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ABSTRACT

Developed by classroom teachers during the development phase of Minnesota's Graduation Standards, this performance package is made up of locally designed assignments that, taken together, show whether a student has learned and can apply the knowledge and skills related to comprehending technical information from documents or electronic media and writing for a variety of academic and technical purposes. It begins with reference to the particular content standard addressed in the package, the educational level of the package (middle school), and a summary statement of the content standard. It then describes the tasks associated with the student performances: (1) read, summarize, analyze, and critique the directions for several laboratory experiments; (2) apply directions, implement laboratory experiments, and analyze the directions for those experiments; and (3) write directions for laboratory experiments. It then offers specific statements from the standard regarding what students should know and should do, the products, task description, special notes, and feedback checklists for each task enumerated in the package. (RS)

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MINNESOTA DEPARTMENT OF CHILDREN, FAMILIES AND LEARNING
Example Performance Package
Minnesota Profile of Learning

Content Standard: Read, Listen, and View: Technical Reading **Level:** Middle

--- A N D ---

Content Standard: Write and Speak: Writing **Level:** Partial Middle

Title of Package/Activity: Procedural Reading and Writing in the Science Lab

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Summary Statement of Content Standard:

Read, Listen, and View: Technical Reading
Comprehend technical information from documents or electronic media.

Write and Speak: Writing
Write for a variety of academic and technical purposes, situations and audiences.

Description of Student Performances:

Task 1: Read, summarize, analyze, and critique the directions for several laboratory experiments. (Read, Listen, and View: Technical Reading)

Task 2: Apply directions, implement laboratory experiments, and analyze the directions for those experiments. (Read, Listen, and View: Technical Reading)

Task 3: Write directions for laboratory experiments. (Write and Speak: Writing)

FINAL ACHIEVEMENT: Use the following scoring criteria when evaluating student performance.

Scoring Criteria:

Standard Level Packages:
4 - Performance on this standard achieves and exceeds expectations of high standard work.
3 - Performance on this standard meets the expectations of high standard work.
2 - Work on this standard has been completed, but all or part of the student's performance is below high standard level.
1 - Work on this standard has been completed, but performance is substantially below high standard level.
No package score is recorded until ALL parts of the package have been completed.

Partial Packages:
4 - Performance on the part(s) of the standard addressed in this package achieves and exceeds expectations of high standard work.
3 - Performance on the part(s) of the standard addressed in this package meets the expectations of high standard work.
2 - Work on the part(s) of the standard addressed in this package has been completed, but all or part of the student's performance is below high standard level.
1 - Work on the part(s) of the standard addressed in this package has been completed, but performance is substantially below high standard level.
No package score is recorded until ALL parts of the package have been completed.

EXAMPLE PERFORMANCE PACKAGE TASK 1
Procedural Reading and Writing in the Science Lab

Content Standard: Read, Listen, and View: Technical Reading **Level:** Middle

Specific Statement(s) from the Standard:

A student shall demonstrate the ability to comprehend technical information from documents or electronic media by:

1. knowing relevant technical vocabulary, use of tools, and safety procedures
3. showing an understanding of information from visual or graphic data

Product(s):

- Questions for establishing purpose for reading
- Summaries of directions for several laboratory experiments
- Analyses of directions for several laboratory experiments
- Critiques of most and least effective sets of directions

Task Description:

Overview: Did you ever try to read instructions for playing a new game or for finding secret codes on a video game? Did you ever give up because it was too hard to understand the directions? You may have given up, not because you are a poor technical reader, but because the technical writing was not very good. Good technical writing is simple, clear, and easy to understand, even if the procedures described are complicated. Even when the technical writing is good, technical reading skills are necessary to make sense of the technical information being presented.

Many pieces of technical writing are sets of step-by-step directions (or procedures) for making or doing something. Technical writing is also sometimes called *procedural writing*. Technical, procedural directions are written in an objective style rather than, for example, the "creative" writing styles used for fiction or poetry.

***In this package*, over an extended period of time,** you will demonstrate your understanding of technical reading and writing. You will read, summarize, analyze, and critique directions for science lab experiments *(Reading standard)*; follow directions to perform science lab experiments and then analyze those directions *(Reading standard)*; and write your own directions for science laboratory experiments *(Writing standard)*.

In this task, your teacher will make available to the class different manuals for performing science lab experiments. (Manuals are books/booklets of technical writing that explain how to do something.) Most of the manuals will have several different experiments in them. **Over an extended period of time**, you will be carefully reading the directions for several different experiments. Be sure to read from different manuals so that you have experience with different types/styles of procedural writing.

Before you begin this task, your teacher will model each step for your class.

Task Description, continued

Steps:

1. The first strategy that successful readers regularly apply is **establishing a purpose for reading** a particular selection. This is often done by the person posing for him/herself questions such as:
   - What do I already know about the topic/subject of this selection?
   - What do I want to know/learn from this selection?
   - What specialized or new vocabulary might I encounter in this selection?
   - ...and so on, with additional questions.

   (After your reading, you can use this questioning strategy again. Ask yourself:
   - What do I *still* want to know?)

   For a set of directions for a laboratory experiment that your teacher gives you, set your reading purpose by posing questions. Write the questions.

2. **Read** the directions for the experiment.

3. **Write a summary** of the directions. Summary writing is another strategy. Compose your summary in your own words -- not by copying from the selection -- and make sure it is complete and accurate. Your summary should include:
   - accurate use of technical vocabulary
   - accurate notes on the appropriate use of tools/materials
   - accurate notes on safety procedures
   - accurate descriptions of visual or graphic data.

4. **Analyze the directions** for the experiment you read. Answer the following questions in your analysis:
   a. How is the description of the experiment structured? (Is background information given first? Are there pictures/graphics? If so, where are they placed -- at the beginning, the end, throughout the description? Are there numbered steps? Are technical words explained in a glossary?)
   b. Can you understand the different elements or parts of the experiment, such as the problem, hypothesis, materials needed, how to collect data? Explain what makes the elements of the experiment clear or difficult to understand.

Task Description, continued

c. Are there drawings or other graphics that help describe the *materials/tools* needed for the experiment? If not, would graphics make how the text explains the use of materials/tools easier to understand?

   If there are graphics, do they help you to understand the *procedure* for the experiment? Why or why not?

d. Are bullets or numbered steps -- or an outline -- used with the written directions? If not, would they be helpful? If they are, are they helpful? Why or why not?

e. Are technical words and terms defined? If not, do they need to be?

f. What do you like or dislike about the objective writing style used? (Consider how general or precise the words are. Think about the length of sentences, the amount of explanation, etc.) Is there anything else that makes the writing easy or hard to understand?

g. Are safety procedures and warnings clear, complete, and easy to understand?

h. Do you think you could do this experiment successfully? Why or why not?

Note: These guiding questions, in an abbreviated form, are in Example 1 (page 5), which shows that responses (both observations and conclusions) are required for each aspect of the procedural writing you are analyzing. Example 1 may help you to prepare your analysis.

5. Over an extended period of time, you will perform Steps 1-4 several times. You will, in effect, be compiling a "reading portfolio" on the directions for several different science lab experiments.

6. After your teacher has given you feedback on your analyses of several sets of directions, choose a set of directions you think is the most clearly and effectively written as well as a set that you believe is the least clearly and effectively written. In **two critiques**, explain why the sets of directions are good and bad examples of technical, procedural writing. Review your analyses from Step 4, and give specific details and examples to support your two choices.

EXAMPLE PERFORMANCE PACKAGE TASK 1
Procedural Reading and Writing in the Science Lab

EXAMPLE 1: Guiding Questions for Analyzing Procedural Writing
-- With *Incomplete* Student Observations and Conclusions --

LABORATORY MANUAL (SOURCE):
Beisenherz, P. & Dantonio, M. (1996). Using the Learning Cycle to Teach Physical Science: A Hands-on Approach for the Middle Grades. Portsmouth, NH: Heinemann.
EXPERIMENT:
Activity 5A: Which liquid contains the most acid?

Questions	Observations	Conclusions
A. How is the description of the experiment structured?	A. *The author starts with background information and materials. Questions are in bold. Procedures are bulleted. There are lots of charts and diagrams throughout.*	A. *The use of the graphics is effective. However, the bold questions, which are also in boxes, are a little distracting since they come in the middle of the procedure.*
B. Explain what makes the elements of the experiment clear or difficult to understand.	B. *The author provides a lot of text in the section on background information. The hypothesis is stated as a problem or question. Materials, methods, and procedures are listed -- minimum number of words.*	B. *The author is very good at listing materials and steps in a few words and phrases. Sentences are used only in the background information section.*
C. If there are graphics, do they help you understand the tools and procedure for the experiment? Why or why not?	C. *Most of the steps are matched up with a diagram that includes materials/tools; the diagram is labeled. Charts are included for data collection.*	C. *The diagrams and text are helpful; they make how to use the materials clear. The labels help me understand the terms. Charts are useful because I might not know how to set up the experiment without an example.*
D. Are bullets, numbered steps, or outlines used with the written directions?	D.	D.
E. Are technical words and terms defined? If not, do they need to be?	E.	E.
F. What do you like/dislike about the objective writing style used? What makes/does not make the writing understandable?	F.	F.
G. Are safety procedures and warnings clear, complete, and easy to understand?	G.	G.
H. Do you think you could conduct this experiment successfully? Why or why not?	H.	H.

EXAMPLE PERFORMANCE PACKAGE TASK 1
Procedural Reading and Writing in the Science Lab

Special Notes:

1. Students should also be able to work on middle level science standards as they work on the standards addressed in this package. Teachers would provide a content focus in the area of Living Systems, Earth Systems, or Physical Systems. In selecting laboratory experiments and manuals, teachers should provide materials consistent with this focus. If, as students work on this package, they also *will* be demonstrating their performance in middle level science standards, additional performance criteria (checklists) must used to assess the *scientific content* of the laboratory experiment.

2. In order for the students to meet the specifications of the middle level Writing standard, the students' writing process must be documented through observations or conferences and by collecting all rough drafts as well as the final products. *Remember: this is a partial package for the Writing standard because it does not meet all the specifications of the Writing standard.*

3. Instructional experiences should be provided in the area of *scientific writings* prior to students working in this package. For example, students should be introduced to the structure and elements of an experiment through the materials provided in their science curriculum. As teachers deliver the middle level Writing and Technical Reading standards, they should adapt this package, using the same terminology as in their *science curriculum*. For those teachers looking for instructional strategies that could be used prior to using this package, the following resources provide a wide range of helpful ideas:

Brandt, W. "Practice in Critical Reading as a Method to Improve Scientific Writing," *Science Education*, Vol. 55, No. 4, pp451-455, Oct.-Dec., 1971.

Burnham, C. *Improving Written Instructions for Procedural Tasks*. Berkley, CA: The National Center for Research and Vocational Education, 1992.

Cannon, R. "Experiments With Writing to Teach Microbiology," *American Biology Teacher*, Vol. 52, No. 3, pp156-158, March, 1990.

Coggin, W. Fall, "A Hands-on Project for Teaching Instructions," *Technical Writing Teacher*, Vol. 8, No. 1, pp7-9, 1980.

Day, R. *How to Write and Publish a Scientific Paper*. Phoenix, AZ: Oryx Press, 1988.

Donin, J. et al. "Student Strategies for Writing Instructions: Organizing Conceptual Information and Text," *Written Communication*, Vol. 9, No. 2, pp209-236, April, 1992

Giese, R. et al. "Teaching Experiment Design to Beginning and Advanced Students: Procedure Writing - But This Ain't No English Class," *Science Activities*, Vol. 26, No. 1, pp24-27, Feb.-March, 1989.

Gratz, R. "Improving Lab Report Quality by Model Analysis Peer Review and Revision," *The Journal of College Science Teaching*, Vol. 19, No. 5, pp292-295, March-April, 1990.

Jacobson, C. *Water, Water Everywhere But...Notes for the Teacher. Report Writing Directions and Experiments*. Loveland, CO: Hawk Company, 1983.

Kroll, B. "Explaining How to Play a Game: The Development of Informative Writing Skills," *Written Communication*, Vol. 3, No. 2, pp195-218, April, 1986.

Lang, T. "A Technical Writing Laboratory: The Puzzle Exercise," *Technical Writing Teacher*, Vol. 15, No. 2, pp132-137, Spring, 1988.

Mayer, B. "Science Writing Experiments," *Teachers and Writers Magazine*, Vol. 19, No. 5, pp6-10, May-June, 1988.

Mulcahy, P. "Writing Reader-based Instructions: Strategies to Build Coherence," *Technical Writing Teacher*, Vol. 15, No. 3, pp234-243, Fall, 1988.

Pechenik, J. & Tashir, J. "Instant Animals and Conceptual Loops: Teaching Experimental Design, Data Analysis, and Scientific Writing," *American Biology Teacher*, Vol. 53, No. 4, pp220-228, April, 1991.

Ross, F. & Jarosz, M. "Integrating Science Writing. A Biology Instructor and an English Teacher Get Together," *English Journal*, Vol. 67, No. 4, pp51-55, April, 1978.

Sheldon, D. & Penick, J. *Favorite Labs From Outstanding Teachers*. Reston, VA: National Association of Biology Teachers, 1991.

Southland, S. "Bibliography on the Writing of Instructions," *Technical Communications*, Vol. 35, No. 2, pp101-104, May, 1988.

Special Notes, continued

The American Association of Physics Teachers. *Physics Demonstration Experiments*. New York, NY: Ronald Press, 1970.
Totten, S. & Tinnin, C. "Incorporating Writing Into the Science Curriculum: A Sample Activity," *Science Activities*, Vol. 25, No. 4, pp25-29, Nov.-Dec., 1988.
Vargas, M. "Writing Skills for Science Labs," *Science Teacher*, Vol. 53, No. 8, pp29-33, Nov., 1986.
Walker, J. "A Student's Guide to Practical Write-ups," *Biochemical Education*, Vol. 19, No. 1, pp31-32, Jan., 1991.
Worsley, D. & Mayer, B. *The Art of Science Writing*. New York, NY: Teachers and Writers Collaborative, 1989.
Wyatt, H. "Writing Tables and Graphs: Experience with Group Discussions in Microbiology Practical Work," *Journal of Biological Education*, Vol. 18, No. 3, pp239-245, Fall, 1984.

4. The following may be used in this package:

Abruscato, J. & Hassard, J. *The Whole Cosmos: Catalog of Science Activities*. 2nd ed. Glenview, IL: Scott Foresman and Company, 1991.
Beisenherz, P. & Dantonio, M. *Using the Learning Cycle to Teach Physical Science: A Hands On Approach for the Middle Grades*. Portsmith, NH: Heinemann, 1996.
Brown, R. *200 Illustrated Science Experiments for Children*. Blue Ridge Summitt, PA: Tab Books, 1987.
Brown, R. *More Science For You: 112 Illustrated Experiments*. Blue Ridge Summitt, PA: Tab Books, 1988.
Carr, J. *The Art of Science: A Practical Guide to Experiments, Observations, and Handling Data*. San Diego, CA: HighTexts Publications, 1992.
Challand, H. *Activities in Physical Sciences*. Chicago, IL: Children's Press, 1984.
Cobb, V. *Chemically Active! Experiments You Can Do at Home!*. New York, NY: Harper & Rowe, 1985.
Ehrlich, R. *Turning the World Inside Out and 174 Other Simple Physics Demonstrations*. Princeton, NJ: Princeton University Press, 1990.
Gardner, R. *Energy Projects for Young Scientists*. New York, NY: Watts Publishers, 1989.
Goodwin, P. *Physics Projects for Young Scientists*. New York, NY: Watts Publishers, 1991.
Hebert, D. *Mr. Wizzard's 400 Experiments in Science*. 1968. (Revised by David Goldberg, 1983.) North Bergen, NJ: Book Lab.
Historical Science Experiments on File: Experiments, Demonstrations and Projects for the School and Home. New York, NY: Facts on File, 1988, 1990, 1993.
Iritz, M. *Blue Ribbon Science Fair Projects*. Blue Ridge Summitt, PA: Tab Books, 1991.
Kramer, A. *How to Make a Chemical Volcano and Other Mysterious Experiments*. New York, NY: Franklin Watts, 1989.
Krishnan, C. *Physics Hands-on Activities*. Annapolis, Maryland: Alpha Publishing Company, Inc., 1990.
Levy, S. *Physical Science Hands-on Activities*. Annapolis, Maryland: Alpha Publishing Company, 1990.
Liem, T. *Invitations to Science Inquiry*. Lexington, MA: Ginn, 1981.
Lunetta, V. & Novick, S. *Inquiry and Problem Solving in the Physical Sciences: A Source Book*. Dubuque, IA: Kendall-Hunt Publishing Company, 1982.
Nature Projects on File. New York, NY: Facts on File, 1992.
Newton, D. *Science Technology Society Projects for Young Scientists*. New York, NY: Watts Publishers, 1991.
Pilger, M.A. *Science Experiments Index for Young People*. Littleton, CO: Libraries Unlimited, 1988.
Pilger, M.A. *Science Fairs and Projects*. The National Science Teachers Association, Washington, DC, published periodically.
Rainis, K. *Nature Projects for Young Scientists*. New York, NY: Watts Publishers, 1989.
Schneider, M.S. *Science Projects for the Intermediate Grade*. Carthage, IL: Fearon Teacher Aids, 1980.
Science in Action: The Marshall Cavendish Guide to Projects and Experiments. New York, NY: Marshall Cavendish, 1988.
The Science Fair Project Index. Metuchen, NJ: Scarecrow Press, published every five years.
The Thomas-Alva Edison Foundation, *The Thomas Edison Book of Easy and Incredible Experiments*. New York, NY: John Wiley & Sons, 1988.
Tocci, S. *Biology Projects for Young Scientists*. New York, NY: Watts Publishers, 1989.
Tolman, M. & Morton, J. *Physical Science Activities for Grades 2-8*. West Nayac, NY: Parker Publishing Company, 1986.

Special Notes, continued

VanDeman, B. & McDonald, E. *Nuts and Bolts: A Matter of Fact Guide to Science Fair Projects.* Harwood Heights, IL: Science Man Press, 1980.
Wolfe, C. *Search: A Research Guide for Science Fairs and Independent Study.* Tucson, AZ: Zephyr Press, 1987.
Wood, R. *Physics for Kids: 49 Easy Experiments with Mechanics.* Blue Ridge Summitt, PA: Tab Books, 1989.
Yoshika, R. *Thousands of Science Projects: Classified Titles of Exhibits Shown at Science Fairs and/or Produced as Projects for the Westinghouse Science Talent Search.* Science Service, 1987.

5. Hands-on Activity Kits:

AIMS (Activities Integrating Mathematics and Science), The AIMS Education Foundation, PO Box 8120, Fresno, CA 93747. (209) 255-4094. Hands-on enrichment units integrating mathematics and science.
CHEM (Chemicals, Health, Environment, and Me), Lawrence Hall of Science, Berkley University of California at Berkley, California, 94720. (415) 642-8718.
FOSS (Full Option Science System), The Encyclopedia Britannica Education Corporation, 310 S Michigan Avenue, Chicago, IL 60604. (800) 554-9862.
GEMS (Great Exploration in Math and Science), Lawrence Hall of Science, Berkley University of California at Berkley, California, 94720. (510) 642-7771.
Insights: Improving Urban Middle School Science, Education Development Center, Inc., 55 Chapel Street, Newton, MA 02160. (800) 225-4276.
Operation Physics, Physics Department, Louisiana State University, Baton Rouge, LA 70808.
Science and Technology for Children, National Science Resources Center, Smithsonian Institution National Academy of Sciences, Arts and Industries Building, Room 1201, Washington, DC 20560. (800) 334-5551.
Sea Pup, Science Education for Public Understanding Program, Lawrence Hall of Science, Berkley University of California at Berkley. Materials are distributed through Sargent-Welch, VWR Scientific, 911 Commerce Court, Buffalo Grove, IL 60089. (800) 727-4368.
TOPS (Task Oriented Physical Science Learning Systems), 10970 S Mulino Road, Canby, OR 97013.

- Many of the manuals contain a combination of experiments in the life sciences, earth sciences, and physical sciences; when only one area is contained in a manual, this is clearly indicated in the title. In addition to written text, the manuals contain visual/graphic data that must be interpreted in order to complete the experiment effectively; *this addresses a specification of the Technical Reading standard.*

- The textbook being used for the science class may also be a source of laboratory experiments that can be used in this package.

6. Tasks 1 and 2 may be done simultaneously -- and both should occur over an extended period of time.

7. The two laboratory experiments the teacher selects for classroom implementation (in Task 2) should provide strong models of science procedural writing and should be connected to the curriculum/content of the course. Although teachers may use laboratory experiments from their existing curricula, the resources listed above would also be useful sources for teachers in selecting model experiments.

8. This assessment package is based upon material that may appear in the following publication: Monson, M.P. and Monson, R.J. (in press). *Integrated Learning Assessment: Building Stronger Bridges Between Learning, Curriculum and Assessment.* Tucson, AZ: Zephyr Press. Task designer Michele Pahl Monson can be reached through e-mail at 0197supt@informns.k12.mn.us.

EXAMPLE PERFORMANCE PACKAGE TASK 1
Procedural Reading and Writing in the Science Lab

FEEDBACK CHECKLIST FOR TASK 1

STANDARD: READ, LISTEN, AND VIEW: TECHNICAL READING

The purpose of the checklist is to provide feedback to the student about his/her work relative to the content standard. Have the standard available for reference.

Y=Yes
N=Needs Improvement

Student		Teacher
_____	Technical reading selections used in this task are at or above an 8th grade reading level.	_____
	Purpose-setting Questions for Several Sets of Directions for Experiments	
_____	Purpose-setting questions are clearly stated.	_____
	Several Summaries	
_____	Summaries are in the student's own words.	_____
_____	Relevant technical vocabulary is used accurately.	_____
_____	Appropriate use of tools/materials is noted correctly.	_____
_____	Safety procedures are accurately noted.	_____
_____	Visual or graphic data are correctly described.	_____
	Several Analyses	
_____	Observations about the writing are thorough and accurate.	_____
_____	Conclusions about the writing are clearly supported by relevant examples and details from the observations, specifically on: • use of relevant technical vocabulary • use of tools/materials • safety procedures • visual or graphic data.	_____
	Two Critiques	
_____	Choices of the most and least effective sets of directions are supported with relevant and specific examples and details.	_____

Overall Comments (information about student progress, quality of the work, next steps for teacher and student, needed adjustments in the teaching and learning processes, and problems to be addressed):

EXAMPLE PERFORMANCE PACKAGE TASK 2
Procedural Reading and Writing in the Science Lab

Content Standard: Read, Listen, and View: Technical Reading **Level:** Middle

Specific Statement(s) from the Standard:

A student shall demonstrate the ability to comprehend technical information from documents or electronic media by:

1. knowing relevant technical vocabulary, use of tools, and safety procedures
2. applying step-by-step directions using appropriate tools and safety procedures
3. showing an understanding of information from visual or graphic data

Product(s):

- Logs on conducting two laboratory experiments
- Analyses of directions for the two implemented experiments

Task Description:

Steps:

1. Your teacher will give all the students in your class a piece of technical, procedural writing for a lab experiment. You are to conduct this laboratory experiment individually. First, pose questions to set a purpose in reading. Read all the directions before you begin; then carefully follow all the directions provided. Use the materials indicated and the safety procedures described for the experiment. **Maintain a log** on conducting the experiment in which you note at least:
    - your purpose-setting questions
    - how you followed the directions
    - how you applied technical vocabulary
    - how you used tools/materials
    - how you followed safety procedures
    - how you applied visual or graphic data.

2. After you have finished the experiment, **analyze the writing** of the set of directions. Use the same questions you used in Task 1 (pages 3-5) to prepare your analysis.

3. After you have received feedback from your teacher about conducting the experiment and about your log and analysis, your teacher will give your class a second piece of technical, procedural writing for another lab experiment. Follow Steps 1 and 2 above for this experiment: conduct the experiment, maintain a log, and analyze the directions.

Note: Task 3 asks you to write down questions that occurred to you as you conducted these two experiments. You may wish to think about questions now, even if you do not until later decide upon questions to use in Task 3. Of course, you could write down questions in your log now, as you are conducting the experiments.

EXAMPLE PERFORMANCE PACKAGE TASK 2
Procedural Reading and Writing in the Science Lab

FEEDBACK CHECKLIST FOR TASK 2

STANDARD: READ, LISTEN, AND VIEW: TECHNICAL READING

The purpose of the checklist is to provide feedback to the student about his/her work relative to the content standard. Have the standard available for reference.

Y=Yes
N=Needs Improvement

Student		Teacher
_____	Technical reading selections used in this task are at or above an 8th grade reading level.	_____
	Logs on Conducting Two Laboratory Experiments	
_____	Purpose-setting questions are clearly stated.	_____
_____	All directions are accurately followed as they are written.	_____
_____	Technical vocabulary is applied accurately.	_____
_____	All tools/materials are used appropriately and safely as written in directions.	_____
_____	All safety procedures are accurately followed.	_____
_____	Visual or graphic data in the directions are interpreted and applied correctly.	_____
	Analysis of Directions for Each Experiment	
_____	Observations about the writing are thorough and accurate.	_____
_____	Conclusions about the writing are clearly supported by relevant examples and details from the observations, specifically on: • use of relevant technical vocabulary • use of tools/materials • safety procedures • visual or graphic data.	_____

Overall Comments (information about student progress, quality of the work, next steps for teacher and student, needed adjustments in the teaching and learning processes, and problems to be addressed):

EXAMPLE PERFORMANCE PACKAGE TASK 3
Procedural Reading and Writing in the Science Lab

Content Standard: Write and Speak: Writing **Level:** Partial Middle

Specific Statement(s) from the Standard:

A student shall demonstrate for a variety of academic and technical purposes, situations, and audiences the ability to write using correct spelling and mechanics:

1. a technical procedure or set of directions that uses:
   a. technical terminology, use of tools to perform an action, or both
   b. original visual representations to support text, including for example, illustrations, diagrams, charts, or technical drawings
   c. sequenced steps using a numbered, bulleted, or outlined format
   d. precise wording and objective style
   e. a glossary of technical terms used in the text

Product(s):

- Working drafts for directions for two laboratory experiments
- Written directions for two laboratory experiments

Task Description:

Overview: In this task, you will compose two separate pieces of technical, procedural writing for science lab experiments. You will demonstrate your use of a writing process that includes steps such as pre-writing, drafting, conferencing, revising, editing, publishing. As you prepare your sets of directions, you will save all notes, drafts, and feedback sheets.

Steps:

Before you begin this task, your teacher will model each step for your class.

Also, your teacher will be observing your individual and group work and regularly giving feedback.

---

1. After completing an experiment, a scientist is often left with questions that need additional investigation. Write down several questions that occurred to you from your experiences in conducting one of the Task 2 experiments.
   (pre-writing)

2. Develop one question from that experiment into a hypothesis you might like to investigate with your own experiment. Then in a group of four or five students (your writing conference group), discuss and get feedback on your proposed hypothesis, and then modify your hypothesis as indicated.
   (focusing, conferencing)

Task Description, continued

3. Write a draft of directions for testing your hypothesis in a science lab experiment. Your directions should be prepared in the format established by your teacher or be modeled on professionally written directions such as those your teacher provided for you to use in Tasks 1 and 2.

   As you prepare your first draft of directions, make sure you follow these specifications:

   - provide a clear description of the background knowledge needed
   - define the problem being investigated
   - state the hypothesis the experiment will be testing
   - include appropriate technical terms to describe the materials and/or tools needed
   - sequence the steps of the procedure, using numbers, bullets, or outlines
   - include all necessary steps
   - include drawings and/or other graphics that support the text
   - state safety procedures, precautions, and/or warnings
   - include a glossary of technical terms used
   - use an objective writing style with precise wording.

   (drafting)

4. When you have completed a first draft of directions, take the draft to your peer conference group for their review and feedback. In the conference, you will also be reviewing and giving feedback on drafts of other students in your group. Pay attention to the required specifications bulleted above (in Step 3). Also use Example 1 (Task 1, page 5) to give and receive feedback.
   (conferencing)

5. Based on your group's feedback and on your own review, make any necessary changes in your directions.
   (revising; redrafting)

6. Take your revised draft to your peer conference group for further review and feedback. Ask how you can make your directions complete and/or clearer. Make further revisions in your directions according to any helpful suggestions from your group.
   (revising; redrafting)

7. Be prepared to repeat any of Steps 1-6 as needed to bring your directions to "publishable," final form.

Task Description, continued

8. Submit your final draft of directions to your teacher.
   (publishing)

9. Follow Steps 1-8 to prepare a second piece of technical, procedural writing for a science lab experiment.

EXAMPLE PERFORMANCE PACKAGE TASK 3
Procedural Reading and Writing in the Science Lab

FEEDBACK CHECKLIST FOR TASK 3

STANDARD: WRITE AND SPEAK: WRITING

The purpose of the checklist is to provide feedback to the student about his/her work relative to the content standard. Have the standard available for reference.

Y=Yes
N=Needs Improvement

Student		Teacher
	Working Drafts **and** Written Directions for Two Laboratory Experiments	
_____	Background knowledge needed to do the experiment is described clearly.	_____
_____	Problem being investigated is clearly defined.	_____
_____	Hypothesis being tested is stated clearly.	_____
_____	Technical terms accurately describe the needed materials and/or tools.	_____
_____	The procedure is sequenced correctly, using numbers, bullets, or outlines.	_____
_____	All necessary steps are included.	_____
_____	Drawings/graphics are accurate and support the text.	_____
_____	All safety procedures, precautions, and/or warnings are stated clearly and accurately.	_____
_____	Glossary of technical terms is accurate and complete.	_____
_____	Language is used precisely.	_____
_____	Writing style is objective.	_____
_____	Spelling and mechanics are correct.	_____

Overall Comments (information about student progress, quality of the work, next steps for teacher and student, needed adjustments in the teaching and learning processes, and problems to be addressed):