
How to Analyze the Literacy Demands of CTE Certification Tests

Technical Assistance Packet

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How to Analyze the Literacy Demands of CTE Certification Tests and Prepare Students to Be Successful

Purpose of this Packet: The purpose of this Technical Assistance Packet is to provide a systematic approach for analyzing the literacy demands of Career and Technical Education (CTE) certification tests and to provide suggestions for how to prepare students to successfully pass the tests.

The Challenge: Many CTE instructors feel confident that their students “know” the material but cannot successfully meet the reading and vocabulary challenges of the certification tests in their field and demonstrate that they know the material “on the test.” Since demonstrating that they know the material in the form of a test is necessary in many CTE fields, it is important to understand the literacy demands of the test and how to prepare students to be successful on the test. This includes, but is not limited to “test taking skills.”

How to Address the Challenge: When CTE teachers understand the literacy demands and teach and expect students to use specific strategies as a part of teaching and learning, students will develop the habits and skills they need to be more successful on the test. Fortunately, these literacy and learning habits and skills are the same they will need in the 21st century workplace so in addition to preparing students to pass the test, they are preparing them to do the types of reading, writing, and thinking needed in the field.

The materials in this packet were developed by PCG-CRM and used during a two-part workshop series offered in 2007–08 that was sponsored by the Maine Department of Education and the Maine Administrators for Career and Technical Education (MACTE). CTE educators from across the state of Maine participated in the workshops and analyzed seven certification tests. The results of those analyses as well as key materials from the workshops are provided in this packet. Teachers can use the process outlined to a) analyze the literacy demands of their specific certification test and b) plan to use literacy strategies to help students be ready to take the test.

Explanations and examples of all of the literacy support strategies can be found in the CTE Literacy Strategies Manual at every Maine CTE center or from the *Content Area Literacy Guide* under Resources for Teachers at CCSSO’s project Secondary School Redesign website:

http://www.ccsso.org/projects/secondary_school_redesign/Adolescent_Literacy_Toolkit/.

In this Technical Assistance Packet you will find the following documents:

- How to Analyze the Literacy Demands of CTE Certification Tests and Prepare Students to be Successful
- Cue Words for Identifying Bloom’s Level of Critical Thinking in Test Questions
- CTE Test Certification Analysis Template
- Teaching Suggestions and Applicable Strategies by Bloom Level
- Sample Results of Analyses Done on Specific CTE Certification Tests
- In the Words of Maine CTE Teachers: *Why Literacy? Why Me? Why Now?*

How to Analyze the Literacy Demands of CTE Certification Tests

Two Core Premises of CTE Test Analysis:

- Analyzing the test using Bloom's Cue Words helps CTE teachers understand what students will need to do in terms of reading and thinking to be successful.
- Using instructional strategies that develop students reading, vocabulary and critical thinking skills in the context of CTE classroom instruction will better prepare students to take the test and better prepare students to succeed in the 21st century CTE workplace.

Use the Following Three-Step Process to Analyze a Specific Test



Step 1: Before Analyzing the Test

1. Review the introductory materials about the test to determine

- Test question accuracy – are these actual questions or samples based on the test?
- Content – Is the test organized by topic or by concept or by process/skill?

Reason why this is important: A test has an internal structure and knowing that structure is helpful to those who will take it – just like knowing how a manual is set up helps the user to access information. Think of a test like a piece of text – knowing length, types of questions, how the content is organized, examples of types of questions helps the test taker to be prepared.

2. Review the test format

- Types and lengths of questions – multiple choice, true/false, open-ended
- Types of answers – single choice (a, b, c or d), multiple correct answers possible (e.g., a and b), presence of intentional distracters
- Use of visuals – diagrams, charts, illustrations, formulas

Reason why this is important: Students need to see good open ended responses modeled, need to practice the critical thinking required to answer items with multiple answers possible and to reason through distracters, and often need assistance on how to read visuals. This is all part of what is needed to be successful in the CTE workplace, not just on the test.

3. Understand the CTE literacy connection

- Rigor = not only getting to advanced material but doing more with the content
- Relevance/context = doing more reading/writing/critical thinking as it applies to CTE content

Reason why this is important: Tests, like real life applications of knowledge and skills, require students to perform a variety of actions with content. That is, students need to apply the content, analyze what is what is being asked for, diagnose what is wrong, and adapt the content to new situations. Teaching and practicing literacy skills in the CTE classroom and shop is integral to being able to learn, retain and apply content—not something “extra” but a core part of CTE instruction.

4. Understand cognitive demands: A new Bloom’s taxonomy of critical thinking

- Test questions are not just recall but require different types of thinking to answer
- Understand the Taxonomy: this is the primary analysis tool used in this packet

Reason why this is important: To do well on the test, students need to be accustomed to applying, describing, analyzing, diagnosing/evaluating the content, using correct terminology (vocabulary), able to communicate in writing and speaking what needs to be done and why, and able to do this in the classroom and in the field/shop. Organize instruction to make sure students are being asked to regularly apply advanced levels of the taxonomy to all important content.

Original taxonomy: Difficulty level		New taxonomy: Instructional level	
Easiest	Knowledge	Remember	Basic
	Comprehension	Understand	
	Application	Apply	
	Analysis	Analyze	
	Synthesis	Evaluate	
	Evaluation	Create	
Hardest			Advanced

5. Preview the CTE test certification analysis template

(see *Accuplacer* template in this packet – you will create one based on this to analyze a specific test)

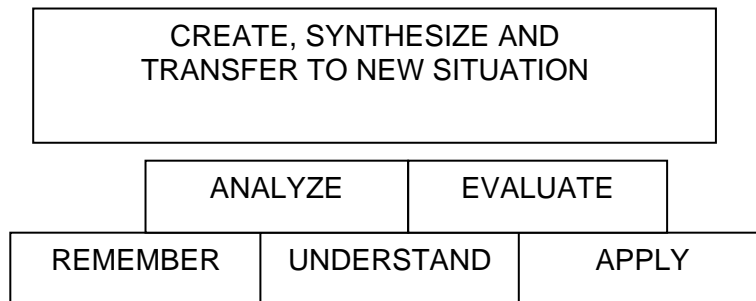
- Cognitive demands – select the most difficult thinking skill required by the question
- Reading level – grade, lexile, other description
- Reading complexity – questions, passages, vocabulary, answers, distracters
- Text format – requires printed text, visuals/graphics, multi-media, kinesthetic, other

Reason why this is important: Familiarizing yourself with the template will allow you to proceed with the analysis and understand the issues you are trying to understand.



Step 2: Analyzing the Test

1. Review the six levels of cognitive demand



2. Record the cognitive demands of the test using the following process. Use the template in this packet.

- Read each explanation and question, underlining or highlighting the most difficult thinking skill required to answer the question.
- Analyze a total of 30–60 questions from different sections of the test to develop a large enough sample from which to draw conclusions about the whole test.
- Total the responses for each of the six levels of Bloom's Taxonomy and calculate the percentage of questions requiring that level of thinking.

NOTE: There is a complete set of Bloom's cue words included in this packet. The following examples of how to locate Bloom cue words in test passages and questions were taken from four CTE certification tests:

- *NIMS Machining Level 1 – Milling*
- *TestKing* samples aligned to CompTIA Computer Technology – A+ Hardware and A+ Operating Systems Technologies
- *ServSafe* Food Manager's Certification Exam
- *Learning Express* samples aligned to EMT National Registry Exam – Emergency Technician Basic Exam

Examples for *Remember* cue words

- The process of checking and adjusting a measuring instrument to an acceptable standard is called: _____
- Which device would you plug into an AGP slot?
- Where is a detailed physical exam for an accident typically performed?
- What is contamination?
- Surface finish can be measured in: a. millimeters; b. microinches; c. kilomicrons; d. centiinches (fill in missing words sentence)

Examples for *Understand* cue words

- When you boot up your computer, the light on the diskette drive lights up and stays lit. What does this mean?
- How is the disc defragmenter utility started in Windows 9x?
- The tap drill for a 3/8-16 UNC internal thread is ___ inches in diameter and provides a ___ thread engagement. a. 0.356, 90%; b. 0.3125, 75%; c. 0.257, 65%; d. 0.375, 100% (implied translation)

Examples for *Apply* cue words

- What does the BIOS do when a plug and play card is installed?
- Which is a proper way to dry hands after washing them?
- Which of the following best describes the procedure for drilling a hole?
- During active inhalation, the diaphragm: a. contracts and flattens; b. relaxes; c. moves upward, forcing the lungs to contract; d. moves upward, forcing the ribs to move down (implied action)

Examples for *Analyze* cue words

- Proper disposal of oily rags and wipes prevents fires by preventing: _____
- A foodservice operation has been closed by the regulatory agency because it has been found to be a source of food-borne illness outbreaks. The establishment should: _____
- What should you try on a Windows 95 operating system if your sound card is not working and appears with an exclamation point in the device manager tab under the system control panel?
- You should apply an automated external defibrillator to: a. patient with chest discomfort; b. patient with traumatic injuries; c. patient without a pulse; d. patient with low blood pressure (implied cause and effect)

Examples for *Evaluate* cue words

- You get an error during POST on a PC. What could this mean? (Choose two)
- What is the best method to assess circulation in an infant?
- There has been a backup in the floor drain of a kitchen area. Sewage and waste water are on the floor. What should the manager do?
- Which of the following is the most common drilling practice?
- Which of the following are advantages of drilling on a milling machine instead of a drill press?

Examples for *Create* cue words

(Note: These are invented. No *Create* questions were provided on these four tests.)

- Which of the following sets of foods could best be adapted for life in outer space?
- Predict what you would do if you saw an unconscious neighbor on the street.
- Theorize what would happen if milling machines could be operated wireless.
- Imagine that it is 300 years from now. What three types of care would Emergency Medical Technicians spend the most amount of time providing?

3. Review the completed template. What do you notice? What surprises you? Is the test balanced? What will happen if students are not prepared to engage in higher order thinking when taking the test?

(Note: Sample results of the analysis of seven CTE certification tests are included in this packet.)



Step 3: After Analyzing the Test

1. Review past student performance data on the certification test

You might want to look at:

- Your students
- School or district multi-year trends
- State and/or national multi-year trends
- Vendor interpretive analysis

2. Plan how you will provide literacy support instruction to adequately develop your students' thinking skills

- Identify specific reading/writing/thinking strategies that connect well to your program area.
- Identify places in the curriculum where these literacy strategies can be added to help students learn how to do the level of cognitive demand necessary for the certification test and workplace.
- Plan how to use each strategy six or more times using “gradual release of responsibility” instruction that transfers the strategy from the teacher to the students. The goal is for students to be able to independently select and use the strategy during learning.

3. Plan how to provide specific test preparation support prior to test administration

How will you communicate the following to students?

- Purpose and benefits of taking the test
- Test format and types of questions
- How to use test-taking strategies (using cue words, elimination, guessing)
- How they should review and prepare for the test
- The logistics of test administration
- Strategies for reducing stress and test anxiety

You may want to give students a checklist of materials to bring, remind them to eat a high protein meal before taking the test and make sure they have directions to the test center (if it is not at the school).

4. Help students gain awareness of their emotional needs as test-takers.

Key Messages --

- Test-taking phobia – “Let yourself accept what you cannot change.”
- Stress level – “Relax—you're in control and this is a positive first step to a good job!”
- Success anxiety – “Even if you're on the right track, you'll get run over if you just sit there.”
- Future fear – “Progress always involves risk. You can't steal second base with your foot still on first.”

Cue Words for Identifying Bloom's Level of Critical Thinking in Test Questions

Note: While these cues typically apply where shown, the context of the complete question or passage may change the cognitive demand in some cases.

LOWER-ORDER THINKING SKILLS					
1. REMEMBER			2. UNDERSTAND		
<ul style="list-style-type: none"> • Acquire • Called • Choose • Cluster • Count • Define • Describe • Distinguish • Draw • Fill-in • Find • Follow directions • Group • How many • Identify • Indicate • Is, are • Know • Label • List 	<ul style="list-style-type: none"> • Locate • Match • Memorize • Name • Observe • Outline • Pick • Point • Quote • Read • Recall • Recite • Recognize • Record • Relate • Repeat • Reproduce • Select • Show • Spell • State 	<ul style="list-style-type: none"> • Tabulate • Tell • Trace • Underline • What, what is/are/does • When • Where • Which • Who • Write <p style="margin-top: 10px;">Also most fill-in-the-missing-word sentence</p>	<ul style="list-style-type: none"> • Account for • Associate • Change • Cite • Classify • Compare • Conclude • Contrast • Convert • Define • Demonstrate • Describe • Determine • Differentiate • Discuss • Distinguish • Draw • Estimate • Example • Expand • Explain 	<ul style="list-style-type: none"> • Express in other terms • Extend • Extrapolate • Generalize • Give examples • Give in own words • Group • How • Identify • Infer • Illustrate • Interpolate • Interpret • Locate • Mean • Measure • Outline • Paraphrase • Predict 	<ul style="list-style-type: none"> • Prepare • Put in order • Rearrange • Reorder • Reorganize • Report • Rephrase • Restate • Retell • Review • Show • Simplify • Suggest • Summarize • Tell (in own words) • Trace (on map) • Transform • Translate • Visualize
3. APPLY					
<ul style="list-style-type: none"> • Action • Apply • Assemble • Build a model • Calculate • Choose • Classify • Collect information • Complete • Compute • Construct • Convert • Demonstrate • Develop • Differentiate between • Do, be done • Dramatize • Draw • Duplicate, reproduce • Employ • Estimate • Examine • Expand • Experiment • Find (implies investigation) 	<ul style="list-style-type: none"> • Function • Generalize • Give example • Graph • Illustrate • Imitate • Interpret • Interview • Investigate • Keep records • Locate (information) • Make • Manipulate • Model • Modify • Operate • Organize • Participate • Perform • Plan, prepare • Practice • Predict • Present 	<ul style="list-style-type: none"> • Procedure • Produce • Proper, acceptable • Prove (in math) • Put into action • Put to use • Put together • Record • Relate • Restructure • Schedule • Select • Show • Sketch • Solve • Track (in development) • Translate • Use, employ • Visualize • Write 			

HIGHER-ORDER THINKING SKILLS		
4. ANALYZE	5. EVALUATE	
<ul style="list-style-type: none"> • Allow, not allow, criteria • Analyze, assess • Appraise • Break down • But, except, exception • Calculate • Categorize • Cause • Check • Classify, organize • Compare, contrast • Conclude, conclusion • Correct, proper, incorrect • Criticize • Debate • Deduce • Detect 	<ul style="list-style-type: none"> • Determine, diagnose, suspect • Diagram • Difference, differs • Discover • Discriminate • Distinguish, differentiate • Divide • Draw conclusions • Edit • Evidence • Examine • Experiment • Failure • Form generalizations • Formulate • Group • Hypothesize • Idea, concept • Identify, indicate • If, if – then 	<ul style="list-style-type: none"> • Illustrate • Infer • Inspect • Inventory • Like, unlike • Logical • Makes inferences • Map • Needs • Next, next step • Observe • Outline • Pattern • Point out • Predict, hypothesize • Prevent, precaution • Priority • Problem, situation • Process • Purpose, motive • Put into categories • Question
6. CREATE		
<ul style="list-style-type: none"> • Adapt • Alternative • Arrange • Assemble • Blend • Change, substitute • Collect • Compile • Compose • Constitute • Construct • Could • Create • Deduce • Derive • Design • Develop • Devise • Document 	<ul style="list-style-type: none"> • Elaborate • Explain • Form • Formulate • Generate • Imagine • Improve • Integrate • Invent • Make up • Manage • Maximize • Minimize • Modify • Organize • Perform (in public) • Plan • Predict • Prepare • Prescribe • Produce • Propose alternative • Put it all together 	<ul style="list-style-type: none"> • Advantages • Affect • Agree • Appraise • Appropriate • Argue • Assess • Award • Better, best (-er, -est words) • Choose • Compare • Conclude • Consider • Contrast • Convince • Criticize • Critique

CTE Test Certification Analysis Template

CTE Program Area: _____

Name of Test: _____

Cognitive Demands: Using Bloom’s Taxonomy of Critical Thinking

(Source: *Learning and Leading with Technology*, Feb. 2007, and the original Bloom’s Taxonomy of Critical Thinking)

Directions: Locate the specific cue words in each test question that identifies what thinking skill is required to answer it. If two cue words are present, select the cue which represents the **most difficult** thinking going “up” Bloom’s thinking skills required to answer the question

	Easiest	—————→				Most difficult
Test ?	Remember (Knowledge)	Understand (Comprehension)	Apply (Application)	Analyze (Analysis)	Evaluate (Evaluation)	Create (Synthesis)
1.						
2.						
3.						
4.						
5.						
6.						
7.						
8.						
9.						
10.						
11.						
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35.						
36.						
37.						
38.						
39.						
40.						

		Easiest → Most difficult				
Test ?	Remember (Knowledge)	Understand (Comprehension)	Apply (Application)	Analyze (Analysis)	Evaluate (Evaluation)	Create (Synthesis)
41.						
42.						
43.						
44.						
45.						
46.						
47.						
48.						
49.						
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69.						
70.						
71.						
72.						
73.						
74.						
75.						
76.						
77.						
78.						
79.						
80.						
TOTALS						
%						

Reading Level

(as defined by the testing company in the test administration manual)

Grade: _____ Lexile: _____ Other: _____

Reading Complexity

Directions

Reviewing the test as a whole, mark each of the five criteria as simple, moderate, or complex.

Indicator	Simple	Moderate	Complex
Question length	<input type="checkbox"/> Mostly short (4-10 words)	<input type="checkbox"/> Some short (4-10 words), some long (11+)	<input type="checkbox"/> Few short (4-10 words), mostly long (11+)
Passage/explanation length	<input type="checkbox"/> Sentence or short paragraphs	<input type="checkbox"/> Mostly single paragraphs	<input type="checkbox"/> Many multi-paragraph passages
Vocabulary	<input type="checkbox"/> Mostly 1-2 syllables, non-technical	<input type="checkbox"/> Some 2-3 syllables, some technical terms	<input type="checkbox"/> Mostly 2-3 syllables, many technical terms
Answer type	<input type="checkbox"/> Simple multiple choice or true/false	<input type="checkbox"/> Some dual choices (e.g., a & b or choose 2)	<input type="checkbox"/> Many/all dual choices (e.g., a, b, a & b)
Distractor information in questions	<input type="checkbox"/> None	<input type="checkbox"/> Occasional	<input type="checkbox"/> Frequent

Test Format

	Approx %	Comment
Text – text only, no graphics		
Visual – graphics only, no text		
Multi-media – mix of text and graphics		
Kinesthetic – hands on demonstration		
Other (describe):		

Teaching Suggestions and Applicable Strategies by Bloom Level

Bloom Level: Remember	
<p>Teaching Suggestions:</p> <ul style="list-style-type: none"> ~ Discuss strategies that students already know and use to help them remember text. ~ Before reading new text, discuss what students already know about the topic. ~ Relate the new topic to things students have experienced in their lives. ~ Help students set a meaningful purpose for learning: WIIFMs (What's In It for Me?). ~ Provide short text readings to frontload essential information or concepts before reading difficult text. 	
Applicable Literacy Support Strategies:	Description:
~ Interactive Word Wall	A systematically organized collection of displayed words. Students can suggest words to add, and interact with them on an ongoing basis to make those words an integral part of their vocabulary.
~ Triple-Entry Vocabulary Journal	A note taking format with three columns: for a word in context, definition in one's own words, and a picture, memory aid, or phrase related to the word.
~ List–Group–Label (Word Sort, Affinity Diagram)	Students collaboratively brainstorm or work with a given list of words to group terms and label the relationships.
~ KWL Plus	A three-column graphic organizer for students to list what they know (K), want (W) to learn, and then have learned (L) about a topic. KWL Plus adds mapping and summarization to the original.

Bloom Level: Understand	
<p>Teaching Suggestions:</p> <ul style="list-style-type: none"> ~ Do a chapter preview to help students use specific text structures that aid comprehension. ~ Do a Think-Aloud of the first paragraphs, modeling to students how you think about, question, and respond to text while reading. ~ During class reading, let students choose to read alone, do paired reading, or have a whole class read-aloud with discussion. ~ Frontload essential vocabulary or concepts which are difficult to understand by the text alone. 	
Applicable Literacy Support Strategies:	Description:
~ Chapter Preview	Before reading, students answer brief questions and make predictions related to chapter headings, vocabulary, text structure, and graphics.
~ Coding/Comprehension Monitoring	Students code text (e.g., “New information”, “I don’t understand”), helping them to engage and interact with text and monitor comprehension as they read.
~ Paired Reading	Supports students to be actively involved in the structured reading aloud of a shared text.
~ Two-Column Note Taking	Helps students organize their thinking about specific content. It is sometimes called a double-entry journal when used with fictional text or when the focus is on a student’s personal response.
~ Reciprocal Teaching	Four-person teams use the skills of summarizing, questioning, clarifying, and predicting to bring meaning to the text.
~ ReQuest	Students take on the role of the teacher to form questions about a reading selection and the teacher models how to answer. Then the teacher asks questions that require higher level thinking to influence the students to frame more challenging questions about the ideas presented in the reading selection.
~ Brainstorming Web	Usually start with a central or key word, idea, or concept. Ideas are generated and relationships are indicated by arrows, placement of items to one another, connecting lines, or similar shapes.
~ Sum It Up	Readers select important words that relate to the main ideas of a text reading and use them in a one sentence summary.
~ Triple-Entry Vocabulary Journal	<i>Previously defined.</i>

Bloom Level: Apply	
<p>Teaching Suggestions:</p> <ul style="list-style-type: none"> ~ Relate the text to real life applications. ~ Engage individuals, small groups, and whole class in visualizing how text applies to shop tasks. ~ Have students put text into graphics and graphics into text as a way to understand content applications. ~ Use writing to learn during application activities—e.g., notes, vocabulary, labeled diagrams. ~ Model your own thinking (Think-Aloud) as you translate text into shop applications. 	
Applicable Literacy Support Strategies:	Description:
~ Think–Pair–Share	A cooperative discussion strategy whose name is derived from the three stages of student action, with emphasis on what students are to be doing at each of those stages.
~ Think-Aloud	A modeling strategy that helps students learn how to monitor comprehension, engage actively with text, and direct their thinking as they work through the process of understanding a text.
~ Question–Answer Relationship (QAR)	Students assess the thinking demands of a passage and develop answers for four types of questions: <i>right there</i> (answer is directly stated in text); <i>think and search</i> (answer is in the text, but not stated directly); <i>author and me</i> (the answer is not in the text but is derived from integrating the author’s information with one’s own background knowledge and experiences); and <i>on my own</i> (the answer is not in the text; the reader must develop the answers solely from background knowledge).
~ Tree Diagram	

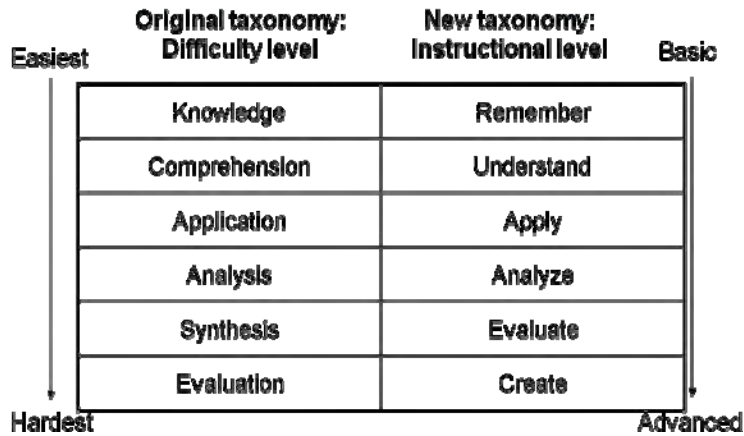
Bloom Level: Analyze	
<p>Teaching Suggestions:</p> <ul style="list-style-type: none"> ~ Show students how to ask and search for answers to questions. ~ Model how to select an appropriate analytic graphic organizer to analyze text. ~ Explicitly teach inferential “detective” thinking, using clues in text and graphics to figure out implied information. ~ Have students look at multiple sources of information during analysis of ideas that have multiple perspectives. 	
Applicable Literacy Support Strategies:	Description:
<ul style="list-style-type: none"> ~ Bloom’s Critical Thinking Prompts 	<p>Questions related to the six thinking skills in Bloom’s Taxonomy are constructed to ensure students are stimulated to respond at all levels of the cognitive domain. Students may be asked to respond through quick writes, learning logs, tests, creative writing, role-audience-format-topic (RAFT) activities, or other writing or speaking activities.</p>
<ul style="list-style-type: none"> ~ Vocabulary Analysis <ul style="list-style-type: none"> ~ Frayer Model ~ Word Analysis 	<p>A Frayer Model is a graphic organizer that helps students form concepts and learn new vocabulary by using four quadrants on a chart to define examples, non-examples, characteristics, and non-characteristics of a word or concept.</p>
	<p>The word analysis strategy is a way of analyzing the structure of unknown words to derive their meaning. Students deconstruct words into prefixes, roots, and suffixes and make connections between these and other words sharing similar parts.</p>
<ul style="list-style-type: none"> ~ Analytic Graphic Organizers <ul style="list-style-type: none"> ~ Venn Diagram (comparison/contract) ~ Process Flow Chart ~ Semantic Feature Analysis 	<p>Venn diagrams can be used compare and contrast the characteristics of reading, writing, or vocabulary by placing differences in the outer circles and similarities in the common portion of the circles.</p>
	<p>Semantic Feature Analysis helps students examine related concepts by recording distinctions between terms according to particular criteria across which the concepts can be compared.</p>

Bloom Level: Evaluate	
<p>Teaching Suggestions:</p> <ul style="list-style-type: none"> ~ Consistently emphasize that opinion must be supported by evidence. ~ Provide time to discuss alternatives, options, and exceptions as appropriate to content. ~ Help students develop “tolerance for ambiguity” by listening to viewpoints that differ from their own. ~ Show examples of assumptions, generalizations, bias, and persuasion that impact evaluation. ~ Help students to think through others’ eyes—e.g., What will customers think? Your boss? 	
Applicable Literacy Support Strategies:	Description:
~ Point of View Study Guide	A guide that asks students to process the text through a specific point of view by responding to questions from the point of view using evidence from the text.
~ Discussion Web	Promotes critical thinking by encouraging students to take a position for or against a particular point of view and requires them to establish and support evidence based on their reading of narrative or expository texts.
~ Proposition–Support Outline	This analytical graphic organizer asks students to set forth a hypothesis/proposition and list the arguments/evidence from the text to support/refute the statement.

Bloom Level: Create	
<p>Teaching Suggestions:</p> <ul style="list-style-type: none"> ~ Provide differentiated choices in summarizing activities that are meaningful to students. ~ Focus on helping students transfer learning into new situations and applications to develop innovative thinking. ~ Create ways for students to share their learning in authentic ways beyond “for a grade.” ~ Help students to articulate their learning process. ~ Allow time for students to investigate questions that arise from reading and content discussions. 	
Applicable Literacy Support Strategies:	Description:
~ Quick Write	Used to develop writing fluency, to build the habit of reflection into a learning experience, and to informally assess student thinking. Learners respond in 2–10 minutes to an open-ended question or prompt posed by the teacher before, during, or after reading.
~ Learning Log	An informal writing strategy that provides students with an opportunity to express their personal reactions to both the content and process of learning. Students reflect on what they are learning, how they have learned it, how they apply knowledge, and what they still need to learn.
~ Response Journal	This writing strategy is an open-ended, personal exploration of the reader’s thinking, feeling, and reactions about what was read or learned and to make connections to one’s own life.
~ Picture This!	Students visually represent three to six key scenes or points from a fiction or nonfiction text supported by related captions and text quotes for each picture.
~ Concept Map	A visual web or map that shows the relationships between different aspects of a key concept to help learners understand it on a deeper level and to relate new information to information already known.
~ Group Summarizing	Students work together to preview text before reading, locate supporting information during reading, and summarize their ideas on a four-quadrant chart after reading. The charted information provides a structure to write the group summary.
~ Role–Audience–Format–Topic (RAFT)	Students creatively analyze and synthesize the information from text by taking on a particular role or perspective, defining the target audience, and choosing an appropriate written format to convey their understanding of the content topic.
~ Jigsaw Discussion	Students read different selections and share that information with a small group.

Sample Results of Analyses Done on Specific CTE Certification Tests

Assess Test for Cognitive Demands Using Bloom's Taxonomy of Critical Thinking



Automotive Technology Results: *Maine Automotive Inspection Test*

Test Questions	Remember	Understand	Apply	Analyze	Create	Evaluate
TOTALS (of 42)	6	1	3	32	--	--
PERCENT	14%	2%	7%	76%	0%	0%

Automotive Technology Results: *Automotive Youth Educational Systems*

Test Questions	Remember	Understand	Apply	Analyze	Create	Evaluate
TOTALS (of 50)	9	4	5	26	6	--
PERCENT	18%	8%	10%	52%	12%	0%

Automotive Technology Results: *Guide to the Auto Certification Exam*

Test Questions	Remember	Understand	Apply	Analyze	Create	Evaluate
TOTALS (of 35)	2	--	8	48	24	--
PERCENT	3%	0%	10%	58%	30%	0%

Sample Results of Analyses Done on Specific CTE Certification Tests

Precision Machine Tools Results: *NIMS Mill Level 1*

Test Questions	Remember	Understand	Apply	Analyze	Create	Evaluate
TOTALS (of 68)	19	2	8	17	22	—
PERCENT	27%	3%	12%	25%	32%	0%

Computer Technologies Results: *Test King A+ Hardware version 4.0*

Test Questions	Remember	Understand	Apply	Analyze	Create	Evaluate
TOTALS (of 35)	5	4	7	27	—	4
PERCENT	11%	9%	18%	57%	0%	9%

Emergency Medical Technician Results: *Learning Express EMT Practice Exam*

Test Questions	Remember	Understand	Apply	Analyze	Create	Evaluate
TOTALS (of 80)	10	1	10	48	11	—
PERCENT	13%	1%	13%	60%	14%	0%

NIMS Machine Level I Preparation Guide: *Measurements, Materials, and Safety*

Test Questions	Remember	Understand	Apply	Analyze	Create	Evaluate
TOTALS (of 62)	12	3	10	23	14	—
PERCENT	19%	5%	17%	37%	23%	0%

All Seven Tests Had Similar Reading Complexity

Indicator	Simple	Moderate	Complex
Question length	<input type="checkbox"/> Mostly short (4-10 words)	<input checked="" type="checkbox"/> Some short (4-10 words), some long (11+)	<input type="checkbox"/> Few short (4-10 words), mostly long (11+)
Passage/explanation length	<input checked="" type="checkbox"/> Sentence or short paragraphs	<input type="checkbox"/> Mostly single paragraphs	<input type="checkbox"/> Many multi-paragraph passages
Vocabulary	<input type="checkbox"/> Mostly 1-2 syllables, non-technical	<input checked="" type="checkbox"/> Some 2-3 syllables, some technical terms	<input type="checkbox"/> Mostly 2-3 syllables, many technical terms
Answer type	<input checked="" type="checkbox"/> Simple multiple choice or true/false	<input type="checkbox"/> Some dual choices (e.g., a & b or choose 2)	<input type="checkbox"/> Many/all dual choices (e.g., a, b, a & b)
Distractor information in questions	<input checked="" type="checkbox"/> None	<input type="checkbox"/> Occasional	<input type="checkbox"/> Frequent

Tests were all "text" heavy

Text Format

	Four tests	One test	Two tests
Text – text only, no graphics	100%	80%	70%
Visual – graphics only, no text	0		
Multi-media – mix of text and graphics	0	10%	30%
Kinesthetic – hands-on demonstration	0		
Other (describe):	0		

In the Words of Maine CTE Teachers: *Why Literacy? Why Me? Why Now?*

If you're thinking...	Why it matters (and how students are counting on you)
I'm trying to help get my students ready for jobs. I don't have time to teach to the National Certification Test.	National certification tests are based on the workplace skills employees need for proficient work performance. Analyzing the test helps you understand the cognitive demands students will encounter in the workplace. You're helping them be ready for jobs, not teaching to the test.
CTE students need time in their school day where they don't have to read and write. They don't like literacy and can't do it well.	CTE students are motivated by interest in their program area – getting to do real world tasks. But the “real world” requires proficiency with reading and writing. Embedding literacy tasks in CTE classes helps students use their interest in a CTE field to strengthen weak reading and writing skills.
Literacy is the high school's job, not mine.	In today's 21 st century workplace, technical reading, writing, and critical thinking requirements are the highest ever. CTE students need additional support to be ready. They need to learn how to read and problem-solve using a variety of types of technical texts and to write and report to workplace specifications. An English, science, or math teacher can't provide that specialized education because they don't have the technical familiarity with materials used in your CTE program area.
I have a large curriculum to cover. I don't have time to add literacy, too.	Your job is not to cover content – your job is to ensure your students <i>comprehend</i> and <i>retain</i> CTE content. They need your help to summarize, analyze, interpret, and evaluate what they read and learn in your classes. Success in learning depends on the student's ability to read/write/listen/speak/think. Literacy isn't something extra on the plate – it IS the plate.
I'm not a very good reader or writer myself. I'm the wrong person to teach this stuff.	Literacy support strategies are easy to learn and use. The goal is to give a toolbox of strategies to every student for them to use when completing CTE work tasks that involve reading, writing, and critical thinking. Your CTE director has a training manual that includes strategy descriptions, templates for you to use in your classroom, and examples of how other CTE teachers have used the strategies. You probably have other teachers in your center who have participated in this training who can help you, too.
It took me years to refine my curriculum, and now you want me to revise it all?	All of us must be ongoing learners to keep pace with the rapid changes in our 21 st century global economy. The status quo is good, but not good enough. Take it a step at a time – teach and have students use one or two strategies a week. You'll find that when the students can work more independently, you will save – not lose – time in teaching your curriculum.
You're still kidding me, right?	If every CTE teacher in every classroom every day spent time on literacy, the result for each student would be remarkable. The bottom line is student success and that's why all teachers teach. You can do it – give it a try!