# 'WRITE TO LEARN' ACTIVITIES - SCIENCES

## ❖ IN-CLASS WRITING (Five Common Activities)

Type of Activity	Objective	When to use it	Examples
(1) Free Writes	To activate prior knowledge or generate ideas by free association.  Students write about a predetermined topic for a brief, specified number of minutes (1-5 minutes) as fast as they can and put words on paper.	<ul> <li>works as a good warm-up at the beginning of class</li> <li>instructors can pose an opening/introduction question related to the day's topic</li> <li>can be used for introductions to lab work</li> </ul>	"What do you know about X?"  "In your opinion, should scientists feed polar bears to save them from starvation?  Take 3 minutes to write out your ideas. Then read and share your ideas with a partner."  "Write down what you recall in the lab manual, what is to be done in lab today, any procedures that confuse you, and the purpose of the experiment."
		can be used to wrap up the day's topic or lecture or to help connect ideas	"What did you learn today about X?" "What questions are left unanswered in regards to X?"  "What did you learn today about the potential applications of the laws of thermodynamics?"  "What questions are left unanswered in regards to the kinds of tissue in the human body?"  "Summarize concept X or concepts XYZ that we've been discussing in class today."  "What part of this concept/these concepts confuse(s) you?"  "Explain what we learned today in your own words."  "What is the relationship between last day's topic and today's?"
		can be used to supplement reading content	"What questions do you have about the last reading?" "What were the most important points in the last reading?"
(2) Paragraph Writing	Students write, read and share their paragraphs.	<ul> <li>Can be used to:</li> <li>Define a concept you've presented</li> <li>Apply a principle to the students' experience</li> <li>Make connections with previous learning</li> <li>Summarize or synthesize important points from a lecture or assigned reading</li> <li>Translate a principle into a word problem</li> </ul>	Sample Paragraph Writing Prompt Based on Assigned Reading:  A. Read or skim the abstract, introduction (p.1-2) & conclusion (p.9-10) sections for the Molnar, Derocher, Thiemann, & Lewis (2010) article.  B. In a free writing paragraph, answer:  "What do Molnar, Thiemann, & Lewis (2010) suggest is absolutely necessary for the survival, reproduction, and abundance of polar bears? Take 5 minutes to write your paragraph. Then read and share your paragraph with your group."
(3) One-Sentence Summaries	Have students write one-sentence summaries of a lecture, lab assignment, reading assignment or discussion		Sample Topic:  "Using the same text source for our last activity on "Paragraph Writing," write a 1- sentence summary of the reading assignment. Then share your ideas with someone from another discipline (outside of your area of Social Sciences, Humanities, or Science)."
(4) Writing Questions	Have students write 2 or 3 questions concerning the main ideas or concepts in a reading		Topic Prompt:  "Using the same text source as above, jot down 2 or 3 questions you have concerning the main ideas or concepts in the reading. Then share your ideas with another new person from another discipline (outside of your area of Social Sciences, Humanities, or Science)."
(5) The One- Minute Paper	Students summarize the most important or most useful point(s) from the lecture, lab, reading assignment, or discussion; Students can write questions that remain as well. Instructors can modify topics.		Sample One-Minute Writing Prompt from Today's Presentation:  "What are the basic ideas behind the concept "Writing Across the Curriculum"  (WAC) that we learned today?"

#### **How-to Lab Report:** OTHER IN-CLASS WRITING ACTIVITIES Students write step-by-step instructions for different experiments. Groups follow each **Class Minutes:** other's instructions & the writers Have 1 or 2 students be observe. Then the original **Assignment Idea Generation:** notetakers for the day who will students rewrite their Use class time for students to be responsible for summarizing instructions for any points of Field Research brainstorm & generate ideas for a the class presentation, lecture, or clarification. **Observation Reports:** class assignment. lab activities in the first 5 minutes Students take notes on of the next class. whatever they choose to **Buzz Groups:** observe. Students work as a group to write down important things **Rotating Response** prior to doing a lab experiment. Stations: To diversify, students can write on note paper, poster board, etc. This helps to introduce a Notephysical element or Other Group taking dynamism for a specific **Snowballing:** Work topic or concept. This involves expanding groups. Students prepare a question or response alone. Then they join a partner, pair, etc. to compare and **Visual Representation:** Other Indiscuss. Instructors can lead brainstorming of Class main themes through visual Scenarios Visual representation or drawing. **Activities** \*Creative Micro-Example: "Take a minute to draw some **Theme Assignment** pictures of the first few things that come to mind when you think of climate change." **Problem Generating:** Exam For math or physics: \*\*"First Day" Take a formula or **Writing Activities** Prep **Anonymous Question Box:** theorem & create a Make a question box for students scenario or problem to place things they would find that would require using useful to review before an exam. the formula. This could also be done by Writing **Short Answer** anonymous submissions of sheets Writing: of paper in class or online. The instructor **Alternative Views:** poses a question. Have students write alternative Students write & points of view to a different topic share answers **Problem Solving: Mock Test Creation:** relative to your course. with partners or Use class time for students to Ask students to write out a the class. Example: "What are the causes of brainstorm & review ideas practical problem that the soil erosion according to X, Y, & before exams. concept, experiment introduced, Z?" etc. might help to solve.

#### \*Creative Micro-Theme Assignment:

This example comes from p. 14-15 of the Hedengren (2004) TA textbook. It is an example of a creative activity, which can help students to understand the physical states or phases of matter and intermolecular forces (especially of hydrogen bonding).

#### Scenario:

"You are a single water molecule among many in a hot water heater. All of a sudden, you are released from the water heater tank and violently expelled through the nozzle of a showerhead. Before you recover, however, you are alone for a period of time, until you meet a group of your water molecule friends on the surface of a bathroom mirror.

#### Writing Assignment:

"On the surface of the mirror, you and your friends all share similar stories. Since you are the most scientifically inclined of the group, you are assigned to write a short report, based on sound fundamental molecular reasoning explaining what happened to you all. Your report to the group should include a discussion of the forces that kept you all together and then reunited you. You should also explain why you each found yourselves alone for a period of time and how you ended up together again on the surface of the mirror. A couple of good paragraphs should suffice."

#### \*\*"First Day" Writing Activities:

#### Some ideas for short writing prompts:

- -Give students a general question to introduce them to the general material on the first day.
- -Ask them to write a short response to submit to you; you can return it to the students at the end-of term as a reflective exercise.
- -Toss out a "playground" question for them to answer in groups, or for you to put answers on the board. Ease them into contributing with a friendly assignment.
- -Have students jot down any fears or anxieties they have as they enter your course.

## ONLINE WRITE-TO-LEARN OPTIONS

Many of the activities can be tailored to online formats:

# E-journals, course websites, or email

 Students can respond to certain topics or prompts in these forums and instructors can highlight interesting or relevant posts.

### Discussion boards

 Students can post provocative questions, queries, or summary/analysis of labs or lectures on an electronic bulletin board or Web forum for class comment.

#### Puzzlemaker

- This is a fun tool for students or instructors to create crosswords, word searches, etc. for key concepts and ideas.
- Link:
   http://www.discoveryeducation.
   com/free puzzlemaker/?CFID=3208214&CF
   TOKEN=18370909

#### **Response Papers: OUT-OF-CLASS WRITING ACTIVITIES** Students can respond to particular features of a reading (the quality of data, the focus of the Free Writes as Homework: research reported, the validity of the research Journals: design, the effectiveness of logical argument). Students can write about what This can include logs based on they read & what they don't reading (combined with understand: this can include SQRRRW - Survey, Question, **Abstract Paragraph Summaries of Readings:** notes & reflection; Instructors Read, Recite, Review, Write Students can practice writing abstract-style can change prompts. skills/SPAR skills), writing logs, paragraphs for chapters or readings as a summary lecture logs, or thinking logs; of the main points. journals can be ongoing; prompts can remain constant or vary. **Short Synthesis Papers:** Based on Students can work through Readings commonalities across several readings in their writing. **Famous Scientist Question Period: Exploratory Writing Assignments:** Students can generate a list Other Ask students to compare two concepts from a of questions they would reading, connect a concept from the reading pose to a famous scientist to some experience in their lives, or work out Out-of-Class in their field. a definition in writing. **Activities Annotation Paragraph of Readings: Collaborative Team** Students can practice writing annotation **Reports or Writing:** paragraphs that include key ideas, strengths, Based on & weaknesses geared toward a particular class Students join together for Course project or assignment. collaborative writing. Concepts Assignments/Pr esentations **Writer's Log Submissions: Compact Essays:** Have students submit a writer's log for submission of assignment drafts. Ask the Have students write a 2 or 3 page students about their main point, how the essay on a key course concept or **Record Challenges:** writing went, which parts seem strong, topic. It's good to assign different weak, what questions they have for their groups different topics. Then they Students can jot readers, etc. This works like a reflection have to condense their own essay to 1 **Paper or Lab Report** down notes when students submit a report. page & share it with classmates. The **Presentations:** concerning where other students read & comment on it. they are stuck or Students bring condensed 1-Finally, they can write a group paper confused about page versions of papers or lab that combines the best of their ideas certain points. reports & present to groups in 1 page. or the whole class.