

Strategic Writing Across the Curriculum in Grades 7 - 12



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Overview

All Students Need Strong Writing Skills

Employers estimate that 39% of high school graduates are not ready for entry-level jobs. American Diploma Project, 2004.

S*trategic Writing Across the Curriculum in Grades 7-12* is for teachers who are focused on giving students an education that prepares them for the world they face today and the future that lies ahead. To respond to the public outcry that workers cannot write to meet even the fundamental requirements of their positions, teachers must reevaluate the role of writing in every classroom. Business and industry are demanding that schools train students in writing beyond the typical essay.

Research is abundant on the incremental growth in students' writing ability when writing is dropped into every hour of their learning day. Included in this resource kit is information on the need for writing in *all* courses taught in middle and high schools. To expose teachers to ideas for Writing Across the Curriculum, the International Center for Leadership in Education has included techniques for designing rigorous and relevant writing lessons, ways to add technical writing to all courses, tips for technology use, presentation guidelines, assessment strategies, and hints for higher performance on state writing examinations.

The answer to the question of who is accountable for teaching students to write is no longer just the English teachers. It is a resounding *all* teachers. Every teacher must shoulder the burden of pushing students to greater heights in writing. The goal is to ensure that proficiency levels set by schools are not just traditional measures of writing competence. The larger picture of academic learning needs must also be considered—including test taking competence, employability, and life after graduation.

This kit emphasizes the need for school-wide programs that add writing in all content areas. Not only should writing occur in every classroom, but also writing should become a major component of the school culture. While this may seem a significant change, the kit proposes strategies that are easily woven into the existing curriculum:

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- Writing to Learn, with techniques that have worked successfully in many programs.
- Technical writing, with samples, templates, and ways to connect to the curriculum.
- Explanations of the best use of electronics in student writing.
- Writing for presentations using technology to produce visuals for better audience understanding.
- Lesson design for English language arts, mathematics, science, social studies, career and technical education, and elective courses.
- Writing in project-based learning involving activity-based writing assignments to plan, produce, and evaluate.
- State writing examination tips on preparing students for short answers and essay writing.
- Technical writing templates to help students develop the writing skills demanded in the workplace.

Administrators, classroom teachers, and curriculum designers will find answers to questions on ways to guide students to higher levels of achievement in writing. School districts that implement school-wide writing programs will see dramatic improvement in student writing skills that translate into greater opportunities for students, stronger ties with business and industry, and better community relations.



Chapter 2

What Is Writing to Learn?

Strategies for Boosting Thinking and Writing

Writing Across the Curriculum encourages the addition of writing to all courses in differing degrees of complexity. On the one hand, students might be asked to research and write a short paper, book report, or lab report. These are formal types of writing. Alternatively, teachers looking for a gauge to help them measure student understanding at any point during the course might have students write in response to a specific point or to the day's lesson. Called *Writing to Learn*, these strategies boost students' writing and thinking abilities.

Generally, Writing to Learn activities are *informal* writing assignments that ask students to think through the concepts on which they are working. Students write short responses in a journal or notebook to prompts given by the teacher. They write for themselves or the teacher as audience to provide order to their thoughts or to shape a meaning out of a jumble of new ideas and notions. They are asked to think logically and encouraged to personalize their learning at that moment. Writing to Learn is a thinking and learning technique that develops and improves the quality of student writing.

Peter Elbow calls this “writing for learning” and considers it “low stakes writing.” The goal is not so much good writing as “coming to learn, understand, remember, and figure out what you don't yet know.”

Elbow, P.
“Writing for
Learning—Not Just
for Demonstrating
Learning.”

Writing to Learn strategies are varied and have many formats. Usually these writing tasks are short and appealing. They energize students, wake them up, or stir them to new thinking. Following are several examples.

- Teachers begin the class with five minutes of student writing on yesterday's lecture or readings.
- To check for learning, teachers stop the lecture for a “quick write” about the meaning³ of their preceding statement.

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- At the end of a lab, science teachers ask students to give a five-minute recap on what transpired during the experiment, what worked, and what went wrong.
- Students in math write a quick process explanation on solving the new equation.
- Social studies students write their thoughts and beliefs on the First Amendment.

Central to all this writing is its freedom, lack of form, personal audience, and engagement of the writer's mind.

The traditional process of writing a paper on an academic topic typically includes the five steps of pre-writing, drafting, revising, editing, and publishing. When students learn to write, they use an analytic thinking process with an emphasis on the revision stage, and generally, the format is an essay, a longer report, or a research paper.

When students write to learn, they use a broader thinking process. The emphasis is on making connections with course content and discovering new understandings. Writing to Learn formats include journal entries, short notes, and commentary. Students write to explore, personalize, and become more familiar with course content.

Differences between Learning to Write and Writing to Learn

Writing to Learn	Learning to Write
Journals and learning logs	Book reports
Lab logs and notebooks	Research reports
Quick writes	Essays
Short narratives	Lab reports
Summaries	Opinion editorials
Dialogues	Technical writing

Hall, A. "Math and Science in My English Class? Why Not?"

Writing to Learn is different from Writing Across the Curriculum; it has different goals. Both emphasize writing in all the content areas, but Writing to Learn does not seek a polished finished product. Instead, Writing to Learn focuses on higher order thinking, analyzing, and summarizing.

In contrast to more formal writing with several drafts and revisions, journal and learning log entries are usually not revised. Requiring students to edit their writing in learning log entries discourages reflection and free thinking. Writing should remain informal and loose, with emphasis on the thought processes and personalizing the learning. Focusing on grammar, punctuation, and spelling distracts students from free-style idea formation and will negate the positive effects of Writing to Learn activities.

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Writing Stage	Activities	Tools to Use
Pre-writing	<ul style="list-style-type: none"> Writers engage with their thoughts on the topic by: <ul style="list-style-type: none"> reading brainstorming reviewing notes discussing using graphic organizers observing testing ideas and theories determining the audience developing an outline of the paper 	Graphic organizers <ul style="list-style-type: none"> spider diagrams Venn diagrams fishbone organizers
Drafting	Writers begin the first draft by considering: <ul style="list-style-type: none"> the needs of the audience purpose of the paper appropriate format Writers may move back and forth between pre-writing and drafting.	Planning sheet to determine: <ul style="list-style-type: none"> what the target audience already knows and what it needs to know how the audience will use the information purpose for writing best format to accomplish the purpose special features— charts, graphs, tables
Revising	Writers: <ul style="list-style-type: none"> check for logical progression of ideas find gaps or determine the need for more information rearrange sentences look for ways to improve the impact and the cohesion of the piece Writers may move back to drafting and pre-writing if needed.	Peer editing checklist for: <ul style="list-style-type: none"> audience understanding clarity of purpose correct form strong supporting details transitions appropriate tone overall cohesion Computer generated graphics, illustrations, tables, and charts Brochure or pamphlet software
Editing	Writers check each sentence for: <ul style="list-style-type: none"> grammar punctuation capitalization spelling Eliminate sentence fragments or run-on sentences. Check for correct formatting and word choice.	<ul style="list-style-type: none"> Focus on one sentence at a time. Read each sentence aloud. Read the sentences one at a time from the bottom up. Use an online dictionary and thesaurus. Use computer spell-check and grammar check software (with caution).
Publishing	Writers prepare the final draft and: <ul style="list-style-type: none"> hand it in to the teacher mail it to the appropriate agency or newspaper present it before a group 	<ul style="list-style-type: none"> Computer generated final copy that includes charts, tables, and graphs Portfolios Public display Publish on Website In-house publishing

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Add Technical Writing: It Is Already Included in the Standards

Professional writing—the non-academic writing found in advertising, in catalogs, on labels, and in all business pieces—is a natural partner to academic writing. Also called technical writing, it is descriptive, creative, and expository, but the format is different and the standards are higher. Its roots are the basic essay form taught in school every day. Most states have incorporated professional business documents, such as proposals, action plans, letters, memos, and resumes, into their standards for English language arts.

See Appendices A and D for technical and workplace writing examples and templates.

Writing in a workplace context is advantageous to both students and teachers. First, workplace writing is simply another form of the essay that is already taught in school, with an introduction, a body, and a conclusion. Next, it is prescriptive writing; there is a recipe for each part outlining what to include.

Any technical writing handbook will provide instructions for developing each section of the piece. Teachers need not wonder when they will have time to take a course in technical writing. If they can write an essay, they can write for the workplace. So can students: they just need to know how to transition from academic to workplace writing.

Professional writing is an essential ingredient of all courses, not just language arts. Science students can write professional observation reports after visiting a streambed and taking samples. After measuring angles and hypothesizing weight-bearing capabilities of structures, physics students write a feasibility report. Art and drama, building trades, and mechanics students write proposals before beginning their next projects. After completing a project, students write product descriptions and process explanations. Professional writing becomes a way for students to engage in critical thinking and for teachers to assess student understanding.

Technical Writing Complements Academic Writing

Each form of academic writing has a match in workplace or technical writing. Teachers can feel comfortable moving from descriptive writing, for example, into a job description or an incident report. Process explanations are also a match for the skills students need to learn in writing descriptions. The chart that follows below outlines other types of academic writing and their corresponding technical writing format.

Key Differences between Technical and Academic Writing

Technical writing stretches the student beyond the competencies required for academic writing to a level of analysis and decision making. Is the goal to persuade the audience? Is it to explain the pros and cons of a specific product? Is it to describe a situation or process? Is the format appropriate or would a different format highlight the information more effectively? Technical writers must reach out beyond their own experience to determine the needs of the audience and the purpose of the communication.

Focus on the Audience

Expository writing, the typical writing of reports and essays, has as its goal explaining or revealing knowledge. Generally, the writer expects no response from the reader. Expressive and creative writing are subjective responses that also differ from technical writing. Expressive writing allows the writer to respond to personal experiences. Poetry, plays, short stories, and novels are even further removed from technical writing.

Academic Writing	Workplace or Technical Writing
Descriptive Writing	Job Description, Incident Report, Resume, Process Explanation
Narrative Writing	Observation Report, Progress Report
Analysis	Performance Evaluation, Feasibility Report
Cause and Effect	Analytical Report, Product Field Test Report
Comparison-Contrast	Product Comparison, Feasibility Report
Persuasive Essay	Proposal, Action Plan

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The difference that makes technical writing stand out is that it targets a specific audience for a particular and identifiable purpose. The first step is determining the audience:

- Who will read this?
- What are their needs?
- For what purpose will they use it?
- What basic information does the audience already have?
- What follow up or action is expected from the audience?

Before writing, students should brainstorm everything they think their specific audience already knows about the subject and what the audience expects from the document. Imagining how the readers will respond when they receive the document is important and may be the key to successful writing.

To connect with some audiences, writers may need to change the level of the language or the tone of the piece to avoid offending or insulting the readers. Specific examples will help audiences understand the point, and rearranging the information may keep readers from becoming perplexed and frustrated as they read. Avoiding misunderstanding and confusion is central when writing for both the workplace and personal business purposes.

Technical writers need a variety of effective strategies to adapt their writing to different audiences and in different situations. Writing in the workplace means being competent in varying the organizational structure and in determining what details to include. In addition, writers must recognize when to include graphics or diagrams to clarify the points they want to make.

Students Are Placed in a Workplace Role

As discussed in Chapter 3, writing projects that place students in adult professional roles provide the opportunity to work on a problem that simulates workplace thinking and writing. Moving from classroom writing expectations to workplace writing expectations gives the lesson relevance, and with the relevance comes the rigor of higher expectations.

National Council of
Teachers of English/
International Read-
ing Association.
“Standards for the
English Language
Arts.”

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Example Prompts on Math Content and Process

- Describe square root.
- When do you use fractions at home?
- Compare the terms we learned today.
- Explain the difference between parallel and perpendicular.
- Tell everything you know about prime numbers.
- What do you know about imaginary numbers?
- What is the difference between area and perimeter?
- Write a word problem that involves measuring square feet.
- What does it mean to solve an equation?
- Describe the key idea of today's lesson.
- Describe today's math concept to a young child.
- Describe what you already knew about today's material.
- How do you make sure you have solved a problem correctly?

Spitz, P. "Journal Writing Prompts."

Example Prompts on Attitudes Regarding Mathematics

- Describe things you find difficult in math.
- How do you apply math in your life?
- Explain how you feel about math now as compared to when you were younger.
- Describe your best experience in math.
- What are your personal goals for this quarter/semester in math?
- Write a children's story that explains using fractions.
- Choose an occupation and describe ways that workers use math concepts.
- Write a letter of advice to a student who will take this class next year.
- What famous mathematician do you admire? Why?
- I would be better in math if I ...
- Describe how you feel when you are unable to solve a math problem.
- Describe the math process you know best.

ReadWriteThink.
"Math Journal Prompts about Attitudes and Dispositions."

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Writing in Response to Science Prompts

Creating writing prompts to stimulate student writing is as simple as asking them to write about themselves in relation to the key concept.

General Science Writing Prompts

- How does science enter into your life?
- What scientific concepts regarding the weather do you wonder about?
- What is the greatest scientific discovery in the world, and why?
- What scientific invention would you like to make that would help the most people?
- Which is the better choice—paper or plastic?

Writing Prompts on Heredity and the Punnett Square

- What common traits (hair color, eye color, etc.) do you share with other members of your family?
- What traits did your grandparents have that were handed down to your generation?
- Write what you know about your family's ethnic roots.
- What would you change about your physical traits if you could?

Writing Prompts on the Ecosystem

- Describe how you feel about protecting the ecosystem in our area.
- How can the average person or household make a change in the ecosystem?
- Where do you see dangerous practices regarding the environment?
- Describe the environment/ecosystem that you interact with directly.
- What steps are you taking personally to protect the environment?

Writing Prompts on Body Systems

- Describe what would happen if your inner ear became infected with a virus.
- Sit quietly and listen to your body. What systems are you aware of and how do you know they are working?
- What was the last thing you ate that upset your digestive system?
- In a moment of fear or stress, what do you notice about your body's reactions?

Ideas for Technical Writing in Science

Other technical writing assignments appropriate for science students are:

- **Magazine and newspaper articles:** Read several examples and choose a topic to write about in an article. As a class, choose a title and produce a student-written science journal.
- **Persuasive proposals:** Write a letter to a legislator on a problem in your community, such as pollution, and offer steps that government agencies can take to correct it.
- **Brochures:** Develop a brochure informing people in the community about how a scientific issue like global warming will affect the area in the future.
- **Observation reports:** Take the role of an employee in a company that works on the specific issue you observed. Write an observation report to a division manager.
- **Marketing advertisements:** Develop an advertisement promoting better science in the community regarding recycling, clean water or air, health concerns, and others.
- **Action plans:** Once you have decided on a science project, write an action plan breaking the tasks into steps and setting goals for completion.
- **Budgets:** Submit a budget proposal for a science project.
- **Safety guidelines:** At the beginning of the year, brainstorm safety in the lab, modify and edit the list, and design a poster outlining the guidelines agreed upon for the year.

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- **Progress reports:** Every two weeks during a nine-week project or a science fair project, write a progress report to gauge progress.
- **Instructions:** Write a set of formal instructions for a scientific experiment.
- **Feasibility reports:** Compare two potential science project assignments and write the pros and cons of each. Determine which project is a better choice for the course.
- **Process explanations:** Choose a process that you understand and write a process explanation for it.
- **Comparisons:** Compare two lab procedures and their specific real-world applications.
- **Field test reports:** Conduct research outside the classroom and write a report on the results and findings.
- **Public service announcements:** Choose an issue the public is concerned about and write an announcement. Topics might include a health concern such as West Nile virus, an environmental concern such as conserving water during hot weather, or a dangerous weather concern such as tornadoes.
- **Letters to the editor:** Choose a highly publicized scientific issue and write your opinion.
- **Newsletters:** Start a science newsletter combining topics, projects, and experiments from all science classes in the school. Publish and distribute the newsletter periodically.

Formats for these technical writing products are found in Appendix A.

Field Test Report

A field test involves trying out a procedure or product in its natural environment to help determine how it performs. Researchers use the field test to observe how the procedure or product functions and whether it operates at the level needed. A field test helps a business decide whether to use a product or look for another that works more effectively. Inventors conduct field tests of their inventions to judge how well they work and learn what to change or modify. Education departments field test new examinations on small groups of students to see how well they do before they give the test to all the students.

Main Parts of Field Test Report

Introduction Product Identification:

- Name of the product or procedure tested
- A description of the product/procedure and its intended use
- Purpose of the field test
- Location and date of the field test

Body Testing Process:

- Description of the method used to test the product/procedure
- List or outline of each step in the testing process
- Results of the testing

Conclusion Comments:

- Did the product perform as expected?
- Were the testing methods satisfactory?
- What are the tester's recommendations?

Planning Sheet for Field Test Report

What is the product/procedure?

Who will read the field test report?

Why do the readers need the report? How will they use it?

Who performed the field test?

When was the product/procedure tested?

Where was the test performed and under what conditions?

Step 1:

Step 2:

Step 3:

Step 4:

Step 5:

Recommendations:

1. Strengths
2. Weaknesses
3. Overall Effectiveness