
Example Assessment Worksheets

Objectives

To allow students to reflect on their learning processes, both individually and groups.
To encourage metacognition and expert learning strategies.

Below are several assessment worksheets.

Self-Assessment checklist

Reinholz, D.L. Int. J. Res. Undergrad. Math. Ed. (2015) 1: 234.
doi:10.1007/s40753-015-0005-y

Completeness, Organization and Labeling

Did you answer all questions asked, showing all steps, in the proper order? yes no
(If applicable) Did you label and explain all graphs, including units, etc.? yes no

Explanations

Did you explain why (and not just what)? yes no

Use of language

Did you avoid the use of pronouns (and other ambiguous language)? yes no
(If applicable) Did you consult definitions of mathematical terms you used? yes no

Justification

Did you justify your solutions in at least one of the following ways? yes no

- By checking if answers to different parts of the question are consistent?
- By explaining how you know your solutions is correct?
- In some other way?

Author

various

Materials & Resources

none

Classroom Context

various

Time Requirement

10 minutes

About this Project

This is one of a set of materials compiled for instructors to draw upon in order to frame non-traditional modes of classroom teaching for their students. Our hope is that these materials can help reduce any student resistance to such techniques.

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Other materials available online at www.colorado.edu/sei/fac-reso

Did you justify your solutions in at least one of the following ways? ___ yes ___ no

- By checking if answers to different parts of the question are consistent?
- By explaining how you know your solutions is correct?
- In some other way?

Self Reflection Rubric

(Next page)

Physics 98: Introduction to Modeling

Self-Evaluation Rubric, Fall 2012

The self-evaluation rubrics are designed to help you in your process of self-reflection. Each skill in the rubric has questions to help you understand what the skill means and descriptions of what it means to be beginning, developing, and succeeding in each skill. The skills are divided into a primary set, which you should focus on first, and an advanced set, which you should move on to once you feel like you are succeeding in the primary set.

Once you pick the class in which you want to self-evaluate, use the rubrics to identify skills that you want to work on each week and write about your progress in those skills in your self-evaluations. Honest, thoughtful reflection is key here: there is no way to improve if you are not truthful with yourself about how you are doing.

Your self-evaluations are due by **midnight each Monday** in your **dropbox on bSpace as PDFs**, and should contain the following pieces of information:

- The name of the class you are evaluating.
- The skill(s) you are evaluating
- Whether you think you are beginning, developing, or succeeding in each skill. This should be accompanied by evidence to support your decision (for example, an anecdote).
- In what way you want to improve in each skill, and how you will do that. This will require you to **identify** the change you want to make, come up with a plan to **implement** that change, be **consistent** in your implementation, and **frequently reassess** how your change is working.

Primary Skills

Skill	Questions to ask yourself	Beginning	Developing	Succeeding
Persistence	<ul style="list-style-type: none"> • What do you do when you're frustrated? • Do you independently pursue understanding? 	I tend to try one or two things. I give up more easily than I should.	I try to stick with things, but I sometimes feel unsuccessful. Sometimes I seek new approaches to help.	I look for new ways to think about the problem. I find a way to persist when appropriate.
Organization	<ul style="list-style-type: none"> • Do you keep accurate, thorough, and consistent records of work? • Do you submit materials in a timely manner? • Do you refer to your records to support conclusions? 	There are significant gaps in my records, and/or I consistently forget to complete assignments on time.	I don't complete all assignments on time or I have no record of some of my work/activities. When I neglect to do something, I forget about it because it's too late.	I am timely and thorough with work and record-keeping. When I've neglected something, I correct my oversight quickly. My records are a valuable resource.
Connections	<ul style="list-style-type: none"> • Do you try to make connections with new people who might be able to help you in the future? 	I tend to go it alone.	I sometimes get help from other people, but only when I really need it. My network of supporters could	I have a strong network of people who I go to regularly for help and support.

Advanced Skills

Skill	Questions to ask yourself	Beginning	Developing	Succeeding
Courage	<ul style="list-style-type: none"> How do you react to uncertainty? What do you do when you feel overwhelmed? Do you take intellectual risks? 	<p>I don't like to try things unless I'm reasonably certain what the outcome will be.</p>	<p>I take some risks, but I sometimes miss out on some good opportunities.</p>	<p>I make a decision to trust that I'll learn something from each experience, even if I'm unsure at times.</p>
Mental Resourcefulness	<ul style="list-style-type: none"> Where do you turn for new ideas? Do you look for connections between ideas? Do you apply past experiences to new situations? 	<p>When something feels unfamiliar, I often assume it's not useful.</p>	<p>There have been times when I disregarded new ideas before considering them fully. I don't often see connections between what I'm doing and what I've done.</p>	<p>I always try to consider things, even if they seem odd or surprising at first. I often relate new ideas to old ones.</p>
Communication	<ul style="list-style-type: none"> Can you clearly convey an idea to someone else using pictures, speech, or demonstrations? Do you give examples that support your ideas? Do you seek consistency in ideas? 	<p>It seems like others don't understand what I'm trying to say/convey most of the time. Once I try to communicate something, I move on to the next thing.</p>	<p>I can usually convey my ideas, but often others don't seem to understand what I'm trying to communicate. When the message doesn't get across, I might try one other way of communicating.</p>	<p>Communication is strength of mine. When I'm feeling misunderstood, I search for new ways to convey my point. I look back through my conclusions to make sure they're clear and consistent.</p>
Diligent Skepticism	<ul style="list-style-type: none"> How do you evaluate the quality of procedures? Do you scrutinize sources of information and search for ways to test ideas? Can you identify problems with procedure that lead to erroneous or incomplete conclusions? 	<p>Much of what I believe came from someone else directly. When someone sounds convincing, I trust that they are right.</p>	<p>I should ask more questions about information that I receive, and steps that I'm taking. Sometimes I discover that I've been lead down a path that I could have avoided with more thought, testing, and questioning.</p>	<p>I ask plenty of questions (to myself and others) and head off problems before they start.</p>
Collaboration	<ul style="list-style-type: none"> Are you respectful, supportive, and critical of peers? Do you share your ideas with others? Do you consider strategies employed by your peers for study, organization, and investigation? 	<p>Sometimes I either: don't participate; dominate the work, so that others might not feel like they have a role; or, distract others.</p>	<p>I'm great as either a leader or participant, but not both. I could be more mindful of the needs of others with whom I work. I try to learn from what others are doing.</p>	<p>I am an asset to any team. I know how to lead when appropriate, and how to support others when they take the lead. I think pretty much everyone has something to offer me.</p>
Reflection	<ul style="list-style-type: none"> Do you consider past experiences when making choices? Do you reference prior work? Are your reflections thoughtful and substantive? 	<p>Once I complete something, I usually just move on to the next thing, without thinking about how it went.</p>	<p>I don't always reflect after each science experience. I don't review my notes during and after a topic of study. I'm not great about considering how things went.</p>	<p>I squeeze every bit of learning from everything that I do by evaluating what happened. My notes are excellent, and I use them often to check on my ideas.</p>

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One-Minute Paper: Group Work

from Moreno R. (2009), *Educational Psychology*, John Wiley & Sons, Hoboken NJ.

1. How is your group making progress towards its' goal?
2. What does your group need to do to improve?

Group Self-Reflection

From Felder, R. and Brent, R., *Teaching and Learning STEM: A Practical Guide*, Jossey-Bass, San Francisco, CA (2016).

Every 2-4 weeks have teams respond in writing to questions such as:

1. How well are we addressing the goals and expectations we agreed on?
2. What are we doing well?
3. What needs improvement?
4. What (if anything) will we do differently from now on?

Group Assessment Worksheet

from Moreno R. (2009), *Educational Psychology*, John Wiley & Sons, Hoboken NJ.

Name:

Group Members:

Group Evaluation

Rate how your group worked together today

Strongly disagree Disagree Somewhat agree Agree Strongly agree

My group was on task	1	2	3	4	5
My group used reading strategies we learned in class	1	2	3	4	5
Everyone in my group helped complete the assignment	1	2	3	4	5

Everyone's opinion was respected	1	2	3	4	5
Everyone was given a chance to speak	1	2	3	4	5

What do you think your group did well today?

What do you think your group needs to do differently next time?

Peer Assisted Reflection

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<http://link.springer.com/article/10.1007/s40753-015-0005-y>

In Peer Assisted Reflection (PAR), students do one homework problem in advance of its' due date; students complete a short self-reflection and discussed the problems in groups in class, prior to turning in the assignment. There is also a short "critical friend" training exercise to ensure that students give each other useful feedback.

Student instructions

1 Overview of Peer-Assisted Reflection (PAR)

Your recitation includes a special activity called Peer-Assisted Reflection (PAR). PAR promotes communication, collaboration, and persistence, which are all essential to college success. Research on PAR at other universities has shown improved student passage rates in calculus by 13% (in the first study) and 23% (in the follow-up study). We are presently exploring opportunities to use PAR here at CU Boulder.

1.1 Basic Procedure

1. Students complete an initial solution to the PAR problem (working individually or with peers) as homework (outside of class). Students then complete the self-reflection sheet.
2. On Tuesday, students come to class and sit in a random seat (so that they work with a new partner each time).
3. When class starts, students trade work with a peer. They spend 5-7 minutes silently reading each other's work and providing written feedback. Afterwards, they trade packets and conference about their work for 5-7 minutes longer.
4. After conferencing, the whole class completes the CRAFT activity, designed to help students give critical, constructive feedback to one another. Students have about 5 minutes individually to write their analyses of the sample work, and then the class discusses the sample work as a whole for about 5 more minutes.
5. Students go home and revise their work based on their conferences.

6. On Wednesday, students turn in their “PAR packet” to their TA’s mailbox. The packet includes: (1) original solution, (2) self-reflection form, (3) PAR form (filled out by your partner), and (4) revised solution based on feedback you received. To receive full credit all, 4 items must be turned in, but only the final solution is graded for correctness.
7. All PAR problems are available online at: <http://www.colorado.edu/csl/par/calculus1/>

1.2 Making the Most of PAR

7. You need to work with a new partner each week. This will allow you to get a variety of different perspectives and also meet new students in your class. As students enter class, they need to sit in a new, random seat.
8. Students need to provide feedback silently at first. It is crucial that students focus on each other’s work, not just the problems themselves.
9. Providing feedback is not an option. Even the best solutions can be made better. Even students who did not complete the problem can still engage in conferences.
10. Use what you’ve learned from PAR to collaborate with your classmates outside of class. Building a strong community is one of the best ways to ensure that you are successful in college.

Peer Reflection Sheet

Peer Feedback Form (to be filled out by a partner)

Hwk11 PAR Problem

Peer-Assister's Name: _____

Instructions: On Tuesday in class, trade your solution with a classmate **you didn't work with** to receive peer feedback.

Communication: Give at least one suggestion to improve the communication of the solution. (Focus on explanations, imprecise use of language, organization, labeling, etc. Be specific: don't say "it was hard to follow" or "part 2 was unclear;" say *why* it was hard to follow, *what* was unclear, and *how* to improve it.)

Correctness: Note any errors you found. (Focus on misunderstanding of concepts, misuse of mathematical language, calculational errors, incomplete answers, etc. Be specific: don't just say "part 2 is wrong;" say exactly *what* is wrong, *why* it is wrong, and *how* to improve it.)

(Optional:) What other feedback do you have? How else could the solution be improved?

Being a Critical Friend handout

Peer-Assisted Reflection (PAR) will help you improve your communication skills and understanding of calculus. Writing solutions for someone who does not already understand your work is a skill that requires practice. We will improve our skills by acting as “critical friends” to each other. Critical friends take the time to fully understand each other’s work, finding the flaws and weaknesses so that they can be improved. Critical friends don’t just say “everything looks good” because it provides no room for growth.

Reading Peer’s Solutions

Try to understand the solution based only on what is written (without thinking of your own solution). Note any gaps in logic you have to fill in yourself. Tell your partner; these need to be revised.

Was the solution justified? What evidence would you need to be sure the solution is correct?

Note any calculational or procedural errors you find. Don’t just gloss over calculations, but work them out in your head to see if your partner’s work makes sense.

Finally, compare your partner’s solution to your own. Did you get the same result? If you used different approaches, were they consistent or did your solutions contradict one another? The more you connect the two solutions the more you will deepen your understanding.

Peer Conferencing

A few simple guidelines will help you have more meaningful conversations with your partner.

1. Focus on the mathematical aspects of the solution to the problem and how they were communicated.
2. Ask questions. Encourage your partner to ask questions. Discussing ideas will help you learn.
3. Demand meaningful feedback. If your partner only says “everything looks good” you learn nothing.
4. Practice revisions to your explanations (verbally) before writing them. This is a unique opportunity to get instant feedback on your communication. Use it!
5. If both you and your partner are unsure about the solution, try to figure it out together. Talk through your reasoning, where it got you, and where it got you stuck.

Meaningful Feedback

Use the self-reflection questions as a guide for areas you might give feedback to your partner on.

7. Be specific. Saying “your explanation was unclear” is not nearly as useful as saying why it was unclear (e.g., “you used the term asymptote incorrectly.”) If you say why you think something, your partner can evaluate your feedback, regardless of your confidence.
8. Be constructive. As much as possible, don’t just say that something needs to be improved, but suggest how it could be improved (e.g., “asymptotes can be touched by the function; you know you have an asymptote because you have a certain limit”).
9. Try to help your partner learn. If the solution seems to indicate misunderstanding of a concept, spend time talking about that concept until both you and your partner are clear on it. Explaining and discussing concepts with your partner will help you understand them better.

Not Very Meaningful Feedback

Here are a number of examples of feedback that are not very helpful for you partner (explanations why in italics). Please refrain from offering these types of feedback.

Communication:

- Everything looked good. (Even the best solutions can be improved. Put more effort into thinking how your partner could do so.)
- Your solution was explained well. (This feedback not only doesn't say what about it was explained well, but it also doesn't help your partner improve.)
- Your solution could use a little bit more explanation. (Tell your partner exactly what needs more explanation and try to suggest how they could improve their explanation. Remember, simply adding more isn't always better.)
- Your explanations were a little unclear. (You need to tell your partner what exactly was unclear, and try to suggest how they could improve it. Try focusing on what you couldn't understand or where you got lost.)
- Show a little bit more work. (Tell your partner exactly where you got confused. You need to be more specific with your feedback.)

Correctness:

- I found an error in part (e). (Tell your partner what the error was and why it was incorrect.) Your answer to part (a) needs improvement. (Tell your partner what was wrong and how to improve it.)
- I think your solution is wrong. (Tell your partner what the error was and why it was incorrect.)
- Be sure to finish the problem. (Your partner probably didn't finish the problem because they didn't know how to. Instead of telling them the obvious, try to help them figure it out.)
- Everything looks good. (What evidence do you have for saying this?)

Strategies for Facilitating Peer-Conferences

Sometimes it may feel like you don't know what to say or how to get better feedback from your peer conferences. If your partner simply says "it looks good" it does nothing to help you improve. PAR is a unique opportunity to get feedback and talk about the mathematics in a problem, so make sure that you take advantage of it!

Here are some suggestions for things you might say or ask in order to have a more productive conversation. One key strategy is asking questions about specific aspects of your solution or your partner's solution. Here are some suggestions:

- I was struggling with how to communicate X, do you have any suggestions?
- Would it be all right if I practiced my explanation with you before I revise my solution?
- Did you check all of my calculations, and did you find any errors?
- I noticed that we did the problem differently. Can we look together and make sure our solutions are consistent?
- I was unsure about (concept X, or how to do X). Can we talk more about it?
- In your solution I noticed that you did X. Can you explain why?