

Redefining Literacy in Grades 7-12

Strategies for Document, Technological, and Quantitative Literacy

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How to Use the Resource Kit

Today, electronic forms and workplace documents require precise understanding and accurate reading and writing skills. The traditional strategies that students learn for reading comprehension need to be adjusted for document, technological, and quantitative (DTQ) literacy skills, because readers are no longer dealing only with long sections of prose text. Writing strategies also need adjustment to meet the requirements of clear technical writing skills.

This kit is designed to be used by teachers, administrators, and other educators in middle and high schools. Because many of the topics and activities include rigorous and relevant real-world application, the kit also is useful for workplace skill development. The chapters are filled with hundreds of strategies for helping students attain DTQ literacy skills from a wide variety of sources.

Where to Start?

To use this comprehensive resource, educators can pick and choose the strategies that best meet the needs of their students. The kit does not need to be used sequentially. Teachers can select strategies based on the literacy needs of the student population, high-stakes assessment results, or the content-specific skill requirements for students.

For orientation purposes, chapters 1-2 should be read first to get the overall picture, along with the beginning of Chapter 3, which introduces the 14 core DTQ literacy skills.

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Chapter 1: Welcome to the 21st Century Workplace

Chapter 1 provides background information, definitions, and a rationale for this kit.

Chapter 2: Introduction to Teaching DTQ Literacy

Chapter 2 is about how to assess students' literacy skills informally and use formal assessment results to choose the right strategies to match student need. This chapter provides general information on how to use this kit and directs readers to chapters for specific student needs.

Chapter 3: Teaching DTQ Literacy

Since Chapter 3 will be referred to often, educators should familiarize themselves with the content and organization of the chapter before moving on to the other sections and strategies.

Chapter 3 describes the 14 skills that are at the core of DTQ forms of literacy. The skills are grouped into three parts:

Part 1: Previewing the Document or Source

1. understanding the structural complexity
2. understanding the organization
3. understanding the amount of information

Part 2: Understanding the Task

4. determining the relationship between the task and the document
5. comprehending the question, purpose, or prompt to initiate the task
6. identifying given and requested information
7. setting an action goal

The Appendix has numerous print examples that can be used when teaching these skills as well as recommendations for online sources to use when integrating the skills with technology and electronic media.

The Appendix also contains many sample DTQ tasks to use for assessments.

Part 3: Completing the Process

8. locating information
9. cycling through the document or multiple sources
10. integrating information
11. generating inferences
12. formulating and calculating
13. taking action
14. evaluating results

The skills are explained and vocabulary concepts are highlighted. Four types of strategies are offered for each skill:

1. strategies that meet the needs of most populations
2. strategies for special populations
3. strategies for quantitative tasks (that require mathematical problem solving)
4. strategies for tasks that include the use of technology or electronic media

Chapter 4: Assessing DTQ Literacy

Chapter 4 contains detailed explanations of what elements to assess for each of the 14 core skills in DTQ literacy and what characteristics to look for in student performance. Chapter 4 also contains numerous examples of ideas for rigorous and relevant assessments that incorporate DTQ literacy. These assessments fall in Quadrant D of the International Center for Leadership in Education's Rigor/Relevance Framework.TM The assessments are all at the upper levels of Bloom's taxonomy. In addition, all of the suggested assessments include predictable or unpredictable real-world applications of skill and thinking.

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Chapter 5: Writing to Do

Chapter 5 includes strategies for technical writing in the workplace and community, and in personal lifestyle situations. In addition, the numerous “before and after” writing examples are good models for effective technical writing and offer opportunities for student practice. This chapter also contains suggestions for assessing technical writing using real-world criteria.

Chapter 6: Graphic Organizers for Reading to Do

Chapter 6 is about using and adjusting research-based strategies, most notably the use of graphic organizers, which are among the most beneficial strategies and the easiest to use. Since many of the traditional research-based strategies taught in the classroom are tied to reading and understanding prose text, educators need to adjust the strategies to fit documents and other sources of technical information, including the Internet. The traditional strategies are presented as well as the DTQ-adjusted versions.

Chapter 7: More on Quantitative Literacy

Chapter 7 presents additional strategies specific to the mathematical problem-solving tasks required for quantitative literacy. Background information is included about quantitative literacy, and Quantiles are introduced. The chapter includes key strategies, a framework for teaching quantitative thinking skills, and numerous examples.

Although this chapter was developed for math and science teachers, it also may be beneficial to special education teachers, career and technical education teachers, and teachers in any content area that requires students to deal with technical text and perform mathematical thinking and reasoning. The strategies also can be used in conjunction with the quantitative literacy examples in the Appendix, released items on state tests, and content-specific

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examples in the Appendix, released items on state tests, and content-specific examples from any math, science, economics, and career and technical education course.

Chapter 8: Leadership for DTQ Literacy

Chapter 8 provides education leaders with strategies for putting DTQ literacy strategies in place in the schools and community.

Appendix: Resources

The Appendix contains a comprehensive and detailed list of online resources along with many examples to use when teaching or assessing the DTQ literacy skills throughout the kit.

Other Resources in the Kit

The DVD has a presentation by author Lin Kuzmich on DTQ literacy. The CD has graphics, checklists, templates, and other material for teaching DTQ literacy. In the binder pockets are maps for the Lexile Framework[®] for Reading and the Quantile Framework[®] for Mathematics.



Chapter 1

Welcome to the 21st Century Global Workplace

Introduction

Consider the following questions and think about the literacy and information skills that are required for success in your job.

- Do you ever work from home?
- Do you use technology of any kind?
- Do you interact with people from other countries or cultures?
- Do you use products that were manufactured overseas?
- What information do you need to do your job?
- How often do you communicate and interact with others?
- What communication methods do you use?
- What skills do you have that are marketable in today's economy?
- What skills do you have that will be marketable in an unknown future workplace?

Valued employees in the 21st century are creative problem solvers and adaptive to change. They interact fluidly with ever-changing technology, communicate, collaborate, and are highly literate. Employees in most occupations regularly deal with forms of text and writing that lead to actions necessary to complete work, communicate, be safe, acquire information and goods, establish relationships, and collaborate.

How well are we preparing students for these tasks? Julian Evetts, a Canadian leader in adult education, reports: "Document use in the workplace is unlike reading and writing tasks found in schools and training institutions. As numerous researchers have discovered, reading and writing tasks in the workplace are carried out for different purposes, use different strategies, and are often at a higher level of complexity than reading and writing in school."

Evetts, J.
*Document Use
at Work*

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Reading to Do

Workplace, community, and lifestyle reading is called “reading to act,” or “reading to do.” It is estimated that students in 1982 spent 2% or less of their time on reading to act in high school. Even with the addition of technology, we still provide students with few opportunities to read, write, and communicate to act. Current estimates indicate that students spend about 25% or less of their time on literacy to act. Instead, we spend 12 to 14 years teaching students “learning literacy” (learning to read, write, speak, and listen) and “literacy to learn” (content-area literacy). Students leave our schools and go on to postsecondary education, or they enter the workplace where 50-80% of all work-related tasks include use of document, technological, and quantitative (DTQ) forms of literacy. This estimate is increasing rather than decreasing with computer use. That means our students will spend the next 50 years or more after high school doing literacy tasks for which they are unprepared. Schools must do more to keep pace with rapid technology, research, and societal changes. They must embrace new designs for learning based on emerging research about how people learn, effective uses of technology, and 21st century skills in the context of rigorous academic content.

The future beckons to us with each innovation and technological marvel. Workplace, community, and lifestyle needs for literacy, seamless interaction with technology, and technical communication skills are increasing in complexity. Access to these skills will be the great leveling agent in the 21st century workplace. We hinder a student’s access to the future and quality of lifestyle when we neglect this aspect of education and preparation. This may be the gravest form of discrimination. We talk about high school success in terms of planning transcripts and courses that allow students to have future choices, and yet we need to focus on the skills and strategies that help all students access the future.

Mikulecky, L.
“Preparing Students
for Workplace
Literacy Demands”

Kirsch, I. and
Guthrie, J.
“Distinctions
between Reading
Comprehension
and Locating
Information in
Text”

Burkhardt, G., et
al. *enGauge 21st
Century Skills:
Literacy in the
Digital Age*

Chapter 1 Welcome to the 21st Century Global Workplace

Workplace Literacy Requirements Versus Literacy Levels

Global competition across job categories includes high degrees of literacy and readiness for retraining. Middle level skilled workers spend between 35-95% of their time in literacy-related tasks interacting with documents and other nonfiction prose forms of literacy. The average shipyard worker spends almost two hours per day reading and writing or doing entry data. Of the reading required at a typical shipyard job site, 60% is “reading to do” or reading to carry out a specific purpose — 76% if we count reading symbols.

Sticht, T., Fox, L.,
Hauke, R., and
Zapf, D. *Reading
in the Navy*

In their international study, Sticht, Fox, Hauke, and Zapf report that most skilled workers spend 58% of their time reading and writing to act upon or apply information while this is the purpose of only 7% of student reading in school. We say we teach “reading to think.” However, if only 7% of that reading gets to the application level, we are not preparing our entire future workforce for the tasks it will do everyday. Workers across occupations say that they use a wide variety of strategies on the job for reading and writing. Those strategies include a combination of problem solving, note taking, associating reading with what is known, rereading, and searching. Mikulecky concluded in his study that “there is little congruence between the reading done by high school students and that done by entry and middle level occupations, nor between reading in technical colleges and the reading required by the occupations for which colleges prepare students.”

Mikulecky, L.
“Preparing Students
for Workplace
Literacy Demands”

Rafferty, Cathleen.
“Literacy in the
Information Age”

Given our expanding technologies and resources, literacy is no longer simply about learning to read in a continuous text format. All forms of literacy, even those involving technology, are powerfully interconnected. Teachers can do much to support literacy for both learning and doing regardless of the medium — print, visual, video, audio, or multimedia environments. We are not doing enough to access this variety of resources on behalf of students. Textbooks alone are insufficient for 21st century preparation.

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International Comparison of Skill Levels

Summaries of international performance on the 2003 ALLSS are shown in the following charts. The charts compare countries and percent of participants scoring at various levels of performance as defined on the assessment. Level 3 is the essential minimum for competency in the workplace. While the U.S. performs better in prose than in other forms of literacy, we are still behind most other countries in overall performance on this assessment.

Table II
2003 Adult Literacy and Life Skills Survey Results
for the First Phase of OECD Countries

Average Prose Literacy scores of 16- to 65-year-olds in 2003	Scale Score	Average Document Literacy scores of 16- to 65-year-olds in 2003	Scale Score
Norway	290.1	Norway	295.1
Bermuda	289.8	Canada	280.6
Canada	280.8	Bermuda	280.0
Switzerland	272.1	Switzerland	276.6
United States	268.6	United States	269.6
Italy	229.1	Nuevo Leon, Mexico	226.2
Nuevo Leon, Mexico	228.3	Italy	225.8
Average Numeracy (Quantitative) Literacy scores of 16- to 65-year-olds in 2003	Scale Score	Average Problem Solving Literacy scores of 16- to 65-year-olds in 2003	Scale Score
Norway	289.8	Norway	284.2
Switzerland	284.9	Switzerland	279.0
Canada	272.3	Canada	273.8
Bermuda	269.7	Bermuda	272.8
United States	260.9	Italy	224.9
Italy	233.3	United States	Not taken in 2003
Nuevo Leon, Mexico	Not taken in 2003	Nuevo Leon, Mexico	Not taken in 2003

(Source: Lemke et al., 2005)

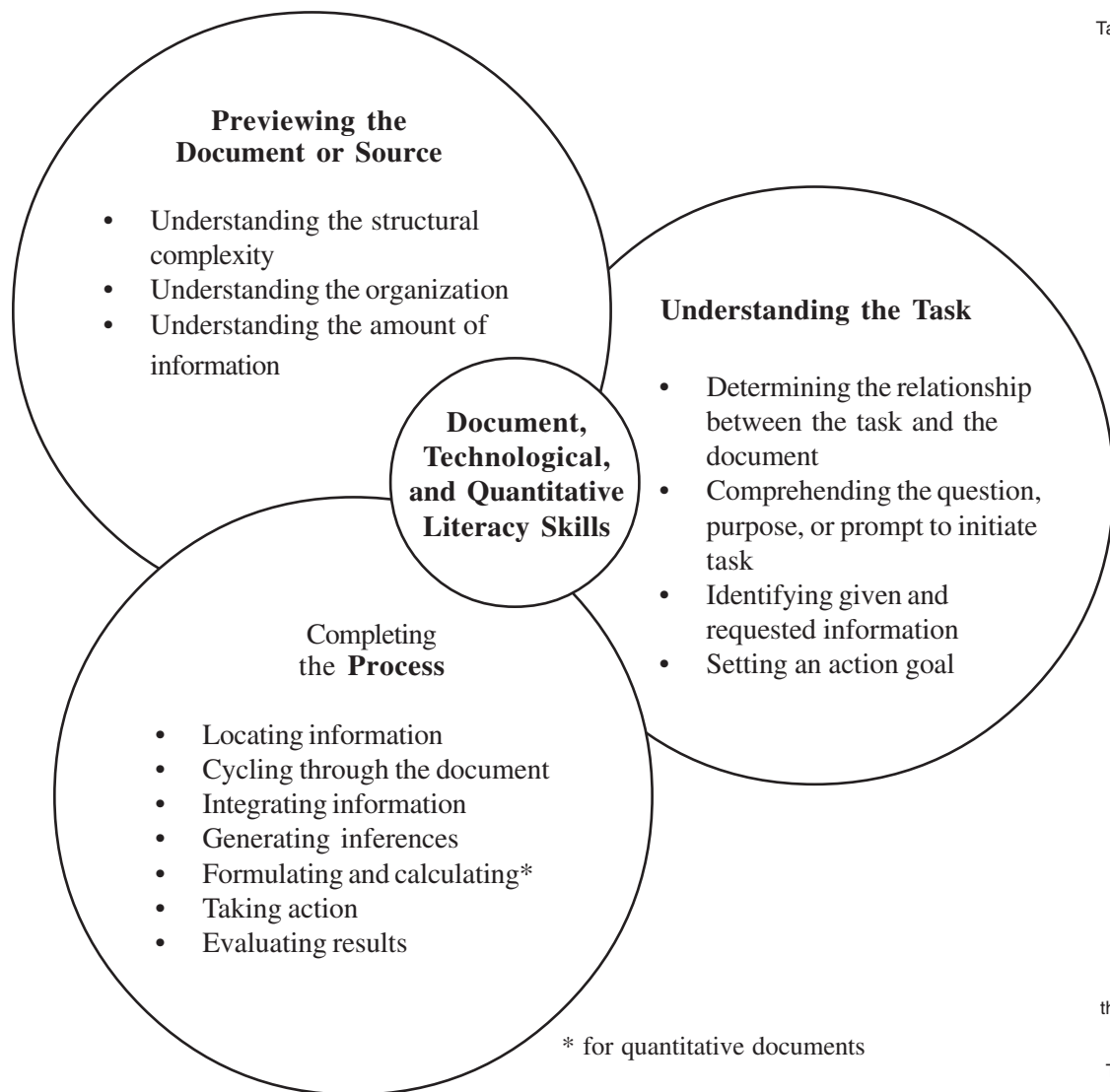
These tests are on a scale score system from 0 to 500. The average (mean) score is 250 points.

Murray, T., Owen, E. and McGraw, B. (Eds.) *Learning a Living: First Results of the Adult Literacy and Life Skills Survey*

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The model in Figure 6 shows the three areas of essential competencies in document, technological, and quantitative literacies. Within these three areas are 14 skills that every student needs to demonstrate literacy with documents, technological sources, and documents requiring quantitative solutions.

Figure 6
Three Competency Areas for DTQ Literacy



These skills and their instructional strategies will be addressed in detail in Chapters 2 and 3.

De Geus, E., and Reitman, P. "Cognitive Components of Task Difficulty in Document Literacy"

Gregory, G and Kuzmich, L. *Differentiation Literacy Strategies for Grades 7-12*

Guthrie, J., Weber, S. and Kimmerly, N. "Searching Documents: Cognitive Processes and Deficits in Understanding Graphs, Tables, and Illustrations"

Kuzmich, L. "Redefining Literacy Strategies for the 21st Century"

Mosenthal, R. and Kirsch, I. "Toward an Explanatory Model of Document Literacy"

Mosenthal, R. and Kirsch, I. "A New Measure for Assessing Document Complexity"

Mosenthal, R. "Understanding the Strategies of Document Literacy and Their Conditions of Use"

Chapter 1 Welcome to the 21st Century Global Workplace

Summary

New Literacy for a New Century

The 21st century workforce is global and technically savvy. Today's workers deal with complex documents, forms, technology, and processes on a daily basis. We used to ask students sarcastically, "Do you want to work at the end of shovel?" This was intended as a motivation technique but is no longer appropriate or relevant. Today, a skilled backhoe operator works with laser-guided grading and global positioning satellites in a computer-based, high-tech environment, and makes good wages. If this operator is successful at this skilled craft, he or she could become a supervisor and earn more than any public school teacher in the country.

The modern answer to the question is, "Maybe working at the end of shovel is a great career ladder." It is critical that we do not limit our students to the old models of lawyer, doctor, and accountant. We do an enormous disservice when we negate the technical careers that populate this century.

Most teaching of DTQ literacy takes place in our current career and technical education programs (CTE). The strategies in this realm are sometimes limited to literacy learning or content-area literacy. The time spent developing these literacy strategies varies greatly among programs and schools. Many CTE programs are marketed to students who are not considered to be on the "college track."

However, technical skills are not limited to specific occupations. A professor at a university may be able to read Socrates' works in multiple forms but unable to read, comprehend, and act upon the directions that came with the DVD player. While this is a minor inconvenience to the professor, other scenarios can cause catastrophic ramifications. Consider the doctor who cannot read prescription drug labels to determine inappropriate combinations of medication or the plumber who cannot interpret the schematic for flood control gates in the Gulf of Mexico. These types of literacy have no economic, class, or education boundaries. In the 21st century, everyone will need these literacy skills to access security, economic well-being, communication, and health.



Chapter 2

Introduction to Teaching DTQ Literacy

This chapter provides some general introductory guidelines on where to turn to in this kit to assess and teach DTQ literacy.

Assessment

Educators need to understand what level of skill their students are demonstrating at in DTQ literacy, so it is important to use informal or formal assessment strategies to measure DTQ literacy tasks. There are several ways to assess students' current performance. The resources in chapters 4, 5, and 7 are especially useful for this initial student assessment. Following are some more specific chapter references for student assessments, depending on the purpose and learning tasks.

Assessing Reading to Do

Chapter 4 includes a summary checklist of criteria for proficient DTQ literacy. The checklist will help you know what characteristics to look for in student responses and how to articulate students' DTQ literacy needs. Consider using some of the samples and activities from the Appendix to see how effectively students respond to the suggested questions in relationship to the charts, graphs, maps, etc. As an alternative, you also could use an Internet search to see how students apply literacy skills in using that medium.

Assessing Writing to Do

Two sections for evaluating technical writing appear in the beginning of Chapter 5 under "Attributes of Clarity in Technical Writing," which can be used as a checklist and a rubric, and in the table labeled "Evaluating Work at Each Stage." Giving students a writing task from the list of technical writing activities or one of the before-and-after writing tasks, also in Chapter

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5, will help identify the writing that students can produce at their level of proficiency.

Assessing Problem Solving to Do

The three factors critical to quantitative literacy (which incorporates problem solving) are:

- literacy of math and science
- complexity of information
- level of thinking

Evaluate student performance based on these three factors, which can be assessed using the coursework and state assessment examples in Chapter 7 or the print and online resources listed in the Appendix. In addition to paper-and-pencil assessments, consider informal assessments in which pairs of students discuss their understanding of quantitative documents or work together to solve problems involving math and science.

Assessing and Using Technology to Do

Chapter 3 includes two tables that may be helpful in assessing both technological sources and student skills. These tables are under “Skill #2: Understanding the Organization” (Page 68) and “Skill #3: Understanding the Amount of Information” (Page 80). Technological literacy also includes skills of interpretation, authenticity verification, and search strategies that are identified in the 14 core skills for DTQ Literacy. See “Skill #10: Integrating Information” (Page 128) and the chart on Page 135 for questions to use when assessing students or teaching these skills.

The assessment tools in Chapter 4 also apply to the technological form of document literacy and the chapter offers numerous assessment ideas. The

Chapter 2 Introduction to Teaching DTQ Literacy

Choosing Strategies that Address Student Needs in Reading to Do

If students struggle with ...	Start with...
one particular DTQ literacy area	Chapter 3 in the “Strategies to Teach this Skill” sections
all three literacy areas	Chapter 3, skills #1-14 (note the level-specific suggestions)
visual materials	Chapter 6
nonfiction materials (special populations)	“Tips for Meeting Diverse Student Needs” sections of Chapter 3
vocabulary	Chapter 6 and the “Vocabulary Concepts” sections of Chapter 3
understanding directions on assessments <ul style="list-style-type: none"> • math and science directions • career and technical education (CATE) directions and prompts 	Chapter 3, Part 2 (skills #4-7) <ul style="list-style-type: none"> • Chapter 3 in the “Tips for Quantitative Literacy” sections and Chapter 7 • Chapter 3 in the “Understanding the Task,” “Tips for Technological Literacy,” and “Strategies to Teach This Skill” sections
literal comprehension of nonfiction	Chapter 3, Parts 1 and 2 (skills #1-7)
higher-level thinking skills for nonfiction	Chapter 3, Part 3 (skills #8-14) and Chapter 6

Task.” For 8th grade, teach the skills in “Part 3: Completing the Task.”

- o At the high school level, the 14 skills could be integrated into the required 9th and 10th grade courses and reinforced in 11th and 12th grades as teachers create rigorous and relevant learning opportunities that include the use of documents and sources.
- If state test results indicate that students struggle with visual materials, teachers in every content area should consider incorporating the adjusted research-based strategies in Chapter 6 when using visuals such as charts, maps, graphs, tables, and illustrations.
- If special populations struggle with nonfiction materials, identify one of the three literacy areas to start with and refer to the strategies in Chapter 3. Each of the 14 skills includes specific strategies under “Tips for Meeting Diverse Student Needs.”

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Numerous opportunities for collaboration between teachers in different departments also will move technical writing forward. Combining an English assignment with a Web design class or a science lab report exposes students to realistic connections that they will encounter in the workplace.

Review the following chart for common problems students experience with writing-to-do tasks. Then, read more about the suggested sections and strategies in the text that follows the chart.

- For special populations that struggle with technical or nonfiction writing:
 - Starting with the before-and-after examples is a good way for students who struggle with English or who have disabilities in communication skills to understand the concept and purpose of technical writing.

Choosing Strategies that Address Student Needs in Writing to Do

If students struggle with...	Start with...
technical writing in general	Chapter 5
technical or nonfiction writing (special populations) <ul style="list-style-type: none">▪ ESL or students with communication disabilities▪ motivation issues▪ revision issues	Chapter 5 <ul style="list-style-type: none">▪ before-and-after examples▪ real-world examples plus view the “Attributes of Clarity in Technical Writing” section▪ “Special Needs Populations and Technical Writing Tips” section
short constructed response items	Chapter 5, before-and-after examples and “Attributes of Clarity in Technical Writing” section
initiating writing tasks	Chapter 4 under “Ideas for Quadrant D Projects” and Chapter 5, projects suggested in “Technical Writing Activities by Difficulty Level”
clarity in writing, word use issues, or organization	Chapter 5 under “Word Guide to Better Technical Writing for Simpler Documents” and “Attributes of Clarity in Technical Writing”

Chapter 2 Introduction to Teaching DTQ Literacy

Choosing Strategies that Address Student Needs in Problem Solving to Do

If students struggle with...	Start with...
quantitative literacy in general	Chapter 7 and “Tips for Quantitative Literacy” sections in Chapter 3
literacy in math, science, or career and technical education, especially with directions and formats of non-prose materials	Chapter 7 and Chapter 3 under the sections “Tips for Quantitative Literacy” and “Tips for Technological Literacy”
initiating a problem-related task or how to approach types of documents and visuals	Chapter 3, skills #1-3
technical vocabulary issues related to problem solving	Chapter 3, skills #1-3
directions, especially the mathematics of a problem	Chapter 3, skills #4-6 and “Tips for Quantitative Literacy” sections under those skills
struggle with assessments that include problem-related tasks	Chapter 6 for teaching methods and Chapter 7
complexity of information in general	Chapter 3, skills #4-14
type of information	Chapter 3, skill #3
confusion between relevant and irrelevant information	Chapter 3, skills #1-2 and #6
locating information or performing multiple searches (persistence issues)	Chapter 3, skills, #8-9
calculation and determining what kind of calculation is needed	Chapter 3, skill #12
critical thinking in Quantitative Literacy tasks	Chapter 7
choosing the correct strategies for problem solving	Chapter 3, skills #6 and #10
inferring unstated information in problems or assumed information	Chapter 3, skill #11
knowing if answers are logical	Chapter 3, skills #7, #12 -14

- o A focus on the skills #1-3 in Chapter 3 is needed if students struggle with initiating a problem-related task or struggle with knowing how to approach different types of charts, maps, graphs, tables, illustrations, and other visuals. Teaching the skills in this section, when coupled with traditional methods of orienting students to nonprose problems and documents, will yield better results.

Chapter 2 Introduction to Teaching DTQ Literacy

cannot begin to address specific software knowledge and computer troubleshooting, it does address the technological literacy skills that would make such additional training easier.

If students struggle with technology use in general it will be important to sort out the cause. Reading through some of the assessment criteria for DTQ literacy will help to make a determination.

Choosing Strategies that Address Student Needs in Using Technology to Do

If students struggle with....	Start with....
technology use in general...	tach the DTQ skills sequentially, strategies suggestions for each of the 14 skills in “ Tips for Technological Literacy”
getting lost in a Web search	Chapter 3, skills #2, #6-8, and strategies for organizing in Chapter 6
the need for continual reteaching on website use	Chapter 3, skill #1-3, check the strategies for diverse learners in skill #2, skill #6, skill # 8
discerning reliable sites and sources of information	Chapter 3, skills #10-11
sticking with a search long enough to produce results or perform needed actions (may have persistence issues)	Chapter 3, skills #6-9
directions for technology use or multi-media projects	Chapter 3, skills #4-9 and strategies under those skills listed in “Tips for Technological Literacy” and in Chapter 6, many of the graphic organizers will help with this difficulty
inferring unstated information based on graphical displays or visual material on web sites and electronic media	Chapter 3, skills #10-11
using or comparing more than one site at a time	Chapter 3, skill #5, #7-8
vocabulary for technological literacy	Chapter 3, skills #1-14 all contain vocabulary that will help students learn this type of literacy, in addition specific technology based vocabulary and strategies are highlighted in skills

Skill #5: Comprehending the Question, Purpose, or Prompt to Initiate the Task

What Is this Skill?

Complete comprehension of the question or prompt is basic to document, technological, and quantitative literacies. The level of understanding related to the task will determine the success of any search or action with that document or source of information. Questions, purposes, and prompts for this type of literacy are different from those for prose. Such task requests require the reader to do something as a result of this comprehension. These questions must be answered by the student:

1. What answer or action is being sought?
2. What words give the reader that information?

This requires high critical-thinking skills, such as predication, summarization, restating intent or requirements, and inferential thinking.

Components for Student Success

- Students can restate the requests in the question or prompt.
- Students can determine the type of information or action needed to respond to the question or prompt.
- Students can predict one or more actions that may need to be taken to respond to the question or prompt.

Strategies to Teach this Skill

1. A clear understanding of how students learn to predict types of actions is essential. Build this understanding by:
 - using the document as a source for predicting what the question or prompt might ask

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- identifying the intended audience
 - brainstorming about the document before reading the question or prompt to help students with the context of the question or prompt
 - asking students if they have seen this type of document or source before and asking them to identify its usual purpose
2. Restate the question or prompt in another familiar form such as a text message, bumper sticker, or advertising slogan helps students to summarize the essential elements of the request.
 3. Have students underline or highlight the section of the question or prompt that contains the request for information or action. Then have students compare the logic of what they highlighted to the actual document. Does it match? Following is one example of the type of question that could be asked.

What is the average number of years a student takes to graduate from college in this country?

Northeast	Southeast	North Central	South Central	Northwest	Southwest
4.3	4.55	4.11	4.87	4.4	4.62

The student should underline “average number of years” in the prompt and then be able to determine that a calculation is necessary.

Tips for Meeting Diverse Student Needs

- The explicit teaching of signal words is essential to comprehending questions and prompts. Understanding patterns of words is a difficult skill for special education and ELL students. Identifying these words in multiple contexts that include workplace, lifestyle, and community documents is essential. Newspapers, magazines, and government Web sites are excellent resources for pointing out the frequency of certain

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words in questions and prompts. Online forms often have predictable patterns that demonstrate great comparisons. Displaying two or more documents or multiple screens at the same time works well in pointing out such patterns.

- Predictions are sometimes difficult for special populations. High-poverty stricken students sometimes have difficulty with future or action-related predictions. Role-play, simulations, and real-life projects are valuable tools to help students learn to predict actions, causes, comparisons, and consequences.

Tips for Technological Literacy

- It is highly recommended that multiple-screen stations (two screens instead of the traditional one-screen approach) for computers are used. This helps students see two examples of online documents or information at the same time and allows for comparison against the question or prompt. This is especially helpful for teaching special needs or ESL populations.
- Web sites with predictable patterns such as shopping, travel, and government sites are great sources for questions and prompts.

Tips for Quantitative Literacy

- The questions and problems in math and science signal a mathematical event or action that must take place. Getting students to relate the possible actions with key verbs and question words is essential in quantitative questions or prompts.
- Math and science problems contain highly technical vocabulary that must be taught and understood before working a problem. Using good methods of vocabulary instruction is essential in helping students to

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understand mathematical and scientific questions and prompts. Methods may include pairing a symbol or picture with the concept or using concrete experiences and lab-based activities to relate the technical vocabulary to real-world activities.

Question Words

To understand questions and prompts fully, students need to know what question words and phrases imply.

- how = procedure
- how much or how many = quantity
- what = identify
- why = reason
- which = compare
- what if = compare and contrast multiple times
- when = time or time basis
- where = position or location

Critical Thinking Text and Writing Cues

Some common signal words and their corresponding text structures help readers to understand the question or prompt enough to initiate action. These words signal the nature of the text structure. Readers should be aware of these text cues and understand what they signal.

Vocabulary Concepts for Skill #5

Gregory, G. and
Kuzmich, L.
*Differentiation
Literacy
Strategies for
Grades 7-12*

Jetton, T. and Dole, J.,
(ed.). *Adolescent
Literacy Research and
Practice*

Cause/Effect
since
because
this led to
on account of
due to
may be due to
for this reason
consequently
then, so
therefore
thus

Comparison/Contrast
in like manner
likewise
similarly
the difference between
as opposed to
after all
however
and yet
but
nevertheless
because

Problem/Solution
one reason for that
a solution
a problem

Question/Answer
how
when
what
where
why
who
how many
the best estimate
it could be that
one may conclude

Sequence
until
before
after
next
finally
lastly
first/last
then
on (date)
at (time)

**Skill #6:
Identifying
Given and
Requested
Information**

What Is this Skill?

Documents and other sources often contain information that is unrelated to the task or action that needs to be accomplish. On the Internet, irrelevant material may be a pop-up ad or part of the Web page. A document may have multiple purposes, so the information density has to be sorted to match the requested action. In addition, prompts will be directive and easy to understand while others must be inferred to fully understand the task.

