PHYSNET

MISN-0-69

EVALUATING WHILE LEARNING (A PROJECT)

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by

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Title: **Evaluating While Learning (A Project)**

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Input Skills:

1. The Input Skills of the module to be learned-from and reviewed.

Output Skills (Knowledge):

K1. Vocabulary: topic sentence, closure.

Output Skills (Project):

J1. Be aware of your reactions to scientific writing and write them down immediately, before you forget their original nature.

J2. Analyze scientific writing, paragraph by paragraph, for clarity, interest, challenge, involvement, and closure.

J3. Analyze a total scientific instructional module for completeness and clarity of input skills, output skills, resources, and overall closure.

J4. Analyze an instructional unit's Model Exam for correspondence with its output skills and instructional resources.

J5. See this module's *Local Guide* for the procedure to obtain credit.

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1. Introduction

1a. Reasons to Review. The art of reviewing is interesting, useful, and sometimes salable in its own right, but its acquisition is also a good way to become aware of the skills necessary for good communication. Here we delineate the techniques that Project PHYSNET asks learners to use for the review of instructional modules: most of these skills are also relevant to the review of scientific reports in general. In addition, reviewing gives the reviewer considerable satisfaction from helping to produce better scientific communication.

1b. Overview of This Project. We want you to comment on an instructional module's details, in an unstructured way, during the time you are actually learning from it, then give a structured review when you have finished all of the module's learning activities.

To do this project successfully, we recommend that you read all the materials in this module, including all supplements at the end, before starting.

1c. The "Graffiti" Review. For the unstructured part of your review, you must mark your thoughts, ideas, questions, irritations and graffiti right on your module as you learn from it.

- At the end of each paragraph, comment on each of the design goals listed in this module's next section. Some reviewers also like to make a table of ratings, on a scale of 1 to 10, for each of those design goals. If there is not enough room in the module margins, put your comments on other sheets of paper keyed to the module's paragraph labels. You can supply any missing paragraph labels that you need.

- Make similar comments at the end of each section, keyed to the two design goals listed below for sections.

- Note that we require you to hand in the original of the module you annotated as part of your review.

1d. The Structured Review. For the second part, the structured review, we ask you to briefly analyze each paragraph and section of the module, using your graffiti as guide. Then we ask you to comment on the other parts of the module (if any).

2. Paragraph Review Items

2a. The Paragraph's Purpose. If you have satisfied a paragraph's prerequisites, you should be able to determine the paragraph's purpose from its first sentence, its topic sentence. Research has shown that learning is more efficient if the topic sentence is at the beginning of a paragraph rather than, say, at its end. Please comment on whether the topic sentence does in fact convey the paragraph's "message" to you and whether all of the other sentences in the paragraph relate to that message.

2b. Clarity. If you have mastered the scientific prerequisites for a paragraph of scientific writing, then that paragraph should seem clear to you. If some steps in an argument have been omitted, you may have to fill them in for detailed clarity, but the general argument should be clear from straight-through reading alone. If a lack of clarity can be pinned down to individual sentences, that should be done. Suggestions for improving clarity, such as by adding examples and problems, are definitely desired.

2c. Interest. Did you find an intellectually stimulating argument? An interesting example? An exciting new view of a topic? Or was the paragraph just boring to you? If the latter, can you tell why; for example in terms of your present and potential interests or your past experiences or the design of the material?

2d. Involvement. Did the paragraph challenge you to make connections with your past experience, to complete mathematical or intellectual arguments, or to rethink your view of a concept? Or, on the contrary, did you only need to be completely passive throughout?

2e. Help. If you became stuck trying to complete an argument or understand a concept, was the help you needed available in a sequence in the module's Special Assistance Supplement?

2f. Challenge (Level). Was the paragraph on too low a level, covering only material which you already knew well? Or did it start from where you were and take you to a new level? Alternatively, was it on too high a level, with a gap between itself and what preceded it?

2g. Closure. A paragraph is the smallest unit of scientific writing that should have some degree of completeness or closure around an idea or a topic. In this sense it is the print analog of a single-concept video. Can you pause at the end of the paragraph and think it over without feeling that you have interrupted a discussion?

3. Section Review Items

A section is a collection of one to five or so paragraphs clustered around a definite theme, which implies these two design goals: (i) you should be able to determine any section's purpose from its introductory paragraph; and (ii) at the end of the section you should have some feeling of completion about the section's topic. Comment on the extent to which these two design goals were successfully met.

4. Structured Review

4a. Introduction. The total module should be reviewed upon completion of its learning activities and Model Exam. This part of the review is usually written on a separate piece of paper and is keyed to the items that follow in this section.

4b. "Input Skills" Statements. An instructional module should have a set of statements detailing the knowledge and skills which are its prerequisites. These should describe the prerequisite skills themselves, not courses or books, and should contain references to materials where the skills can be obtained. It is especially important that physics modules include statements of mathematics prerequisites. However, a prerequisite to a prerequisite is not ordinarily mentioned. Each prerequisite should be footnote referenced at the point where it is first needed.

4c. "Output Skills" Statements. There should be a set of statements of Output Skills. These statements should be clear to you upon completion of the module's learning activities. The Output Skills should be appropriately separated into Knowledge and Rule Application, and/or Problem Solving Skills statements. Are the statements clear? Are the module's resources sufficient for their attainment? Do the statements cover all of the important concepts the module teaches?

4d. Closure. An instructional module should hang together and form a whole, much as does a work of art, music, literature, or theatre. Does the module give you a feeling of such completeness or closure?

4e. Non-Text Resources. The resources available to help you attain the Output Skills may include problems, questions, films, videotapes, and demonstrations. What is your judgement of their usefulness?

4f. Problem Supplement. If the unit has rule-application or problem-solving Output Skills, then it should have a Problem Supplement that allows you to practice and test those skills on problems you have not seen before. In your review of the Problem Supplement, comment on: (1) whether the problems adequately covers the output skills; (2) whether you would have worked more problems had they been present; and (3) whether there was sufficient help in the Special Assistance Supplement for cases where you became stuck and were unable to get going again without outside assistance.

4g. Local Guide. If the module makes use of external resources, such as a computer, a video, or a reference book, is good information given for finding it and using it?

4h. Model Exam. Is there a test by means of which you can assess your mastery of skills? Does it (properly) cover a good selection of the ID Sheet's listed Output Skills? Does it (improperly) cover material not in the Output Skills?

4i. Length. A module should contain about the amount of material for which you would be held responsible from a fifty-minute lecture. Was this module about that length, or was it too short or too long?

4j. Usefulness. Do you think there is a good chance you will use what you have learned in this module, either in your personal or professional life? Do you think it will have any influence on your thinking about what you see around you, or what you talk about or what you hear or what you read? Alternatively, do you think it will simply disappear from your life as soon as you take the relevant exam? Give us your thoughts on this subject.

5. Check List (Summary)

For each and every paragraph:	purpose
	clarity
	interest
	challenge (level)
	involvement
	help (if needed)
	closure
For each and every section:	purpose
	closure
Total module:	input skills with references
	output skills
	learning resources
	post-options
	completeness and clarity
	length
	perceived usefulness
Problem Suppl:	adequate coverage
	enough practice
	sufficient help
Model Exam:	correspondence with output skills
External Resources:	location and use

Acknowledgments

LOCAL GUIDE

1. Check your Syllabus to see if exam U69 is allowed for your course.

2. For review, select a module from which you are about to start learning and which does not depend on a commercial textbook.

3. If you wish to keep a copy of the module you study and annotate, be sure you make your copy before you come in to CBI to hand in the annotated original as part of your review.

4. Bring your review and the original of your annotated module to our Exam Room. Fill out an Exam Application Form and mark the "exam" as U69. Take the Exam Application Form to our Exam Manager, as usual, but also take your review and the original of your annotated module. The Exam Manager will log you in and give you an exam sheet and an exam answer sheet.

5. The Exam will look just like this unit's Model Exam.

6. Any amount of time after you hand in the review, but during your class's regular CBI times in the same term, take an exam that includes coverage of the module you learned from and reviewed. You must get an exam fraction of greater than 50% on that exam if you wish to also get credit for your Unit-69 review.

   Note: the reason you must hand in the review before taking the real exam, on the module being reviewed, is to help ensure that you actually reviewed the module while you studied it, not later.
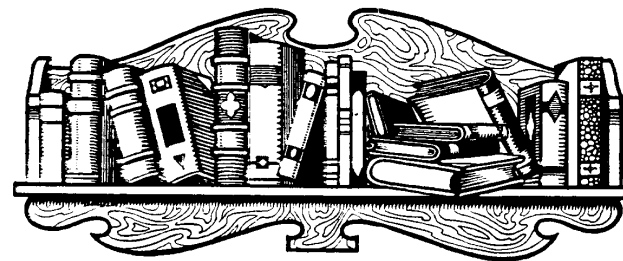
MODEL EXAM

Examinee: Mark page numbers on your review. On your Exam Answer Sheet, for each of the following parts of items, show: (i) a reference to your annotated module or to appropriate page numbers in your written review; and (ii) a blank line or two for grader comments. When finished, staple together your sheets as usual, but include the original of your annotated module and your written review just behind the Exam Answer Sheet.

1. Show the original module you learned from, with your liberal annotations written directly on it, showing the thoughts you had about it while learning from it.

2. Show your analysis of each and every paragraph for:

   a. purpose

   b. clarity

   c. interest

   d. involvement

   e. help

   f. challenge

   g. closure

3. Show your analysis of each and every section for:

   a. purpose

   b. closure

4. Show your analysis of the module's:

   a. input skills

   b. output skills

   c. closure

   d. learning resources

   e. problem supplement

   f. local guide

   g. model exam

   h. length

   i. usefulness

INSTRUCTIONS TO GRADER

Grader! The student must have attached:

- the ORIGINAL of his/her hand-annotated module, and

- the ORIGINAL of his/her review.

If the student handed in a copy, not an original, of either one, then

immediately give the student a grade of zero

on this exam. Write the reason on the Exam Answer Sheet and grade no further.

1. Did the student liberally annotate the module, paragraph by paragraph, putting down his/her thoughts while learning from the material?

2. Did the student analyze the scientific writing of the module, paragraph by paragraph, for: purpose, clarity, interest, challenge, help, involvement and closure?

3. Did the student analyze each section for: purpose and closure?

4. Did the student analyze the instructional module's: input skills; output skills; closure, non-text references, problem supplement, local guide, model exam (if there is one), length, and usefulness?