRACTICAL ARTS &amp; P.E.</th>
<th>FINE ARTS</th>
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<tbody>
<tr>
<td>Analyze different historical periods through their music</td>
<td>Learn mathematical operations through songs, jingles, &amp; rhythmic beats</td>
<td>Learn Morse Code &amp; practice communicating with it</td>
<td>Learn to use music, rhythm, sound, &amp; vibrations to reduce stress</td>
<td>Listen to &amp; analyze different kinds of music from different cultures</td>
<td>Perform physical exercise routines in sync with music</td>
<td>Play &quot;Guess the Rhythm/Instrument&quot; when listening to various musical pieces</td>
</tr>
<tr>
<td>Create a series of key dates in history &quot;raps&quot;</td>
<td>Learn addition, subtraction, multiplication, &amp; division through drum beats</td>
<td>Use different kinds of music for different kinds of writing</td>
<td>Listen to the sound &amp; rhythmic patterns of the environment (humanly-created &amp; nature)</td>
<td>Play musical &amp; percussion instruments from around the world</td>
<td>Record &amp; recognize the varying sounds of a computer operating (and what they meant!)</td>
<td>Turn a nonmusical play into a musical or into an &quot;old time radio show&quot;</td>
</tr>
<tr>
<td>Teach/learn songs/music that were popular in previous eras (e.g. Gregorian chant, WWII songs)</td>
<td>Break a set of tones and/or rhythmic patterns into various groups to learn division tables</td>
<td>Create song/raps to teach grammar, syntax, phonetics, semantics, &amp; other language concepts</td>
<td>Try various humming patterns to see how they can alter your mood &amp; awareness</td>
<td>Learn the key characteristics of music &amp; rhythmic patterns from different cultures</td>
<td>Experiment with the effects of different kinds of music on how you eat</td>
<td>Practice impromptu music composition using the &quot;stuff&quot; in your surroundings</td>
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<tr>
<td>Make musical instruments from the past &amp; compose a piece using them</td>
<td>Play the “Rhythm Game” to learn times tables (slap thighs, clap hands, snap fingers)</td>
<td>Learn &amp; practice &quot;phonetic punctuation&quot; (a la Victor Borge)</td>
<td>Experiment with the effects of vibration on sand in a metal plate</td>
<td>Create a sound/tonal-based legend for a map</td>
<td>Learn to recognize various machines in industrial technology via their sounds</td>
<td>Draw, paint, or sculpt a piece of music as it plays</td>
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<tr>
<td>Watch films about the past &amp; focus on the sounds of history</td>
<td>Make up sounds for different math operations &amp; processes</td>
<td>Illustrate a story/poem with appropriate sounds, music, rhythms, &amp; vibrations</td>
<td>Assign sounds to systems you are studying such as the nervous system, circulatory systems, etc.</td>
<td>Learn &amp; sing songs from nations/countries being studied</td>
<td>Use music to help improve keyboarding skills &amp; speed</td>
<td>Make up a creative/interpretive dance to a piece of music</td>
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### Lesson Planning Ideas

#### Logical/Mathematical Intelligence

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<tbody>
<tr>
<td>Find examples where &quot;history repeated itself&quot;</td>
<td>Find unknown quantities/entities in a problem</td>
<td>Predict what will happen next in a story or play</td>
<td>Use the symbols of the Periodic Table of Elements in a story</td>
<td>&quot;Follow the Legend&quot; map-reading games &amp; exercises</td>
<td>Follow a recipe to make bread from scratch</td>
</tr>
<tr>
<td>Compare &amp; contrast different periods of history</td>
<td>Teach how to use a calculator for problem solving</td>
<td>Create an outline with 4 main points x 4 sub points x four sub sub points</td>
<td>Find five different ways to classify a collection of leaves</td>
<td>Play &quot;Guess the Culture&quot; based on artifacts in an imaginary time capsule</td>
<td>Learn patterns of ten different dance steps</td>
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<tr>
<td>Ask factual, process, &amp; higher-order questions about key historical decisions (a la Bloom's taxonomy)</td>
<td>Create number sequences &amp; have a partner find the pattern</td>
<td>Learn to read, write, &amp; decipher &quot;code language&quot;</td>
<td>Create a goal-setting chart for a study of AIDS (what I know, want to know, &amp; what I learn)</td>
<td>Rank-order key socio-economic factors that shaped a culture's development</td>
<td>Compose a piece of music from a matrix</td>
</tr>
<tr>
<td>Create time sequence charts with titles for major eras of history</td>
<td>Mind-map proofs for geometric theorems</td>
<td>Analyze similarities &amp; differences of various pieces of literature</td>
<td>Learn the pattern of successful &amp; reliable scientific experiments</td>
<td>Design a physical exercise routine using a matrix</td>
<td>Use a Venn diagram to analyze characters in a play</td>
</tr>
<tr>
<td>Predict what the next decade will be like based on patterns of the past</td>
<td>Analyze similarities &amp; differences of various pieces of literature</td>
<td>Use a &quot;story grid&quot; for creative writing activities</td>
<td>Predict what will happen in several current-event stories</td>
<td>Create problem solving scenarios for machines used in industrial technology</td>
<td>Create a &quot;paint-by-numbers&quot; picture for another to paint</td>
</tr>
<tr>
<td>Practice webbing attributes of various systems of the body</td>
<td>Use a &quot;story grid&quot; for creative writing activities</td>
<td>Learn cause &amp; effect relations of geography &amp; geological events</td>
<td>Make a classification matrix on meaning(s) of computers symbols</td>
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<td>Analyze plays using the classical dramatic structure model</td>
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## Lesson Planning Ideas

**Visual/Spatial Intelligence**

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<tbody>
<tr>
<td>Have imaginary talks/interviews with people from the past</td>
<td>Do a survey of student's likes/dislikes then graph the results</td>
<td>Play vocabulary words “Pictionary”</td>
<td>Draw pictures of things seen under a microscope</td>
<td>Draw maps of the world from your visual memory</td>
<td>Draw pictures of how to perform certain physical feats</td>
<td>Watch dancers on video &amp; imagine yourself in their shoes</td>
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<tr>
<td>Make visual diagrams &amp; flow charts of historical facts</td>
<td>Estimate measurements by sight &amp; by touch</td>
<td>Teach “mind mapping” as a note taking process</td>
<td>Create posters/flyers showing healthy eating practices</td>
<td>Study a culture through its visual art-painting &amp; sculpture</td>
<td>Create visual diagrams of how to use machines in industrial technology</td>
<td>Pretend you can enter a painting--imagine what it's like</td>
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<tr>
<td>Imagine going back in time--see what it was like “back then”</td>
<td>Add, subtract, multiply, &amp; divide using various manipulatives</td>
<td>Draw picture of the different stages of a story you're reading</td>
<td>Create montages/collages on science topics (e.g. mammals)</td>
<td>Make maps out of clay &amp; show geographical features</td>
<td>Practice drawing objects from different angles (e.g. drafting)</td>
<td>Listen to music with eyes closed &amp; create a sculpture from clay</td>
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<tr>
<td>Paint a mural about a period of history</td>
<td>Imagine using a math process successfully, then really do it</td>
<td>Learn to read, write, &amp; decipher code language</td>
<td>Draw visual patterns that appear in the natural world, including the microscopic</td>
<td>Make decor for the classroom on a culture you are studying</td>
<td>Learn a series of “spatial games” (e.g. horseshoes, ring toss)</td>
<td>Draw the sets for the various scenes of a play you are reading</td>
</tr>
<tr>
<td>Imagine &amp; draw what you think the future will be like</td>
<td>Learn metric measurements through visual equivalents</td>
<td>Use highlight markers to “colorize” parts of a story or poem</td>
<td>Pretend you are microscopic &amp; can travel in the bloodstream</td>
<td>Use a map to get around an unfamiliar place or location</td>
<td>Imagine your computer is human-draw how it works</td>
<td>Draw the visual and color pattern of a dance</td>
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<tr>
<td>HISTORY</td>
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<tr>
<td>Perform and/or create dramas from a period of history</td>
<td>Use different parts of the body to as a “rule” to measure different things</td>
<td>Play “The Parts of a Sentence” charades</td>
<td>Role play the parts &amp; dynamics of the life of a cell</td>
<td>Learn folk dances/dramas of a culture being studied</td>
<td>Learn &amp; perfect various “multi-tracking” routines (e.g. rub stomach &amp; pat head)</td>
<td>Create the dance equivalent for different inventions, machines, settings, etc.</td>
</tr>
<tr>
<td>Re-enact great scenes or moments from history for today</td>
<td>Add &amp; subtract members to &amp; from a group to learn about fractions</td>
<td>“Embody” (act out) the meaning of vocabulary words</td>
<td>Create the rotation of planets with the class as the solar system</td>
<td>Create gestures to represent the legend of a map</td>
<td>Invent something in manufacturing technology classes (e.g. a new house, a tool, etc.)</td>
<td>Create “human sculpture tableaux” to express an idea</td>
</tr>
<tr>
<td>Hold an historical period costume &amp; food day</td>
<td>Invent something that requires applying math concepts</td>
<td>Act out a story or play that you are studying</td>
<td>Become &amp; act out the different states of matter</td>
<td>Play “physical movement games” from another culture</td>
<td>Practice physical movements in your mind then with your body</td>
<td>Make up gestures, postures, or facial expressions to accompany a musical score</td>
</tr>
<tr>
<td>Play “Great Moments from the Past” charades</td>
<td>Create &amp; act out a play in which the characters are geometric shapes or other math concepts</td>
<td>Learn the alphabet and/or spelling through body movements &amp; physical gestures</td>
<td>Conduct a series of “hands-on” scientific/health experiments</td>
<td>Simulate “going shopping” using currency from another country</td>
<td>Make up a new kind of snack food, prepare it, &amp; eat it</td>
<td>Design a “living painting” of a classical work</td>
</tr>
<tr>
<td>Learn dances from previous periods of history (e.g. the minuet, waltz, etc.)</td>
<td>Make up a playground game that uses math concepts/operations</td>
<td>Make up a “Parts of Speech” folk dance</td>
<td>Study &amp; try various “biofeedback” techniques/methods</td>
<td>Study “body language” from different cultural situations</td>
<td>Create &amp; perform a drama on how a computer operates</td>
<td>Practice doing impromptu dramatic mime activities</td>
</tr>
</tbody>
</table>
Lesson Planning Ideas

**Interpersonal Intelligence**

<table>
<thead>
<tr>
<th>HISTORY</th>
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<th>LANGUAGE ARTS</th>
<th>SCIENCE &amp; HEALTH</th>
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<th>PRACTICAL ARTS &amp; P.E.</th>
<th>FINE ARTS</th>
</tr>
</thead>
<tbody>
<tr>
<td>Do an historical period “jigsaw” (each one learns part &amp; teaches others)</td>
<td>Solve complex story problems in a group</td>
<td>Experiment with joint story-writing—one starts then pass it on</td>
<td>Discuss “Saying No to Drugs” &amp; create Say NO* strategies</td>
<td>Assume the perspective of another culture &amp; discuss a current news item</td>
<td>Teach &amp; play a series of non-competitive games</td>
<td>Learn a new dance &amp; teach it to others</td>
</tr>
<tr>
<td>Role-play a conversation with an historical figure</td>
<td>Conduct an “interviewing others” research project &amp; calculate results as percentages</td>
<td>Analyze the message or moral of a story with a group—reach a consensus</td>
<td>Assign group research projects—groups design and implement their research plans</td>
<td>Find the relation of geography/climate to customs/values</td>
<td>Assign teams to prepare and serve meals from foreign countries</td>
<td>Create a team cooperative sculpture from clay</td>
</tr>
<tr>
<td>Imagine “passing over” into other times/lives—describe their feelings, thoughts, beliefs, values</td>
<td>“Each one teach one” new math processes/operations</td>
<td>Use a “human graph” to see where a group stands on an issue</td>
<td>Use lab teams for science experiments &amp; exercises</td>
<td>Create scenarios of “culture shock” &amp; analyze for its causes</td>
<td>Use peer coaching teams for projects in industrial technology</td>
<td>Sketch your partner with different expressions</td>
</tr>
<tr>
<td>Make a case for different perspectives on the Revolutionary War</td>
<td>Describe everything you do to solve a problem to a partner</td>
<td>Read poetry from different perspectives &amp; in different moods</td>
<td>Discuss controversial health topics &amp; write team positions papers</td>
<td>Brainstorm &amp; prioritize ways to overcome “ugly Americanism”</td>
<td>Have students work in pairs to learn &amp; improve sports skills</td>
<td>Practice “Stop the Action &amp; Improvise” while dramatizing a play</td>
</tr>
<tr>
<td>Discuss the impact of key historical decisions on today’s world</td>
<td>Have teams construct problems linking many math operations, then solve them</td>
<td>Conduct language drill exercises with a partner (make it into a game)</td>
<td>Describe the “before &amp; after” of key scientific paradigm shifts</td>
<td>Learn to read different kinds of maps, then teach another how to understand them</td>
<td>Create cooperative computing teams to learn computer skills</td>
<td>Learn to sing rounds &amp; counter-melody songs</td>
</tr>
</tbody>
</table>
# Lesson Planning Ideas

## Intrapersonal Intelligence

<table>
<thead>
<tr>
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<tbody>
<tr>
<td>Keep a journal: “Questions from life history might be able to answer”</td>
<td>Track different thinking patterns for different kinds of math problems</td>
<td>Write an autobiographical essay entitled: “My Life to Date”</td>
<td>Design, implement, and evaluate a one-month “Be Healthy” project</td>
<td>Try using “awareness” or “consciousness raising” techniques from other cultures</td>
<td>Perform &amp; discuss how different physical exercises make you feel</td>
<td>Draw yourself from different angles while looking in a mirror</td>
</tr>
<tr>
<td>Do a “pluses, minuses, &amp; interesting” analysis of famous historical decisions</td>
<td>Bridge math concepts beyond school into “real life” (what? so what? now what?)</td>
<td>Write an autobiographical essay entitled: “My Life in the Future”</td>
<td>Reflect on pictures of the solar system &amp; your own life on earth</td>
<td>List criteria of your “ideal geography/climate”--find it on a map</td>
<td>List how things learned in industrial technology classes can help in your future life</td>
<td>Dance the different stages of your life's journey including the anticipated future</td>
</tr>
<tr>
<td>Reflect on: “If I could be any historical figure, who would I be &amp; why”</td>
<td>Use guided imagery to see &amp; solve complex story problems</td>
<td>Analyze literature for “connections to our lives today”</td>
<td>Write about “If I could be any animal what would I be &amp; why”</td>
<td>Discuss: “How I’d be different if I’d grown up in another culture”</td>
<td>Write down &amp; analyze conversations with your computer</td>
<td>Create a series of sculptures to express your moods</td>
</tr>
<tr>
<td>Write an essay: “Mistakes from the past I won’t repeat”</td>
<td>Evaluate your strengths/weaknesses in understanding math--plan new strategies for success</td>
<td>Write a new poem each day for a week on “Who am I?” &amp; “Where Am I Going?”</td>
<td>Lead a series of “I Become What I Behold” exercises (imagine you ARE an object, animal, etc.)</td>
<td>Learn “focusing techniques” from different cultures (methods for concentration)</td>
<td>Watch yourself preparing a meal &amp; note everything that goes on (thoughts, feelings, physical responses, etc.)</td>
<td>Imagine yourself as each character in a play (note different feelings, values, beliefs, etc.)</td>
</tr>
<tr>
<td>Imagine people from the past giving you advice for living today</td>
<td>Watch your mood shifts/changes as you do math problems--note causes</td>
<td>Imagine being a character in a story/novel--what would you do differently or the same</td>
<td>Practice techniques for achieving relaxation &amp; reducing stress (e.g. deep breathing)</td>
<td>Keep a “feelings diary” as you read about current events</td>
<td>Imagine a skill &amp; then try to do it exactly as you imagined</td>
<td>Carefully observe the effects of different kinds of music on you</td>
</tr>
</tbody>
</table>
# Lesson Planning Ideas

## Naturalist Intelligence

<table>
<thead>
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<tbody>
<tr>
<td>Recognize &amp; interpret historical trends (e.g. Toynbee)</td>
<td>Work story problems with patterns in nature</td>
<td>Nature scene re-creation/simulations for literature &amp; poetry</td>
<td>Classify different foods for healthy diet planning</td>
<td>Environmental representations for different cultures</td>
<td>Grow vegetables, fruits, herbs &amp; use them in cooking</td>
<td>Compose using sound from nature &amp; the environment</td>
</tr>
<tr>
<td>Understand how &quot;natural events&quot; have influenced history</td>
<td>Use of &quot;nature manipulatives&quot; in math problem-solving</td>
<td>Poetic/descriptive essay writing based on nature experiences</td>
<td>Experience past scientific experiments &quot;first hand&quot; (do them!)</td>
<td>Grow, taste, &amp; learn to recognize food from different cultures</td>
<td>Learn about uses of nature for building in construction &amp; manufacturing technology</td>
<td>Recognize &amp; recreate visual images of natural patterns (paint or sculpt them!)</td>
</tr>
<tr>
<td>Create analogies between historical events &amp; events in nature</td>
<td>Graph positive &amp; negative influences on the environment</td>
<td>Learn &amp; practice using the vocabulary, idiom, jargon, &amp; vernacular of the nature &amp; the naturalist</td>
<td>Keep a diary of the natural processes of your own body</td>
<td>Study the influence of climate/geography on cultural development</td>
<td>Understand pluses/minuses of different fabrics based on their natural content</td>
<td>Create dances which embody/demonstrate patterns, objects, &amp; animals in nature</td>
</tr>
<tr>
<td>Study how animals have effected history &amp; historical trends</td>
<td>Understand the mathematical patterns of the natural world &amp; environment</td>
<td>Understand influences of climate/environment on various authors</td>
<td>Use of various &quot;naturalist taxonomies&quot; on nature field trips</td>
<td>Recreate multi-media experiences of the natural environments of different parts of the world</td>
<td>Understand how climate &amp; geography influence transportation technology</td>
<td>Design &quot;full-blown&quot; dramatic enactments of natural process</td>
</tr>
<tr>
<td>Study the lives of famous naturalists &amp; their impact on history</td>
<td>Create &amp; work calculation problems based on nature/natural processes</td>
<td>Creative story-writing using animal characters &amp; their characteristics</td>
<td>Use cognitive organizers to explore &amp; understand natural scientific processes</td>
<td>Study animals &amp; insects from different parts of the world</td>
<td>Learn how to use nature responsibly &amp; appropriately in industrial technology</td>
<td>Make montages/collages incorporating &quot;stuff&quot; from nature</td>
</tr>
</tbody>
</table>
**CALL ON STUDENTS RANDOMLY**
   NOT JUST THOSE WITH RAISED HANDS

**UTILIZE "THINK-PAIR-SHARE"**
   TWO MINUTES OF INDIVIDUAL THINK TIME, TWO MINUTES DISCUSSION
   WITH A PARTNER, THEN OPEN UP THE CLASS DISCUSSION

**REMEMBER "WAIT TIME"**
   TEN TO TWENTY SECONDS FOLLOWING A "HIGHER LEVEL" QUESTION

**ASK "FOLLOW-UPS"**
   WHY? DO YOU AGREE? CAN YOU ELABORATE?
   TELL ME MORE, CAN YOU GIVE AN EXAMPLE?

**WITHHOLD JUDGMENT**
   RESPOND TO STUDENT ANSWERS IN A NON-EVALUATIVE FASHION

**ASK FOR SUMMARY (TO PROMOTE ACTIVE LISTENING)**
   "COULD YOU PLEASE SUMMARIZE JANE'S POINT?"

**SURVEY THE CLASS**
   "HOW MANY PEOPLE AGREE WITH THE AUTHOR'S POINT OF VIEW?"

**ALLOW FOR STUDENT CALLING**
   "RICHARD, WILL YOU PLEASE CALL ON SOMEONE ELSE TO RESPOND?"

**PLAY DEVIL'S ADVOCATE**
   REQUIRE STUDENTS TO DEFEND THEIR REASONING AGAINST
   DIFFERENT POINTS OF VIEW

**ASK STUDENTS TO "UNPACK THEIR THINKING"**
   DESCRIBE HOW YOU ARRIVED AT YOUR ANSWER." (THINK ALOUD)

**STUDENT QUESTIONING**
   LET STUDENTS DEVELOP THEIR OWN QUESTIONS

**CUE STUDENT RESPONSES**
   "THERE IS NOT A SINGLE CORRECT ANSWER FOR THIS QUESTION.
   I WANT YOU TO CONSIDER ALTERNATIVES."
THE THEORY OF MORAL DEVELOPMENT
Adapted From Lawrence Kohlberg and Carol Gilligan
Stages in Moral Development

PRECONVENTIONAL MORAL DEVELOPMENT

Stage Zero - Premoral
- Pleasure - Pain (exciting-fearful) determine behavior
- No sense of obligation or morality
- Not immoral but amoral
- Take what is pleasant; avoid what is unpleasant
- Person is guided only by what he can and wants to do

Stage One - Simple authority orientation
- Obedience-and-punishment orientation
- Physical consequences determine good/bad
- Deference to superior power or prestige
- Authority figure determines standards
- Responsive to rules

Stage Two - Instrumental relativist
- Naively egoistic orientation
- Instrumentally satisfying needs of self (occasionally others)
- Equal sharing, exchange, reciprocity, fairness
- Eye for eye, same for all, treat all the same
- You scratch my back, I'll scratch yours (not from concern or loyalty, but because it's fair)

CONVENTIONAL MORAL DEVELOPMENT

Stage Three - Interpersonal concordance-good boy/nice girl orientation
- Being nice, approval, pleasing a limited group are important
- Consider own feelings (conscience) and feelings of others
- Put oneself in other’s shoes
- Stereotypes of right behavior of majority
- Intentions ("he means well") become important

Stage Four - Law and order
- Orientation toward authority and maintenance of the social order
- Maintain the given social order for its own sake
- Doing duty
- Rigid: fixed rules hard to change
- Respect for authority and majority rule

POST-CONVENTIONAL MORAL DEVELOPMENT

Stage Five - Social contact
- Contractual legalistic orientation
- Standards critically examined and socially agreed upon
- Constitutional and democratic
- Legalistic but law can be changed for benefit of society
- Individual rights respected except when contrary to constitutionally agreed rights
- Relativity of personal values respected
- Utilitarian
- Moral values are defined in terms of individual rights and standards agreed upon by the society
- Consensus rather than majority
- Official morality of United States

Stage Six - Ethical principle
- Orientation to principles above social rules
- Principles appeal to logical universality and consistency
- Conscience guided by self-chosen principle
- Justice with individual dignity
- Obedience or disobedience to law based on moral respect for justice
<table>
<thead>
<tr>
<th>Stage One:</th>
<th>Might makes right</th>
<th>Power belongs to the older and stronger</th>
</tr>
</thead>
<tbody>
<tr>
<td>Stage Two:</td>
<td>An eye for an eye</td>
<td>Take equal and exact revenge</td>
</tr>
<tr>
<td>Stage Three:</td>
<td>The moral mirror of others</td>
<td>Look for approval</td>
</tr>
<tr>
<td>Stage Four:</td>
<td>Law &amp; order&lt;br&gt;Internalize ethical self-image</td>
<td>Temper justice with compassion</td>
</tr>
<tr>
<td>Stage Five:</td>
<td>Social obligation</td>
<td>Participate in a larger, more complex group</td>
</tr>
<tr>
<td>Stage Six:</td>
<td>Spiritual democracy &amp; personal responsibility</td>
<td>Respect the rights of others</td>
</tr>
</tbody>
</table>


For an expanded bibliography or to order these materials online, visit our web-site at www.rogertaylor.com
Standards-based Interdisciplinary Curriculum with Rubrics
www.internet4classrooms.com/teacher.htm

Websites for Songs
www.greenbookofsongs.com
www.limewire.com
www.morpheus.com
www.lyrics.coolfreepages.com
www.contemplator.com/america/
www.songsforteaching.com
www.niehs.nih.gov/kids/music.htm
www.lyrics.com
www.oyate.com (Authentic Native American Music)
www.fiftiesweb.com/amerpie-1.htm
http://www.springfield.k12.il.us/movie/fire.html
www-biology.ucsd.edu/classes/bibc102.SP98/songs/PHOTOSYNTHESIS.html

Free Timelines
www.hyperhistory.com/online_n2/History_n2/a.html
www.digitalhistory.uh.edu/timeline/timeline.cfm
www.metmuseum.org/toah/splash.htm (Art History)
www.foodtimeline.org (Food)

Database of Award-Winning Children’s Literature
www.dawcl.com
www.google.com
www.gutenberg.net

Websites for Films
www.unitedstreaming.com
www.digitalcurriculum.com
(Must have Windows Media Player or QuickTime)
www.reelclassics.com/gallery/video.htm
www.apolloguide.com
www.aifisf.com (American Indian Film Institute)

Websites for Poetry
www.gigglepoetry.com

Websites for Cultural Literacy
www.bartleby.com
Examples of Kindergarten, 1\textsuperscript{st}, 2\textsuperscript{nd} & 3\textsuperscript{rd} grade curriculum units
Examples of 4th & 5th grade curriculum units

Examples of 6th, 7th & 8th grade curriculum units
Examples of 9th & 10th grade curriculum units

Examples of 11th & 12th grade curriculum units
I got friends in the Middle Ages, where Arthur rules and Guinevere chases...Lancelot.

Or

Your cheatin' heart will tell on you.

A view of the Life and Times of

King Arthur

An Integrated, Interdisciplinary Thematic Unit Exploring Arthurian Legend and the Middle Ages.

Written by:
Vicki W. Thomas, Edmond North H.S., Edmond, OK
Diana Mosley, Decatur H.S., Decatur, TX
Donna Tucker, Como-Picton H.S., Como, TX
Paula McGee, Key Academy, McAlester, OK
I. **CONTENT:** (Why is this unit important? What are the essential concepts in this unit?)

II. **PROCESS:** (How are the thinking skills developed?)

III. **PRODUCT:** (What will kids do/know as a result of this unit?)

Unit Overview: Alignment with National / State / District Pupil Performance Standards

Overarching Benchmarks / Standards / Goals for COMPLETE unit of study:

**Benchmark 1:**
  - Standard A:
  - Standard B:

**Benchmark 2:**
  - Standard A:
  - Standard B:

**Benchmark 3:**
  - Standard A:
  - Standard B:

**Benchmark 4:**
  - Standard A:
  - Standard B:

Go to www.rogertaylor.com to download the complete curriculum writing template; Look under Reference Library for this template and for your state’s grade-by-grade content standards.
OVERVIEW

I. CONTENT:
C.S. Lewis described the legend of Arthur by comparing it to a medieval cathedral: "I am thinking of a great cathedral, where Saxon, Norman, Gothic, Renaissance, and Georgian elements all co-exist, and all grow together into something strange and admirable which none of its successive builders intended or foresaw."

The Medieval Period is important because its influences on society and culture throughout the world are still prevalent today. The study of the legend of King Arthur encompasses literature, history, romance, relationships, politics, religion, social structure, war, intrigue and more. What better way to study the time period and its people? Many literary works and customs of today are influenced by Arthurian legend. Through the study of the Arthurian legend students will gain insight into the foundations of many literary plots and cultural practices easily recognized in their time and apply that knowledge to become more culturally aware.

In addition, this unit addresses many National Education Standards. The authors chose National Standards because we were from different states. Match state standards with the National Standards found in the goals section below.

II. PROCESS:
Students will gain thinking skills through study using activities, which promote:
- critical/analytic reasoning
- moral/ethical/philosophical reasoning
- productive/creative reasoning by analyzing human activities and interdisciplinary connections of
  - History/Politics
  - Literature/Theatre
  - Religion/Philosophy/Learning
  - Visual Arts
  - Music
  - Science/Technology Growth
  - Daily Life
Through the use of:
- activities that promote understanding of cultural diversity
- working individually, in small groups and in large groups
- employing research skills
- activities that foster an understanding of the interdisciplinary connections
- creation of various products that lead to a better understanding of legends and their role in cultures of the past and present
- journal entries
- creative decision making

III. PRODUCT:
Students will know the importance of the Arthurian legend and its role in literature, history, fine arts and social studies, as well as the effects of the middle Ages on cultures of today.

Unit Overview Alignment with
National Education Standards for Pupil Performance Outcomes

National Standards Covered in this Curriculum

GOAL 1: Social Studies, National Standard #1. Students will understand and use complex cultural concepts such as adaptation, assimilation, acculturation, diffusion, and dissonance drawn from anthropology, sociology and other disciplines to explain how culture and cultural systems function.

GOAL 2: Social Studies, National Standard #2. Students engage in analysis and reconstruction of the past, examining its relationship to the present and extrapolating into the future. They integrate individual stories about people, events, and situations to form a more holistic a more holistic conception, in which continuity and change are linked in time and across cultures. Students also learn to draw on their knowledge of history to make informed choices and decisions in the present.

GOAL 4: Social Studies, National Standard #5. Students must understand the paradigms and traditions that under gird social and political institutions. They should be provided opportunities to examine, use, and add to the body of knowledge related to the behavioral sciences and social theory as it relates to the ways people and groups organize themselves around common needs, beliefs and interests.

GOAL 6: Social Studies, National Standard #7. Students develop economic perspectives and deeper understanding of key economic concepts and processes through systematic study of a range of economic and sociopolitical systems, with particular emphasis on the examination of domestic and global economic policy options related to matters such as health care, resource use, unemployment, and trade.

GOAL 7: Social Studies, National Standard #8. Students begin to explore the complex relationships among technology, human values, and behavior. They will find that technology brings changes that surprise us and even challenge our beliefs, as in the case of discoveries and their applications related to our universe, the genetic basis of life, atomic physics, and others.

Go to www.rogertaylor.com to download the complete unit.
I–SEARCH INDEPENDENT RESEARCH PROJECTS
FOR GIFTED AND TALENTED STUDENTS

State each research project with an investigative focus and a "hands-on" product to show research outcome.

(If writing curriculum for inclusion, design one I-Search project for Gifted and Talented learners and a concrete operational project for special learners or Students on IEPs.)

1. **PARADOXES:**
   - Common notion not necessarily true in fact.
   - Self-contradictory statement or observation.

2. **ATTRIBUTES:**
   - Inherent properties.
   - Conventional symbols or identities.
   - Ascribing qualities.

3. **ANALOGIES:**
   - Situations of likeness.
   - Similarities between things.
   - Comparing one thing to another.

4. **DISCREPANCIES:**
   - Gaps of limitations in knowledge.
   - Missing links in information.
   - What is not known.

5. **PROVOCATIVE QUESTIONS:**
   - Inquiry to bring forth meaning.
   - Incite knowledge exploration.
   - Summons to discovering new knowledge.

6. **EXAMPLES OF CHANGE:**
   - Demonstrate the dynamics of things.
   - Provide opportunities for making alterations, modifications, or substitutions.

7. **EXAMPLES OF HABIT:**
   - Effects of habit-bound thinking.
   - Building sensitivity against rigidity in ideas and well-tried ways.

8. **ORGANIZED RANDOM SEARCH:**
   - Use familiar structure to go at random to build another structure.
   - An example from which new approaches occur at random.

9. **SKILLS OF SEARCH:**
   - Search for ways something has been done before (historical search).
   - Search for the current status of something (descriptive search).
   - Set up an experimental situation and search for what happens (experimental search).

Go to www.rogertaylor.com to download the complete template.
I–SEARCH INDEPENDENT RESEARCH PROJECTS
FOR GIFTED AND TALENTED STUDENTS

1. **PARADOXES:**
Chivalry is considered one of the highest forms of social behavior. Why then did it develop in a time considered barbaric by modern standards? Create your own modern rules of chivalry. Compare and contrast with those of the Arthurian legends.

2. **ATTRIBUTES:**
Research modern social systems that have feudal characteristics. Create a presentation outlining one of these systems.

3. **ANALOGIES:**
King Arthur’s character can be found in many works of literature. Through research, choose a character from Modern literature, movies, comics, etc. that is like Arthur. Write an essay or create a presentation that answers the question, “How is ____________ like King Arthur?”
Example: How is Luke Skywalker like King Arthur?

4. **DISCREPANCIES:**
Many scholars have tried to answer the question of King Arthur’s true existence. Chose a point of view, real man or myth. Write an essay and prepare an oral defense of your point of view.

5. **PROVOCATIVE QUESTIONS:**
Women and their role in society began to change with the introduction of the Code of Chivalry and Courtly Love. Write and produce a short scene of Courtly Love demonstrating the power of women. Then do the same scene as if in modern times.

6. **EXAMPLES OF CHANGE:**
Writing instruments have undergone tremendous changes over the centuries since the Middle Ages. Create a power point presentation outlining the major changes in writing instruments over the ages.

7. **EXAMPLES OF HABIT:**
In the movie “The Name of the Rose,” the monks were responsible for copying great works of literature and scientific information. Works that directly conflicted with the religious teachings of the day were copied with poisonous ink. The result was death to anyone who read these writings. Research articles from the modern arguments of science versus religion. (i.e. the debate on evolution vs. creationism.) Form a panel and role-play the differing opinions being debated today. You will need a moderator and a format for the discussion.

8. **ORGANIZED RANDOM SEARCH:**
Medieval music tells us a lot about the people and their culture. If music defines the time, then what does the music of today say about your generation? Search for themes in today’s music, which will tell future generations about the beginning of the 21st century. You are creating a time capsule with music of your choice. Remember you are defining your generation with your choices. What do you want the future generations to understand about growing up now? Be prepared to defend your choices.

9. **SKILLS OF SEARCH:**
Today we are being faced with diseases and infections that are immune to modern medical treatments. Search for diseases that existed in the middle ages. What measures were taken to help curb the spread of these diseases? What were the results of these outbreaks? How do we handle outbreaks of viruses now? What parallels can you draw between diseases and their treatments now and in the Middle Ages? Present your findings and document your research.

Go to www.rogertaylor.com to download the complete unit.
CRITICAL THINKING SKILLS – ACADEMIC STRANDS
ANALYZING HUMAN ACTIVITIES! (AHA!)

STATE STANDARD #________ STUDENTS WILL BE ABLE TO ____________________.

ESSENTIAL QUESTION: How does the Universal Theme of Producing, Exchanging and Distributing create mastery learning of essential concepts in this unit?

State the essential concept(s) that this specific lesson will teach:

1. PRODUCING, EXCHANGING, AND DISTRIBUTING [ECONOMICS]
   (Textbook or Database_______)

KNOWLEDGE:
Definitions, describes, identifies, labels, lists, matches, names, outlines, reproduces, selects, states.
(Include ANCHORING ACTIVITY / ANTICIPATORY SET, at least 2 “for examples”)
Anchoring Activity / Anticipatory Set:

Students will:

COMPREHENSION:
Converts, defends, distinguishes, estimates, explains, extends, generalizes, gives examples, infers, paraphrases, predicts, rewrites, summarizes. (Include “for examples”)
Short term / Formative Assessment:

APPLICATION:
Changes, computes, demonstrates, discovers, manipulates, modifies, operates, predicts, prepares, produces, relates, shows, solves, uses. (Include ANCHORING ACTIVITY / ANTICIPATORY SET, and at least one IN-CLASS TEAM PRODUCT)
Anchoring Activity / Anticipatory Set:

Students will create a (class / team product):

Rubric for Product Assessment:

Multicultural and/or ESL and/or Bilingual Link:

Mathematics/Science Link and/or Humanities Link:

School-to-Career/Tech Prep Link:

HIGHER ORDER THINKING SKILLS (H.O.T.S.):
Paradoxes, attributes, analogies, discrepancies, provocative questions, examples of change, examples of habit, organized random search, skills of search, tolerance for ambiguity, intuitive expression, adjustment to development, study creative people and process, evaluate situations, creative reading skill, creative listening skill, creative writing skill, visualization skill. (Include ANCHORING ACTIVITY / ANTICIPATORY SET and IN-CLASS TEAM OR INDIVIDUAL PRODUCT)
Anchoring Activity / Anticipatory Set:

Students will (Class/team/individual product):
Short term / Summative Assessment:

INDIVIDUAL JOURNAL ASSIGNMENT:
HOMELINK:
CRITICAL THINKING SKILLS [ACADEMIC]
ANALYZING HUMAN ACTIVITIES! (AHA!)
(The 10 Foundational Activities of Humans)

NATIONAL STANDARDS:
Social Studies, National Standard #1. Students will understand and use complex cultural concepts such as adaptation, assimilation, acculturation, diffusion, and dissonance drawn from anthropology, sociology and other disciplines to explain how culture and cultural systems function.
Social Studies, National Standard #2. Students engage in analysis and reconstruction of the past, examining its relationship to the present and extrapolating into the future. They integrate individual stories about people, events, and situations to form a more holistic, a more holistic conception, in which continuity and change are linked in time and across cultures. Students also learn to draw on their knowledge of history to make informed choices and decisions in the present.

ESSENTIAL QUESTION: How does the Universal Theme of PRODUCING, EXCHANGING, AND DISTRIBUTING [ECONOMICS] create mastery learning of essential in this unit?

Through the study of production, exchanging and distributing during the Middle Ages the student will gain an understanding of the feudal system and the social culture.

1. PRODUCING, EXCHANGING, AND DISTRIBUTING [ECONOMICS]

KNOWLEDGE:
Anticipatory Set: Show film clip from Braveheart portraying feudal daily life.
Students will: be able to identify the history and economics of feudalism and how it impacted England.

COMPREHENSION:
Anticipatory Set: Show film clips demonstrating noble life from The Mists of Avalon
Activity:
1. Students will divide into groups. Through discussion the groups will develop their own social and economic system. Groups then will debate the advantages of their system as opposed to the other groups.
2. Create a visual representation of the elements of a feudal village.
Class/team product: Visual representation of the elements of a feudal village.

APPLICATION:
Anticipatory Set: Show clips from Robin Hood depicting the dire straits of the common man.
Students will: demonstrate an understanding of feudal government systems.
1. Students will divide into groups establishing a high king and several kings and courts. With given assets the groups will deal with the economic demands of the high king.
2. Students will compare and contrast the challenges and opportunities people experienced during the Middle Ages with people today, e.g. homelessness, hunger.
Class/team product: construct an economic treaty

MULTICULTURAL and/or ESL and/or BILINGUAL LINK:
Anticipatory Set: Film clip from The Seven Samurai showing the contrast of Japanese feudal classes with the European system.
Students will: examine feudal societies in Native American Culture, Japanese Shogun culture, ect.
Activity: Make a chart showing the parallel roles of two of the feudal systems.
MATHEMATICS/SCIENCE LINK and/or HUMANITIES LINK:
Anticipatory Set: Show Robin Hood: Prince of Thieves scene where Marian comes to forest while they are engineering tools and weapons.
Activity: Create a wheel and axle, pulley and counterweight, or lever and fulcrum.

SCHOOL-TO-CAREER/TECH PREP LINK:
Activity: Analyze your name and what that meant you would do.

HIGHER ORDER THINKING SKILLS (H.O.T.S.):
Anticipatory Set: Play the Pink Floyd song “Money” or Tina Turner’s “Proud Mary”
Students will: show an understanding of the barter system by applying it to daily life today.
Activity: Students will be divided into family groups. They must earn credits by establishing some merchandise to trade with other family groups. Each group should be located in a specific geographic area that will produce certain types of products. Basic human needs must be met, such as food, housing, water. Supply and demand will play a role in the bartered merchandise’s worth.
Class/team/individual product: Each group will produce an advertising campaign for their product.

INDIVIDUAL JOURNAL ASSIGNMENT:
How do you perceive your life as being different from that of someone in the Middle Ages in the same economic strata as you today?

HOMELINK:
Go home and ask someone to describe a time when they may have been discriminated against based on their social status.

Go to www.rogertaylor.com to download the complete unit.
MORAL / ETHICAL / SPIRITUAL REASONING AND DILEMMAS FOR CHARACTER EDUCATION

TEN ETHICAL DILEMMAS
(Must be set in context of unit, but must also relate to the lives of today's students)

STATE STANDARD # ______.

ESSENTIAL QUESTION: How does the content of this unit reflect character education through Moral and Ethical dilemmas?

1. **Producing, Exchanging, and Distributing** [Economics]
   ESSENTIAL QUESTION: How does the Human Activity of Producing, Exchanging and Distributing create moral/ethical dilemmas?

DILEMMA:

2. **Transportation**
   ESSENTIAL QUESTION: How does the Human Activity of Transportation create moral/ethical dilemmas?

DILEMMA:

3. **Communications**
   ESSENTIAL QUESTION: How does the Human Activity of Communications create moral/ethical dilemmas?

DILEMMA:

4. **Protecting and Conserving**
   ESSENTIAL QUESTION: How does the Human Activity of Protecting and Conserving create moral/ethical dilemmas?

DILEMMA:

5. **Providing Education**
   ESSENTIAL QUESTION: How does the Human Activity of Providing Education create moral/ethical dilemmas?

DILEMMA:

Go to www.rogertaylor.com to download the complete template.
TEN ETHICAL DILEMMAS
ESSENTIAL QUESTION: How does the content of this unit reflect character education through Moral and Ethical dilemmas?

1. **Producing, Exchanging, and Distributing** [Economics]

**DILEMMA:** You are a feudal lord and the time has come to collect your share of the peasant’s gross agricultural product. However, the farmers have had a bad year and if they give you what they truly owe you, there will be next to nothing left for the peasant’s and their families to store for the winter. If you do not let them keep more of their harvest, most of them will starve and you will have no workers for next season. Unfortunately, if you do not take what is rightfully yours, regardless of the peasants’ situation; neighboring lords may see you as weak and try to take your land by force. What do you do? If you let the peasant keep some of their food, they will survive the winter and be stronger (and grateful) for next year’s harvest and may produce even more for you. On the down side, your neighbor’s may look at you as weak and try to usurp your land. Make a decision.

Similarly, your company has had a horrible year. If you give your loyal employees their customary year-end bonus, yearly profits will suffer and leave your company ripe for a hostile take-over. However, your employees live off commissions and with such a bad year, some of them might be financially destroyed if they do not receive the bonus they have been counting on. Do you give them the bonus and save their collective financial butts and. Therefore, insure great loyalty on their side yet face the possibility of being eaten up by a larger corporate fish or do you let them suffer financially and know that your business will be safe from a corporate raider?

2. **Transportation**

**DILEMMA:** At your village, a man on horseback has ridden in to warn you that a caravan of foreigners is on its way to your area. The caravan is full of men, women and children, some of whom are sick and others just simply exhausted and starving. You round up the village elders to make a decision: Do you let the caravan in and try to help those you can, or do you turn them away, which may result in the death of everyone in the group? Do you try to save some, even at the risk that the sick may infect your people and, thus, result in the sickness and/or death of many?

The Coast Guard is made aware that a raft carrying the sick from Cuba is bound from Florida. In Cuba, they do not have the resources to help the people so they come to a "better life” in America. These people do not have insurance and if they land, any medical will be provided free of charge and, even worse, those that are infected may take off once they hit land and infect others. If you let them drift, not only will they all die, but also they will die long, painful deaths from exposure and starvation. What do you do?

3. **Communications**

**DILEMMA:** You are a devout young priest and you realize the Bishop is only pretending to read from the Gospels. Instead, he is preaching that the peasants should pay their lords even more taxes, thereby insuring that the Bishop will be able to ask for more donations to line his own pockets. The congregation cannot speak Latin, so they do not realize that the “translation” is pure bull. Do you turn the Bishop into the order for such behavior, therefore preventing the gauging of the pockets of the already poor peasants? This could possibly mean that you, as a priest, will be sent to a Church on the edge of nowhere by the Bishop’s powerful friends. Or do you simply let the activity slide and vow to never do such malicious things when you become a Bishop?

On the first day of school, you notice that a group of kids are standing by the restrooms sending foreign male students to the women’s bathroom and vice versa and then sitting back and laughing at the bewildered and embarrassed newcomers. Do you try and reach the foreign students first and tell them what is what, but risk being ridiculed by your “own” group of students?

4. **Protecting and Conserving**

**DILEMMA:** It is the Middle Ages and invaders have been running rampant over the countryside. The Lord and brought all the peasant inside the manor walls and the group is waiting out the sacking and pillaging. However, this has been going on all winter and the supplies are getting low. You are guarding the drawbridge when a group of scraggly women and children come up, begging to be allowed inside. Invaders killed all their men and they have no place to go. By letting them in, you will undoubtedly save them from being raped, possibly murdered, by the marauding scoundrels and you also probably save them from freezing to death. However, you need to conserve your own supplies for your own people. Additionally, without any men, who will take care of these women and children come spring and the manor peasants go back to their lots?

In today’s world, there are children upon children that are unwanted. They are children of all races, ages and health. It would almost seem to be a pure exercise in vanity to have your own child. However, most people want to protect their family names and genes and therefore, many kids are left in orphanages. You are of childbearing age and need to make a decision—would have your own, or adopt?

5. **Providing Education**

**DILEMMA:** Religious and nobles were the only educated people in the middle ages. The peasants (laborers) are uneducated and do not think for themselves. The jobs of the religious were to give sermons to the peasants that miserable lives on this earth will reap many rewards in the after life. You are a monk in the Middle Ages you see that if peasants were taught and given the ability to decide from themselves they could live better lives. However, if you educate the masses there will be peasant revolts and the nobles and church will lose power over the masses. Do you educate the peasants and take the risk of revolt or do you do nothing and retain power over them.

Go to www.rogertaylor.com to download the complete unit.
1. **BRAINSTORM MODEL**
   A. BRAINSTORM ALL OF THE ________________.
      AHA #1:  
      AHA #2:  
      AHA #3:  
      AHA #4:  
      AHA #5:  
      AHA #6:  
      AHA #7:  
   
   B. BRAINSTORM AS MANY_____________ AS YOU CAN THINK OF.
      AHA #8:  
      AHA #9:  
      AHA #10: 
      AHA #11: 
      AHA #12: 
      AHA #13: 
      AHA #14: 
   
   C. HOW MANY WAYS CAN YOU COME UP WITH TO _________________?
      AHA #15:  
      AHA #16:  
      AHA #17:  
      Random Brainstorm:  
      Random Brainstorm:  

2. **VIEWPOINT MODEL (Human or Animate)** USE CULTURAL LITERACY TERMS
   A. HOW WOULD ________________ LOOK TO A (N) _________________?
      AHA #1:  
      AHA #2:  
      AHA #3:  
      AHA #4:  
      AHA #5:  
      AHA #6:  
      AHA #7:  
      AHA #8:  
   
   B. WHAT WOULD A ______ MEAN FROM THE VIEWPOINT OF A (N) _______?
      AHA #9:  
      AHA #10:  
      AHA #11:  
      AHA #12:  
      AHA #13:  
      AHA #14:  
      AHA #15:  
      AHA #16:  
      AHA #17:  

Go to www.rogertaylor.com to download the complete template.
PRODUCTIVE THINKING SKILLS
DIVERGENT/CREATIVE THINKING

1. BRAINSTORM MODEL
A. BRAINSTORM ALL OF THE ________________:
   AHA #1. All of the tasks a lord must perform to protect the serfs
   AHA #2. The problems associated with transportation during the Middle Ages
   AHA #3. All the problems associate with mass communication
   AHA #4. How people protected themselves without guns during the Middle Ages
   AHA #5. The advantage of dealing with superstitious, illiterate people during the Middle Ages
   AHA #6. How enough food is produced to feed the masses without technology
   AHA #7. How many types of dances you know

B. BRAINSTORM AS MANY ___________ AS YOU CAN THINK OF.
   AHA #8. Countries that have a true monarchy
   AHA #9. Names of religions
   AHA #10. Expressions of art
   AHA #11. As many political scandals as you can think of
   AHA #12. How many styles/settings can you think of to tell the about the legend of King Arthur
   AHA #13. As many chants as you know
   AHA #14. Scenes that you would depict in a stained glass window

C. HOW MANY WAYS CAN YOU COME UP WITH TO ________________?
   AHA #15. As many musical styles as you know
   AHA #16. As many dramas that they know of
   AHA #17. The different ways teenagers like to spend their leisure time

2. VIEWPOINT MODEL (Human orAnimate) (Use Cultural Literacy Terms)
A. HOW WOULD ______________ LOOK TO A (N) ________________?
   AHA #1. How would the New York Stock Exchange look to King Arthur?
   AHA #2. How would a thoroughbred horse look to a knight?
   AHA #3. How would email look to Merlin?
   AHA #4. How would a gun look to a knight?
   AHA #5. How would a Xerox machine look to a monk/scribe?
   AHA #6. How would a cathedral builder look at a power tool?
   AHA #7. How would the Dallas Cowboys look to King Arthur's jousters?
   AHA #8. What would King Arthur think about Congress?

B. WHAT WOULD A __________ MEAN FROM THE VIEWPOINT OF A (N) ______?
   AHA #9. Song from Eminen; Gregorian monk
   AHA #10. Sewing machine; tapestry artist
   AHA #11. Bill of Rights; serf
   AHA #12. Audio book; serf
   AHA #13. Televangelists; Medieval Age priest
   AHA #14. Graphic arts technology; monk
   AHA #15. Synthesizer; monastery choir director
   AHA #16. Lasers; a minstrel
   AHA #17. A shopping mall; a maiden/lady

C. HOW WOULD Lancelot VIEW THIS?
   1. a spot on the Jerry Springer show
   2. a tank, a F-16, a nascar
   3. a bullet proof vest
   4. condoms
   5. Brittny Spears
   6. a McDonald's drive through

Go to www.rogertaylor.com to download the complete unit.
### Cultural Literacy/Spelling List

#### Knights and Ladies of Arthur’s Realm:

<table>
<thead>
<tr>
<th>Character</th>
</tr>
</thead>
<tbody>
<tr>
<td>AGGRAVAINE</td>
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<tr>
<td>ARTHUR</td>
</tr>
<tr>
<td>BALIN AND BALAN</td>
</tr>
<tr>
<td>BEDIVERE</td>
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<tr>
<td>BORS</td>
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<tr>
<td>DINADAN</td>
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<tr>
<td>ELAINE OF ASTOLAT / THE LADY OF SHALOTT</td>
</tr>
<tr>
<td>ELAINE OF CORBENIK</td>
</tr>
<tr>
<td>ENID and GERAINTE / EREC</td>
</tr>
<tr>
<td>GAHERIS</td>
</tr>
<tr>
<td>GALAHAD</td>
</tr>
<tr>
<td>GARETH and LYNETTE</td>
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<tr>
<td>GAWAIN</td>
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<tr>
<td>GUINEVERE</td>
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<tr>
<td>KAY</td>
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<tr>
<td>THE LADY OF THE LAKE</td>
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<tr>
<td>LANCELOT</td>
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<tr>
<td>MARK</td>
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<tr>
<td>MELEAGANT</td>
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<tr>
<td>MERLIN</td>
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<td>MORDRED</td>
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<td>MORGAN LE FAY</td>
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<td>MORGAUSE</td>
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<td>PALOMEDES</td>
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<td>PELLINORE</td>
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<tr>
<td>PERCEVAL</td>
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<tr>
<td>PELLEAS AND ETARRE</td>
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<tr>
<td>TALIESSIN THE BARD</td>
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<tr>
<td>TRISTAN and ISOLT</td>
</tr>
<tr>
<td>VIVIEN (NINEVE, NIMUE, NINIANE)</td>
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<tr>
<td>YVAIN (YWAIN, OWAIN)</td>
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</table>

**Others:**

<table>
<thead>
<tr>
<th>Character</th>
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<tbody>
<tr>
<td>CHRÉTIEN DE TROYES</td>
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<tr>
<td>GEOFFREY OF MONMOUTH</td>
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<tr>
<td>SIR THOMAS MALLORY</td>
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<td>KING RICHARD I</td>
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<tr>
<td>KING JOHN</td>
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<tr>
<td>ROBIN HOOD</td>
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<tr>
<td>ALFRED LORD TENNYSON</td>
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#### Phrases

<table>
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<tr>
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<tbody>
<tr>
<td>THE HOLY GRAIL</td>
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<td>THE ROUND TABLE</td>
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<td>THE SIEGE PERILOUS</td>
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<td>EXCALIBUR AND THE SWORD IN THE STONE</td>
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#### Dates

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<td>1136-38</td>
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#### Ideas/Places/Events/Titles

<table>
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<tr>
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<tbody>
<tr>
<td>CHIVALRY</td>
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<td>FEUDALISM</td>
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<td>AVALON</td>
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<td>CADBURY</td>
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<td>CAERLEON</td>
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<td>CAMELOT</td>
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<td>GLASTONBURY</td>
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<td>SQUIRES</td>
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<td>TAPESTRY</td>
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<td>PILGRIMAGE</td>
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<td>COMMON LAW</td>
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<td>NOBLES</td>
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<td>VASSALS</td>
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<td>ARCHITECTURE</td>
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<td>SHOGUN</td>
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<td>LORD</td>
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<td>SERFS</td>
</tr>
<tr>
<td>HERALDRY</td>
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<tr>
<td>STONEHENGE</td>
</tr>
<tr>
<td>FAIR MAIDEN</td>
</tr>
</tbody>
</table>

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I. Bibliography – Teacher/Professional Books and Resources
19. *Arthurian Literature*. (An annual journal publication from Boydell and Brewer.)

Bibliography – Student Books and Video/sound Recordings available in Metropolitan Library system, Oklahoma City. Books may be obtained through the Media Center at local schools.

III. Educational Films/Videos

IV. Commercial Films/Videos
1. Camelot
2. Excalibur
3. First Knight
4. The Seven Samurai
5. Merlin
6. Shogun
7. Monty Python and the Holy Grail
8. The Net
9. Anna and The King
10. Prince Valiant
11. Sir Gawain and the Green Knight
12. The Lion in Winter
13. Lancelot du Lac
14. The Sword and The Stone
15. Braveheart
16. Robin Hood: Prince of Thieves
17. *A Connecticut Yankee in King Arthur’s Court*
18. The Fisher King
19. Vikings
20. *Indiana Jones: The Last Crusade*
21. The Mists of Avalon
22. Dead Poets Society
23. Men of Honor
24. Becket
25. *A Man for All Seasons*
26. The Hunchback of Notre Dame
27. Hamlet

V. Literature/Language Arts (available through High School Media Center)

Fiction

©Dr. T. Roger Taylor
15. Anonymous, Ode to Joy

Non–Fiction

Poetry
3. *Beowulf*
5. *Divine Comedy*, Dante Alighieri, 14th Century
6. *Union of Words and Music in Medieval Poetry/Book & Cassette* -- Rebecca A. Baltzer (Editor), Et Al. (Editor); Hardcover
7. Carroll, Lewis, *Jabberwocky*
8. Coleridge, Samuel Taylor, *Christabel*, 1798
9. Whitman, Walt, *Leaves of Grass*
10. Spencer, Edmund, *The Faerie Queen*

**Drama (Stage Productions)**
1. Second Shepherds Play
4. Everyman

**Art Works**
Should include a study of stained glass, tiles, tapestries, glasswork, pottery, etc. Here are a few references for pictures. There also exists some great online exhibits. These exhibit sites change frequently so just do a search on Medieval art and Arthurian legend in art.
8. *The Book of Kells: forty-eight pages and details in colour from the manuscript in Trinity College, Dublin*. Selected and introd. by Peter Brown. Thames and Hudson, c1980

**Music**
The classes should always have some music playing when they enter themed with the lesson of the day. Choose music from the period of contemporary music of your choice. Play some of the story songs from the seventies like “I’ll Give You a Daisy A Day Dear,” “Honey,” as examples of lyrical songs. Use creative association to set the mood. Below are suggested musical references for music of the Middle Ages.
8. *Sinners & Saints - The Ultimate Medieval and Renaissance Music Collection*, Droardus Trecensis, Traditional, Michael Praetorius; Audio CD
10. *Songs and Dances of the Middle Ages*, Dorian 1993 Audio CD
12. *Canticles Of Ecstasy*, by Hildegard of Bingen, Jan Hoermann, Laurie Monahan (Audio CD)

**Reference Sources for Music**

9. [http://www.red-hedgehog.co.uk/AboutMus/EarlyMed.htm](http://www.red-hedgehog.co.uk/AboutMus/EarlyMed.htm) Short description of early medieval music
10. [http://wally.rit.edu/cary/manuscripts/antiphonal27.html](http://wally.rit.edu/cary/manuscripts/antiphonal27.html) medieval music manuscript

**VI. Resource People/Mentors**

<table>
<thead>
<tr>
<th>Artist</th>
<th>Poet</th>
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<tbody>
<tr>
<td>Priest</td>
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<td>Travel Agent</td>
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<tr>
<td>Architect</td>
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<td>Politician</td>
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<tr>
<td>Farmer</td>
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<tr>
<td>Morris Dancer</td>
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<tr>
<td>Musician</td>
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<tr>
<td>Medieval club member</td>
<td></td>
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<tr>
<td>Craft Person</td>
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</table>

**VII. Field Trips**

| Medieval Fair |
| Art Museum |
| Church or Cathedral (Stained Glass) |
| Travel Agency |
| Architecture Design Firm |
| History Museum |
| Map Department at a State of Local Agency |

**VIII. Other Material (CD–ROM, Laser Disc, Internet sites, etc.)**

There is an enormous amount of information on Arthurian Legend and the Middle Ages on the internet. Internet sites change frequently. Below are a few sites of special interest.

2. [http://www.users.globalnet.co.uk/~tomgreen/Arthuriana.htm](http://www.users.globalnet.co.uk/~tomgreen/Arthuriana.htm) Arthurian Resources
6. The Saxon Shore – Literary Magazine online
9. Chaucer, Geoffrey, d. 1400, *The Pardoner's tale and The Nun's tale* [sound recording] Caedmon, p1956.(read in Middle English)
11. Quest For Camelot (CD Rom) Atlantic/Q Records 1998
12. *Myths & Legends Of King Arthur & The Knights Of The Round Table* -- Rick Wakeman; Audio CD
The Party's Over-

but the Band Plays On

AIDS In Africa

Burning the Fabric that Binds Us

An Integrated, Interdisciplinary, Thematic Study of Viral, Bacterial, and Parasitic Epidemics that have Affected Mankind from 1340 to the Present

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OVERVIEW

I. CONTENT:
Recently, the world has turned its attention to the AIDS epidemic in Africa. 17 million Africans have died since the AIDS epidemic began in the late 1970s, and AIDS has orphaned an additional 12 million children. This plague threatens to wipe out the African population. Similarly, historians have estimated in the 14th century that the Bubonic plague wiped out about 32% of the European population. This interdisciplinary integrated unit is designed to guide students to an understanding of both historic epidemics, like the Bubonic Plague, and contemporary plagues, such as AIDS, so they can make more informed decisions now and in the future.

II. PROCESS:
Students will be guided as they discover knowledge, comprehend the knowledge, and apply historic and contemporary information concerning epidemics. They will examine how major epidemics have altered the course of political, economic, and social history. Students will analyze human anatomy, trace disease transmission, and the body’s corresponding response to infection. Throughout the unit, various hands-on lab experiments, fictional and non-fictional accounts, and analytical activities will be utilized. Students will work both independently and cooperatively to reach these goals.

III. PRODUCT:
Students will gain basic knowledge of human anatomy and cell structure. They will analyze historic and contemporary epidemics and its effects on society. Students will examine political and economic decisions concerning epidemics. They will be able to synthesize this information to make informed decisions concerning themselves, their neighborhood, and the international community.

State/District Pupil Performance Outcomes

GOAL 1: Students will evaluate the United States and other economic systems on their ability to achieve broad social goals such as freedom, efficiency, equity, security, development, and stability.

GOAL 2: Students will describe how major world issues and events affect various people, societies, places, and cultures in different ways.

GOAL 3: Students will evaluate the responses of individuals to historic violations of human dignity involving discrimination, persecution, and crimes against humanity.

GOAL 4: Students will explain why people may agree on democratic values in the abstract but disagree when they are applied to specific situations.

GOAL 5: Evaluate foreign policy positions in light of national interests and American values.

GOAL 6: Students will examine how historical, political, and social factors affect developments in science.

GOAL 7: Students will compare and contrast the chemical composition of different cell types.

GOAL 8: Students will describe and compare basic cell functions.

GOAL 9: Students will explain the basics of human anatomy with understanding of pathogenic infection.

GOAL 10: Students will compose both informal and formal writings concerning the effects of epidemic on society.

Go to www.rogertaylor.com to download the complete unit.
I–SEARCH INDEPENDENT RESEARCH PROJECTS
FOR GIFTED AND TALENTED STUDENTS

1. **PARADOXES:**
   In Medieval times, during the Black Plague, it was generally thought that cats (especially black cats) were from Satan and the cause of the plague. This led them to kill the cats, thus causing the rat population to increase and spread the plague even more.

   Product: Research and discover another medical malpractice in the history and/or contemporary times. Create a “problem-solver” report that uncovers the truth behind the case.

2. **ATTRIBUTES:**
   You have decided to pursue a career in research science involving the spread of disease. What skills and background will you need to earn a degree in this profession to not only gather and interpret data, but also in the creative thinking involved in developing new technology?

   Product: Create an informative pamphlet that a guidance counselor would distribute to students interested in a career in medical research.

3. **ANALOGIES:**
   Some people say that human rights can be compared to an epidemic.

   Product: Examine how human rights can be analogous with epidemics. Write a poem that utilizes symbolism and metaphors of epidemic to illustrate this analogy.

4. **DISCREPANCIES:**
   While scientists have learned a lot about HIV, much more is still left to be learned. In addition, the public does not necessarily understand all that science has revealed.

   Product: Research the aspects of HIV that are unknown and/or misunderstood. Create an advertisement that informs people about these discrepancies.

5. **PROVOCATIVE QUESTIONS:**
   Many people feel that employees should be required to inform their employers about existing medical conditions. In addition, many people feel that doctors should reveal to their patients if they are HIV-positive.

   Product: Research the history of medical confidentially and interpret if it applies in cases of HIV-positive individuals. Create a television program (CNN’s “Crossfire”) that examines both aspects of this issue.

6. **EXAMPLES OF CHANGE:**
   Throughout history people regarded others inflected with disease in many different lights. While some people have displayed compassion, others have showed ignorance through their fear.

   Product: Research the public treatment and opinion of people with disease throughout history. Find film clips (edited into one continuous film) depicting this treatment. Write a comparison essay that illustrates the changes and/or consistency of this treatment over time.

7. **EXAMPLES OF HABIT:**
   The use of intravenous drugs is an obvious risk to one’s health; however, with diseases like AIDS and hepatitis, the risk is even greater.

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1. **PRODUCING, EXCHANGING, AND DISTRIBUTING** [*ECONOMICS*]

   **Textbook:** Global Insights

   MCF SS IV 4.3 Students will be able to evaluate the United States and other economic systems on their ability to achieve broad social goals such as freedom, efficiency, equity, security, development, and stability.

   **KNOWLEDGE:**
   - **Anticipatory Set:** Play Barenaked Ladies song, “If I Had a $1,000,000”.
   - **Activity:** List at least ten ways money affects (or has affected) their life. E.g.: kind of clothes they can buy, type of neighborhood they live in. . . .

   **COMPREHENSION:**
   - Proportionately, Africa has a large infection rate of HIV and AIDS. Examine the economic conditions in Africa that contribute to this epidemic. Explain how economic issues may promote epidemics in some countries and curb the disease in others.
   - **Activity:** In collaborative groups, examine the GDP, GNP, average family income, and unemployment rate of assigned African countries. Discuss how these factors may inhibit the availability of health care in that particular country.

   **APPLICATION:**
   - **Anticipatory Set:** Show movie clip from Philadelphia and Jeffery that illustrate medical care in the U.S. Show movie clip from City of Joy to illustrate conditions in developing countries.
   - In order to understand how economics affects availability of health care worldwide, students will examine health care conditions in African countries (or other developing countries). Then students will compare and contrast medical conditions between industrial countries (United States) and developing countries (Africa).
   - **Product:** Students will create an original drawing that accurately illustrates the conditions of treatment in the two countries.
   - **Mathematics Link:** Using present mortality rates of AIDS, predict the population of Africa in 10 years, 20 years, 50 years.

   **HIGHER ORDER THINKING SKILLS (H.O.T.S.):**
   - **Anticipatory Set:** Students will read excerpts from Martin Luther King Jr.’s “Letter from a Birmingham Jail” to examine an appeal to others.
   - **Students will appeal for economic assistance through a public speech.**
   - **Product:** Write a two-minute speech to appeal to the World Health Organization (United Nations) for economic assistance in Africa. Students should include not only factual evidence, but also, a passionate plea.

   **INDIVIDUAL JOURNAL ASSIGNMENT:** Describe a time when the amount of money your parents make affected your life. How did you feel? Did you talk to your parents about the issue? If so, what did you say?

   **HOMELINK:** Interview your parents about the health care coverage that your family has. Do you have full medical coverage including vision and dental? Are you allowed to choose your own doctor?

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Go to www.rogertaylor.com to download the complete unit.
Remember, if you're not part of the solution you must be part of the precipitate!

A Thematic Chemistry Unit with Emphasis on the Mole

"Oh Chemistry, Oh Chemistry"
"Six Point - Oh - Two Times Ten to the Twenty-Three"

"What do you do with a dead chemist?"
"Barium in a Krypton"

Steve Kobernik - Rialto HS, Rialto CA
Diann Mazingo - Eaglecrest HS, Aurora, CO
OVERVIEW

I. CONTENT:
Nearly all of first year chemistry relies on one principle – the mole. Understanding the mole is the key to: basic nomenclature, the law of conservation of matter, balancing chemical equations, stoichiometry, molecular and empirical formulas, and several property constants. Both the California and Colorado state standards directly address these concepts as fundamental understandings of physical science.

II. PROCESS:
Organized according to Bloom’s Taxonomy
- Knowledge: The unit will begin by ensuring that students know the basic concepts and principles of the mole as a counting unit.
- Comprehension: Then, by connecting the principle of the mole to an understanding of the law of conservation of matter, students will translate this understanding into balancing chemical equations.
- Application: Furthermore, students will be able to apply these concepts to the process of stoichiometry in determining amounts required or produced of certain compounds or elements in chemical reactions and to the understanding of several physical constants.
- Analysis: After stoichiometry, students will be able to analyze laboratory experiments quantitatively and determine, through the process of error analysis, where discrepancies in the experimental procedure or process led to quantitative errors in the formation of products.
- Synthesis and Evaluation: Finally, students will be able to design, perform, analyze, and evaluate an experimental procedure in an authentic assessment setting.

III. PRODUCT:
Students will know
- how to describe chemical reactions by writing balanced equations.
- the quantity one mole is set by defining one mole of carbon 12 atoms to have a mass of exactly 12 grams.
- one mole equals 6.02 x 10^23 particles (atoms or molecules).
- how to determine the molar mass of a molecule from its chemical formula and a table of atomic masses and how to convert the mass of a molecular substance to moles, number of particles, or volume of gas at standard temperature and pressure.
- how to calculate the masses of reactants and products in a chemical reaction from the mass of one of the reactants or products and the relevant atomic masses.
- how to calculate percent yield in a chemical reaction.

Students will be able to:
- write and balance chemical equations
- do stoichiometric calculations
- develop, design, analyze and apply experimental processes.

Unit Overview: Alignment with National/State/District Pupil Performance Standards

California Strand 3: The conservation of atoms in chemical reactions leads to the principle of conservation of matter and the ability to calculate the mass of products and reactants. As a basis for understanding this concept:
- Students know how to describe chemical reactions by writing balanced equations.
- Students know the quantity one mole is set by defining one mole of carbon 12 atoms to have a mass of exactly 12 grams.
- Students know one mole equals 6.02 x 10^23 particles (atoms or molecules).
- Students know how to determine the molar mass of a molecule from its chemical formula and a table of atomic masses and how to convert the mass of a molecular substance to moles, number of particles, or volume of gas at standard temperature and pressure.
- Students know how to calculate the masses of reactants and products in a chemical reaction from the mass of one of the reactants or products and the relevant atomic masses.
- Students know how to calculate percent yield in a chemical reaction.

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I–SEARCH INDEPENDENT RESEARCH PROJECTS
FOR GIFTED AND TALENTED STUDENTS

1. **PARADOXES:**
If electrons are attracted to protons, and protons repel other protons, how can you explain the structure of the atom?

Product: Write a short science fiction story personifying the subatomic particles and their placement in the atom.

2. **ATTRIBUTES:**
Visualization techniques can be used to help memorize inherent properties of acids and bases. For example, Acids turn litmus red, create hydronium ions, etc. A picture of a H$_3$O$^+$ molecule colored red can help remember these two properties.

Product: Draw a picture or write a story that will help you memorize all the properties of both acids and bases.

3. **ANALOGIES:**
Stoichiometry and balancing chemical equations are often taught by using an analogy to cooking and recipes.

Product: Determine another appropriate analogy for a chemistry concept and demonstrate how it works.

4. **DISCREPANCIES:**
Ritalin is commonly prescribed medication to treat symptoms of ADD/ADHD. However, very little is actually known about how it works. Since it is a stimulant in the same category (Type II) as cocaine and speed, why is it effective in increasing attention.

Product: Investigate the current research on Ritalin and how it works and create an animation of the process in Anime style personifying the chemicals and processes involved.

5. **PROVOCATIVE QUESTIONS:**
Many great scientific discoveries have been the result of serendipity. However, we continue to teach the scientific method as “the way real science is done.” For example, the discovery of Teflon was the result of a tank of nitrogen being contaminated.

Product: Investigate major scientific advances that have been the direct results of accidents and create a timeline of the discoveries.

6. **EXAMPLES OF CHANGE:**
The evolution of the modern atomic theory began with Democritus and is still under modification as we learn more about quarks, leptons, etc.

Product: Come up with quips that describe the view of the atom at each stage in history and put them in a form appropriate for a poster or a series of bumper stickers.

7. **EXAMPLES OF HABIT:**
The theories about the position of the earth in the solar system/universe were strongly debated back in the days of Copernicus, Kepler, Brahae, Galileo and others. Changing scientific thought is sometimes an arduous process of butting heads with other scientists – sometimes even involving bloodshed and ostracism.

Product: Create and perform a true-to-history puppet show depicting Avogadro and Dalton arguing over the veracity of Avogadro’s hypothesis.

8. **ORGANIZED RANDOM SEARCH:**
In a search engine such as Google or Alta Vista, perform a search on a word chosen by random from the index of your text book. Gather information. Perform a second search with a new, different term.

Product: Create a “six degrees of separation” analysis connecting these two concepts using the research you have found.

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CALIFORNIA STATE STANDARD #9a-c

Predict the effect that changes in pressure will have on equilibrium position, write and calculate an equilibrium constant for a reaction, and explain how chemical engineers affect the world economy.

ESSENTIAL QUESTION: How does the Universal Theme of Producing, Exchanging and Distributing create mastery learning of essential concepts in this unit?

Mole numbers affect equilibrium equations, equilibrium constants, and, in turn, the earnings of the chemical industry and their stockholders, and the world economy.

a. PRODUCING, EXCHANGING, AND DISTRIBUTING
(Textbook: Addison-Wesley Chemistry Chapter 19)

KNOWLEDGE:
Anticipatory Set:
- Capped water bottle next to open beaker with about the same amount of water
- 1-L flask with 200 mL 6M HNO₃ to which 5-10g Cu is added, then stoppered

Students will:
- identify what is necessary for equilibrium [closed system]
- state what is equal in equilibrium [forward and reverse reaction rates]
- state the side to which the equilibrium position will shift when pressure is increased [the side with fewer moles of gas]
- reproduce the K<sub>eq</sub> expression when aA + bB ⇋ cC + dD

COMPREHENSION:
- infer the side to which the equilibrium position will shift when pressure is increased in several gaseous equilibria when reaction equations are given
- explain what happens to the mole numbers/coefficients when placed in the K<sub>eq</sub> expression

APPLICATION:
Anticipatory Set:
- juxtaposed pictures of a bag of NH₄NO₃ and a cultivated field with lush foliage
- juxtaposed pictures of a pick-up truck of NH₄NO₃ and the Federal Building in Oklahoma City after the explosion
- equilibrium equation for the Haber Process with temperature [450°C], pressure [elevated], and catalyst [Fe₂O₃]
- statement that about 17 billion kg of ammonia were produced this way in the U.S. in 1995, and China produced even more than we did.

Students will:
- produce the K<sub>eq</sub> expressions for several equilibria when reaction equations are given
- solve for the K<sub>eq</sub> value when concentrations or partial pressures are given for all reactants and products
- solve for any concentration or partial pressure when the others are given along with the K<sub>eq</sub> value

Class/team product: Write a paragraph explaining why elevated temperature, elevated pressure, and catalysts are used in the industrial production of ammonia by the Haber Process.

Multicultural and/or ESL and/or Bilingual Link: Find out and write up what Fritz Haber was famous for in 1918 [Nobel Prize in chemistry for industrial ammonia synthesis], what he was infamous for during World War 1 [director of the German Chemical Warfare Office], and why he had to leave Germany in 1933 [had a Jewish background].

Mathematics/Science Link and/or Humanities Link:
• Find, copy, and submit a graphic drawing of the equipment and flow of reactants and product in the Haber ammonia synthesis process. –or—
• Gather and present some statistical data on food costs, food production expenses as part of the economy, the proportion of food production expenses spent on fertilizers each year, the relationship between costs of fertilizer and gross food sales from producers, etc. –or—
• Prepare a list of explosives (names and chemical formulas) containing nitrogen. Conclude with a short paragraph explaining why (at least 2 reasons) so many explosives contain nitrogen. [1. enormous, sudden expansion of gases from solids or liquids, 2. cheap and abundant supply of \( N_2 \) in the atmosphere]

School-to-Career/Tech Prep Link:
Find or write the job description of a chemical engineer. How would that apply to the chemical engineer overseeing the Haber Process?

HIGHER ORDER THINKING SKILLS (H.O.T.S.):
Anticipatory Set: A chart comparing the closing monthly stock prices (also gross assets, ?P ratios, and CEO salary packages?) of 4-6 major chemical companies, including 2 German companies, for the past 5 years, with the question, “What is the “bottom line” in the chemical industry?”
Students will: Use the internet to find another chemical synthesis reaction in which the pressure is elevated for industrial production.
Class/team/individual product: Create several power point slides showing how raising the pressure helps the “bottom line.”

INDIVIDUAL JOURNAL ASSIGNMENT:
You are the C.E.O. of a major pharmaceutical company. Write about what you would look for when interviewing to replace your Chief Chemical Engineer.

HOMELINK:
Ask your family, or some adult you know with money, about their stock market investments, and if not, how they would choose specific stocks or mutual funds in which to invest if they were in a position to do so.

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Starring, in Ordered Pairs:
- Ima Slope and Al Jabar
- Perp N. Dicular and Par A. Lell

**Plot: Your Point**
- If coordinates don’t fly, why are they on a plane?
- To “b” or not to “b” that’s the y-intercept...
- One person’s positive slope may be another person’s negative slope...
- Learning to cope with slope...when you’re a zero or simply undefined!
- What goes up may keep going up...
- The Rise and Fall of the Rise and Run!
- Y intercept?

First Flight of the Coordinate Plane...
or It’s All Downhill From Here!

*An Integrated, Interdisciplinary 8th Grade Unit on Slope*

Prepared by Dan Cutler and Kelley Hunter
Windsor Middle School, Windsor, California
I. **CONTENT:**
Students need to understand that slope represents a rate of change as applied to areas of science, economics and in other daily life.

II. **PROCESS:**
Through hands-on activities students will practice various modes of graphing (e.g. paper/pencil, classroom wall graphs, and outdoor rope graphs); students will develop thinking skills through note-taking, literature, songs, poems, observations, and class discussions.

III. **PRODUCT:**
Students will gain an understanding of slopes as a rate of change and its relationship to events in the world around them, as well as its relationships to the linear equation that defines it.

**Unit Overview: Alignment with National/State/District Pupil Performance Standards**

**Benchmark 1: California State Standard 6.0**
Students graph a linear equation and compute the x- and y-intercepts. (e.g., graph 2x+6y = 4)

**Benchmark 2: California State Standard 7.0**
Students verify that a point lies on a line, given an equation of a line. Students are able to derive linear equations by using the point-slope formula.

**Benchmark 3: California State Standard 8.0**
Students understand the concepts of parallel lines and perpendicular lines and how their slopes are related. Students are able to find the equation of a line perpendicular to a given line that passes through a given point.

**Benchmark 4: California State Standard 9.0**
Students solve a system of two linear equations in two variables algebraically and are able to interpret the answer graphically.

**I–SEARCH INDEPENDENT RESEARCH PROJECTS FOR GIFTED AND TALENTED STUDENTS**

1. **PARADOXES:**
A slope is considered to be positive or negative based on your point of reference when reading a graph from left to right. In a world where measurement cannot be negative, use a model to explain to someone the difference between positive and negative slope, and why slope can be considered negative.

2. **ATTRIBUTES:**
Create a rap or song describing the attributes (symbols and their meanings) of slope using the slope-intercept formula.

3. **ANALOGIES:**
Make a crossword puzzle using other words that have the same meaning as slope.

Go to www.rogertaylor.com to download the complete unit.
STATE STANDARD #6  _STUDENTS WILL BE ABLE TO GRAPH A LINEAR EQUATION AND COMPUTE THE X- AND Y-INTERCEPTS._

ESSENTIAL QUESTION: How does the Universal Theme of _Producing, Exchanging and Distributing_ create mastery learning of essential concepts in this unit?

1. **PRODUCING, EXCHANGING, AND DISTRIBUTING** [ECONOMICS]

   **KNOWLEDGE:**
   **Anticipatory Set:** After seeing clip from Grease (scene: Travolta & Greasers are fixing up older car)
   You are given this true life example to graph: “You have found an ’86 Mustang GT in great shape for $4000. Negotiating with your parents, your parents will not give you the money, but they have $5000 in the bank that you can have the interest on annually; the rate is 5%. Graph the rate at which the money will accrue on the x- and y-axis.”

   **COMPREHENSION:**
   Because you’re smart and don’t have to do a lot of homework, you feel you can handle an after school job and keep your grades at a B or better. This job at Burger King pays $5 per hour for 25 hours a week. Recalculate your earnings combined with the interest from your parent’s bank account. How long would it take for you to earn the $4000?

   **APPLICATION:**
   **Anticipatory Set:** Sing the Beatles’ “Tax Man” and discuss the song.
   **Students will be given this dilemma:** you have just received your first monthly check from Burger King. Social Security and other taxes have been taken out at the combined rate of 20%.
   **Product:** Plot the new rate of money earned on taxed income. Use a transparency to overlay the two rates (before and after taxes) for the class to see on the overhead projector.
   **Multicultural and/or ESL and/or Bilingual Link:** Taxes in Sweden are approximately 70% of gross income. Plot your savings at 70% of gross wages. Discuss the differences between a socialist and capitalist government.
   **Mathematics/Science Link and/or Humanities Link:** Discuss Steven Forbes idea of a flat tax for America, where everything sold would be taxed at a rate of 6% regardless of the income of a person’s earnings. Verbally compare how the taxes would affect people who are rich and people who are impoverished.
   **School-to-Career/Tech Prep Link:** Interview a car appraiser from a local dealership on how they determine a used car’s trade-in value.

   **HIGHER ORDER THINKING SKILLS (H.O.T.S.):**
   **Anticipatory Set:** Sing “Born to Be Wild” (Bob Seager)
   **Students will:** Discuss the reason why teenagers want a car. Is it to be free and to get out from under teacher or parental supervision? We then discover the cost of insurance, gas, repairs, do we lose our freedom because we are now serving a car?
   **Class/team/individual product:** Plot the real monthly cost of owning a car if the monthly payment is $250, insurance $120, gasoline $60, repairs $50, at an income derived from your interest and your job. How much of your time will be spent maintaining your car?

   **INDIVIDUAL JOURNAL ASSIGNMENT:** After explaining the mathematics, write a journal assignment, “Does owning your own car set you free?”

   **HOMELINK:** Ask your homelink: Did you have a car as a kid? How much was it? Did you have to pay for it? How much was insurance? Who paid for it? Do they feel their car gave them freedom or cost them their freedom?

Go to www.rogertaylor.com to download the complete unit.