



## Research and Writing

### Standards:

**W.11-12.7.** Conduct short as well as more sustained research projects to answer a question (including a self-generated question) or solve a problem; narrow or broaden the inquiry when appropriate; synthesize multiple sources on the subject, demonstrating understanding of the subject under investigation.

**W.11-12.8.** Gather relevant information from multiple authoritative print and digital sources, using advanced searches effectively; assess the strengths and limitations of each source in terms of the task, purpose, and audience; integrate information into the text selectively to maintain the flow of ideas, avoiding plagiarism and overreliance on any one source and following a standard format for citation.

### Lesson Objectives:

1. Employ close reading skills in acquiring information in the research process
2. Utilize various sources of information to research a problem
3. Accurately document sources
4. Take efficient notes
5. Identify factors creating a problem
6. Using data, statistics, interviews, and various other resources, propose a solution
7. Draft a research report with a clear and coherent thesis or problem/solution statement that incorporates the research and the proposed solution
8. Write a coherent research paper incorporating multiple sources of information
9. If possible, test solutions and record and report findings
10. Edit and revise the research paper

This overview provides teachers with some steps to take in implementing the research process. Teachers are guided through the steps that students take with instructional advice regarding the problems students face and some ways to facilitate their research and learning endeavors to prepare them for college research based papers and projects. This set of instructions can be used for any kind of research paper or project in which students are required to meet the basic objectives above.

### Many students actually enjoy research projects!

#### What do they like about them?

Students often say some of their most positive learning experiences involve writing and research. Some of the things they value about this process:

- Meeting the challenge of becoming an "expert" on a topic.
- Searching for answers to real questions.



- Being surprised by the depth of information and quantity of materials they uncover. In many cases, students do not comprehend the research process. They do not see a connection between doing a paper in history and doing an experiment in science. Research in general involves common processes: posing clear questions or hypotheses, crafting methods to gather relevant data, analyzing and evaluating different sources of information, and composing a final document. Instead of seeing these underlying commonalities, many students reinvent the task every time they do research in a new field. While students appreciate clear guidelines for the research paper's format, they need examples and guidance on the processes of doing research.

### WHERE STUDENTS NEED HELP

By the time they are ready to graduate; many students have learned new research strategies through trial and error in several different courses. They learned that the research process is recursive---looking forward to analysis, back to the research questions, then returning to the data/readings. But much of this learning can be facilitated with hands on assistance. These three items pose the most problems:

1. Constructing a narrowed focus
2. Making sense of readings, facts and statistic
3. Composing a logical and well written argument

### Challenge #1: Constructing an inquiry

#### Why do students struggle?

Students are often unaware that exploring a topic does not mesh with expectations of critical analysis.

### APPROACHES THAT HELP STUDENTS DEVELOP QUESTIONS

- **Be an expert for your students**  
Demonstrate or model how you shape research questions by showing how one of your recent research projects evolved.
- 
- **Use exploratory writing to uncover topics**  
Have students explore potential topics through informal writing. You or your students can list several course topics on the board. Have students investigate 2 or 3 of the topics by answering questions such as
  - What is your initial position on the topic?
  - What assumptions do you have about the topic?
  - What might you be interested in discovering?
  - Why is the topic relevant or interesting today?



**Assume an inquirer's stance**

Once students have a topic to investigate, they must find in it questions to answer. A good place to start is with what they do not know, including the standard *who? what? when? and where?* Give special attention to *why/how* questions that move beyond matters of fact into inquiry:

-- <i>What</i> are some problems in this field that need solving? What is one specific solution and how will it work?	-- <i>Why</i> are hotel employees leaving corporation X after four weeks?
--Under <i>what conditions</i> of temperature and pressure does molecular iodine exhibit ideal behavior?	-- <i>How</i> can the corporation retain new employees?
-- <i>Why</i> is this important, to whom, and for what purposes?	-- <i>How</i> is the high turnover rate impacting the corporation?

Another strategy for creating questions from a topic is to have students work through a sequence that asks them to name their topic, state what they want to find, and provide the rationale for the research:

I'm studying	<b>Topic</b>	<b>Research question</b>
	<u>eating disorders</u>	to find out <u>why women more than men are affected by them</u> in order to

<b>Significance/Rationale</b>
Understand <u>what social conditions exist and what changes can be made to prevent this disorder.</u>

**Challenge #2: Making sense of the data or readings**

**WHY STUDENTS HAVE PROBLEMS ANALYZING INFORMATION**

- The crux of most students' problems with research is simple: the readings related to their research (e.g., professional journal articles, financial reports, theory-laden research reports) are difficult.
- Lack of critical attention and contextual understanding often leads students to summarize rather than analyze, to misuse quotations, and even to plagiarize.



- What *you* want---that they read critically, pick up links between theory and data, make links across texts---often requires knowledge and skills they do not readily have.

#### APPROACHES THAT HELP STUDENTS DEVELOP ANALYTIC SKILLS

- **Be an expert for your students**

Show students what you look for when you read journal articles or analyze information. Show them materials you have read; explain why you underline passages and write marginal notes, how you code and organize data.

- **Encourage critical responses to reading or data**

Require students to write critical responses to readings or data sets throughout the semester. These responses can take the form of critical summaries, abstracts, mini pro/con arguments, question lists, "tests" against personal experience, or theory-based

- Evaluations. Responses can be exchanged with peers and discussed or handed in to you for your comments.

Here is a random example from a student's critical summary of a frequency distribution table:

33% of students surveyed decided to go to college to receive a better education and 36% decided to go in hopes of getting a better job. Speculation: Perhaps the percentages are higher because students surveyed were juniors & seniors; others had already been filtered out of the university system. Students with goals and plans prior to entering college seem to have a better chance of sticking through the required amount of time to graduate. Other possible contributing factors: What about ages of students? Marital status? Immigrant students on visas intent on securing a job? Socioeconomic level of parents?

- **Compare / contrast perspectives**

In *Engaging Ideas*, John C. Bean urges instructors to help students see that texts convey messages with specific purposes for particular audiences. You can accomplish this by comparing articles for different audiences or comparing articles with contrasting perspectives on the same subject. Have students read several articles on a topic and answer these questions for each one:

- Before I read this text, the author assumed that I believed \_\_\_\_\_.
- After reading this text, the author wanted me to believe \_\_\_\_\_.
- The author was/was not successful in changing my views because . . .

- **Help students to evaluate their readings**

Inexperienced students sometimes attach equal weight to everything they read because "it was published." Offer guidance to help students evaluate readings: What do you know about the author's background? Do you know anything about his or her biases?



When was the material published and in response to what other publications? Does the author define terms? Does the author support assertions? What evidence does the author use to test or support his or her hypothesis? How do this author's conclusions match the conclusions of other authors I have read?

### Challenge #3: Composing the report or argument

#### WHY STUDENTS HAVE PROBLEMS WHEN DRAFTING

Students do not know:

- What information or data to include and what to leave out;
- When to quote and when to paraphrase;
- How to weave information or data into their text;
- What format to use.

#### WAYS TO HELP STUDENTS WHILE THEY DRAFT

##### ▪ Give early feedback

Students tell us that they usually get extensive feedback from their teachers only after they have committed one or more serious errors, often when it is too late to correct them. Better: promote preventive research-process maintenance. Like a physician, encourage your students to have frequent check-ups: require them to submit a research prospectus, an annotated bibliography, critical summaries, an early draft, or sections of long reports for your feedback when it can be most effective.

##### ▪ Point out connections with writing tasks in other fields

Connect the present task with writing tasks that students may have experienced in other fields. For example, the "literature review" is a *summary* of relevant research findings. An "executive summary" is in many ways an extended *abstract*.

##### ▪ Do "rhetorical analysis"

Students often have trouble getting a sense of the overall shape of their report. A large part of this difficulty is being unclear about the rhetorical context the stance they will assume, the purposes and audiences for the writing. Students can ask themselves these questions:

- What is the message I want to convey?
- What is the purpose of writing this report? What impact do I want to have on my readers?
- Who are my readers? What do they already know about my subject? What do they expect me to say?
- What stance do I assume? Should I analyze critically? Review a controversy? Analyze a controversy? Synthesize current thinking on an issue?



**Explain purposes for report structure and conventions**

Students who write technical research reports in engineering, physical, and social sciences need to understand the purposes for the structure, content, and stylistic conventions of each section of the typical report. Students from a wide range of areas of study need relevant information about why their possible fields of study will use these research formats. Using published articles, distinguish for students parts of the report and the specific kinds of information covered in each part.

▪ **Show how professionals use citations**

Students often think that learning how to cite sources properly is the most important research skill---often because instructors provide more handouts on how to format citations than they do on how to analyze texts. Help students understand how citations function as parts of an argument by reviewing sample research articles or by explaining how you used quotations, paraphrases, summaries, and bibliographical citations in your own writing.

**Capitalizing on your role as teacher/researcher**

The research process is an invigorating process that can lead to discovery and new knowledge. However, unless you help your students move from their preconceived notions of research to a working knowledge of processes that constitute inquiry in their fields of interest, their research assignments will remain missed opportunities for new learning. By guiding your students as apprentice researchers and writers, you will help your students to gradually master the challenges of writing research projects/papers.