Engineering Teaching Portfolio Program
Supplemental Materials

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Session 1:
Teaching Portfolio Design Specifications

Handouts

"First Day Icebreakers"

"Teaching Portfolios for Engineers"

"Carnegie Classification 2000"

First Day Icebreakers

- On the first day of class I pass out a syllabus which includes a "student data sheet." I ask students to form pairs with student "A" interviewing "B" and filling in the other's data sheet. "B" does the same for a third student. I ask each student to respond to a final question and add information as he/she thinks best. It has brought no complaints and provides useful information on perhaps one student in three.

- On the first day of class I try to learn students names. I ask them to state their first name and answer a question about themselves, which I vary from class to class. The questions are "What is your favorite food?" "...TV show?" or "What music group do you listen to if you sit down to do nothing else?" I take them in groups of five and repeat their first names, then add a second group of five, also repeating the first group, etc. About halfway through, I ask for volunteers. I make it a point to not always repeat their name in the order of their seating. The students also learn each other's name just by listening. The 2nd, 3rd and 4th days I call everyone's name and also ask for volunteers. The students seem to enjoy the challenge .

- I give students four small cards about the size of business cards and tell them to fill the cards with the name, address and phone number of four different people in the class. These are calling cards to use when they miss class and need to know what was covered or about assignments. I usually do this after a names exercise so they have at least heard the names.

- I make it a course objective that "In this class you will get to know the names of at least 80% of the class." This helps the students see that personalizing the learning environment is important to you. It also serves as a reminder for you to include activities that help students achieve the objective.

- I have students write out 3 statements about themselves. Only one statement can be true and the other 2 are a slant on the truth. Divide students into groups and have them guess which statement is true. The object is to be so creative you fool the other participants into guessing the wrong statement. The exercise develops lots of interaction and conversation between participants. They also learn a lot about each other.

- I ask students in groups of 2 or more to find something in their wallet, backpack, etc., that would help the class understand and remember who they are. This is a short 10 minute exercise that also personalizes the group. Of course there are pictures, but people also find other interesting items that surprise even themselves. Modification: ask students to pull out their key rings and tell a partner what the keys signify.

- I prepare groups of engineering images from the public or popular media that reflect some aspect of my discipline. The image is on the front and questions are on the back (I usually have 6–8 copies of the same image). Students pick an image that appeals to them.

  I ask the students to think about the questions for a few moments, then form a team with others that have the same color/image. The questions are: Why did you choose this image? How is it an image of you as an engineer? What does your choice of image indicate about why you are in this course? How does it reflect you as a learner? What similarities/differences do you find in your group?

  It doesn't take long for students to begin talking about what they expect the class to be like and what the class is about. After 20 minutes, I ask each group to share with the larger class a similarity and a difference. One year I had about 5 students who did not want to participate. I asked them to form a group and to share with each other their reasons. This modification impressed those students because I respected their right to choose. However, they met the objective of the activity—to be involved in a group and get to know some other students.

- This should be conducted the first day of class, right at the beginning of the class. One of the best ways I have found to "energize" the classroom is to leave it! Tell students that you are going to leave the classroom for five minutes and that when you return, you want each student to be able to introduce five classmates to you on a first-name basis. How are they going to do this? That is up to them. Then, leave the class for the allotted time. When you come back, 5–10 minutes later, you will find an energy level that is sadly lacking in most of our classrooms. Point this out to your class, and then ask for a volunteer to introduce 5 students. You will almost always get a couple of volunteers. If you don't, choose a student who looks as though he/she won't mind "being volunteered." As the students are introduced, repeat their names and welcome them to the class.

  This activity is a terrific way to jump-start your class and let students know that they will be active learners and that the normal "passive mind-set" won't work in your class. With no instruction from you on how the students are to learn the names of five others, you have put them on the spot—they are experiencing an introduction to "discovery" learning. They have to actively choose a strategy and solve the problem in one of many possible ways. Some will write the names down, others will commit the names to memory, others will not just give the names, they will include other information about the people they are introducing. After the introductions, you can then tell students what you are expecting of them for the term, and, believe me, you will have their attention!

- Finding Things In Common—In groups of four, I ask students to find five things they all have in common. I chose 5 so that they can't each pick one thing and be finished. The restriction is that they cannot pick school or work items. They must be personal such as what music they like, books they read, travels, etc. They then report back to the whole class their results. This is a fun exercise and I am always amazed at the things people have in common. This tends to open people up and get them talking to each other.

- Here we go:
  1. Find a stranger in the room—someone you have not previously met.
  2. Write a letter to this person and discuss what you think a class called "____" is going to involve. You have 5 minutes.
  3. Add a P. S. where you tell your partner something about your personal life that you don't mind sharing. You have 2 minutes to write and 2 minutes to exchange letters and read. No talking.
  4. Now, write another letter to your partner where you discuss one of your major concerns about "____" or taking a "____" class. You have 5 minutes.
  5. Respond to your partner's P. S. from the first letter. You have 2 minutes to write and 2 minutes to exchange letters and read. No talking.
  6. Write a letter where you try to solve your partner's concern about "____" or "____" class. You have 5 minutes.
  7. You may add a P. S. if you like. You have 2 minutes.
  8. Pair your group with another group and develop one major concern to share with the class. You have 5 minutes.
     You may now talk.

  The key to this is no talking until #8. I write the prompts on an overhead so that I don't talk either. Be diligent about the time. The letters become more informal throughout the sequence. Later in the semester, use this activity to check progress, provide feedback on understanding, and to allow students to explain a difficult concept to each other. You can collect the group concerns and use that to supplement your lecture or to create a review for a test.

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Originally collected from UW faculty and TAs by:
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Teaching Portfolios for Engineers

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The importance of teaching portfolios in academic engineering has increased in recent years. As "accountability" becomes a more frequently used word in higher education, teaching portfolios have become a more common means for assessing those seeking jobs in academia. Their use in tenure and promotion decisions is also on the rise, even in institutions where faculty have traditionally been rewarded primarily for research productivity.

The increased popularity of teaching portfolios has spawned a corresponding expansion of materials that might be included in them. The possibilities for inclusion are so extensive that you might be tempted to include everything and as a result, produce a portfolio that includes too many out-of-context teaching artifacts with too little interpretation. If you yield to the temptation, you will overwhelm search committee members and administrators and your portfolio will be a liability rather than an asset in the hiring and promotion process.

In this article I define teaching portfolios, provide a framework for construction, and a basic list of materials that could be included.

Definition and Basic Framework

> A portfolio or dossier is a *collection of material* that depicts the nature and quality of an individual's teaching and students' learning. Portfolios are *structured deliberately* to reflect particular aspects of teaching and learning—they are *not trunks full of teaching artifacts and memorabilia.* At its best, a portfolio *documents an instructor's approach to teaching*, combining specific evidence of instructional strategies and effectiveness in a way that *captures teaching's intellectual substance and complexity* (Cerbin 1993:90, emphasis added).

Note that the content and coverage of your courses are not the focus of a teaching portfolio. The core concept is that a teaching portfolio demonstrates you have thought about why you teach the way you do and what you can do to help your students learn.

Teaching Portfolio Taxonomy

The most basic classification divides portfolios into two kinds: developmental and evaluative. A developmental portfolio is private, for yourself, and focuses on improvement. An evaluative portfolio is a public account of your teaching. If you begin your teaching career with a developmental portfolio, you will save considerable time and energy when it comes time to construct your evaluative portfolio.

Developmental Portfolio

Developmental portfolios record the evolution of your teaching and encourage self-reflection about your role and your interactions with students. You can start your developmental portfolio anytime, even during your first teaching assistantship. You might begin with a teaching journal that includes notes about the success of particular strategies, how you implemented an instructional experiment, documentation of difficult situations and potential solutions, and suggestions for future classes. As you develop as a teacher, you will want to include other materials such as:

- descriptions of courses taught
- representative course syllabi
- feedback on your teaching (from supervisors, peers, and students)
- examples of student work
- activities aimed at improving your teaching
- honors/recognition

Evaluative Portfolio

Evaluative portfolios are typically used to supplement a job application or a bid for tenure or promotion. As the name implies, they are used to evaluate the author. Evaluative portfolios are constructed for "public" consumption and non-engineer should be able to understand it.

Evaluative portfolios, in particular those made available on the worldwide web, help to challenge the popular "ivory tower" myth in which the academy is accountable to no one. Portfolios available to students, colleagues, and the public demonstrate professional accountability without external (e.g. legislative) controls. Faculty retain the responsibility for monitoring, improving and ensuring instructional quality (FCIQ 1996).

Constructing your Portfolio

Approach your teaching portfolio as you would your research design. In scientific research parlance, provide readers with an explanation of your teaching rather than accumulated data or evidence of teaching. Your "explanation" should include a thesis statement, supporting evidence, analyses and interpretation of the data, and a conclusion (Lang and Bain 1997).

The Teaching Philosophy Statement

Your thesis statement establishes your teaching philosophy. Your teaching statement provides a context for the accumulated data and evidence about your teaching. Your statement should delineate the following:

- what you expect your students to accomplish intellectually (your learning objectives),
- your program for helping students to achieve, and
- a few examples citing student learning activities.

Data and Interpretation

The bulk of your teaching portfolio provides supporting evidence for your teaching philosophy. It includes a narrative analysis and interpretation using a *sample* of teaching artifacts as your data (e.g. syllabi, grading standards, assignments, exams, student work, student ratings, colleague evaluation, videotape, etc.). Deliberately select a limited number of teaching artifacts to provide the best documentation for the following:

- the significance of your course objectives
- your teaching strategies (how you help students achieve your objectives)
- how you evaluate student learning, and
- how you assess and improve the quality of your teaching.

For example, you might select the syllabus that epitomizes your course objectives, an in-class problem solving exercise that displays your most successful teaching strategy, a homework assignment or class project that documents how students meet your learning objectives and, a sample of feedback on your teaching effectiveness (e.g. student ratings or a mid-term class interview).

Conclusion
Your conclusion should describe changes in your teaching philosophy and instructional methods and explain why you made those changes. You should then summarize your portfolio and "close the loop" by discussing plans for continuous improvement of your teaching skills and enhancing your students' learning in the future.

Cautionary Notes
Be concise. The text of a typical teaching portfolio is rarely more than seven pages. If your portfolio is lengthy it will not receive the attention it deserves. Limit each section to a couple of paragraphs. For example, your teaching philosophy should fit on one page.

Finally, do not leave readers to puzzle over the meaning of a particular piece of data. Annotate your teaching data by adding a few sentences to direct the reader's attention to a particular section or result. For example, the summary statistics of student ratings vary with the institution, and thus usually require clarification.

References Cited

Cerbin, William
1993 Campus Profile: University of Wisconsin–La Crosse. In, *Campus Use of the Teaching Portfolio*, edited by E. Anderson, pp. 89-91. American Association for Higher Education Teaching Initiative, AAHE, Washington D.C.

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1996 Guidelines for the Preparation and Use of Teaching Portfolios. Faculty Council on Instructional Quality, University of Washington.

Lang, James M., and Kenneth R. Bain
1997 Recasting the Teaching Portfolio. *The Teaching Professor* 11(10):1.

Carnegie Classification 2000

The Carnegie Foundation for the Advancement of Teaching provides the most commonly cited classification of higher education institutions, originally published in 1973, and updated in 1976, 1987, 1994 and 2000; a reassessment will be concluded in 2005. All the data below refer to the 2000 classification. To see in what category a certain institution belongs, check http://www.carnegiefoundation.org/Classification/CIHE2000/PartIIfiles/partII.htm

Faculty responsibilities and teaching loads differ vastly between different types of institutions, and so are the weights accorded to teaching, research and service in tenure and promotion decisions. Typically, faculty in a Doctoral/Research University would be required to teach a course per semester (possibly involving 150 students and 5 teaching assistants), while leading a research group and bringing in the institution a sizable amount of research funding from grants and contracts. In comparison, faculty in an Associate's College have no research funding requirements, but will teach 3-5 courses/ sections of the same course per semester, typically involving 30 students and no teaching assistant.

Doctoral/Research Universities—Extensive **151 inst or 3.8%**

These institutions offer a wide range of baccalaureate programs, and they are committed to graduate education through the doctorate.

Examples: Auburn Univ., CalTech, Case Western Reserve Univ., GATech, N.Carolina State Univ., Univ. of California (8 of the campuses), Univ. of Florida, Univ. of Michigan-Ann Arbor, Univ. of Notre Dame, Univ. of Pennsylvania, Univ. of Washington, SUNY at Buffalo, VATech.

Doctoral/Research Universities—Intensive **110 inst or 2.8%**

These institutions typically offer a wide range of baccalaureate programs, and they are committed to graduate education through the doctorate. They awarded at least ten doctoral degrees per year across three or more disciplines, or at least 20 doctoral degrees per year overall.

Examples: Dartmouth College, Florida Atlantic Univ., Illinois Inst. of Technology, New Jersey Inst. of Technology, Northern Arizona Univ., San Diego State Univ., Univ. of Missouri – Rolla, Univ. of South Alabama, Worcester Polytechnic Inst.

Master's Colleges and Universities I: **496 inst or 12.6%**

These institutions typically offer a wide range of baccalaureate programs, and they are committed to graduate education through the master's degree. They awarded 40 or more master's degrees per year across three or more disciplines.

Examples: California Polytechnic State Univ.-San Luis Obispo, Colorado Technical Univ. (Colorado Springs), Embry-Riddle Aeronautical Univ., James Madison Univ., Loyola Marymount Univ., Pennsylvania State Univ.-Harrisburg, SUNY College at Buffalo, Univ. of North Florida, Valdosta State Univ.

Master's Colleges and Universities II 115 or 2.8%

These institutions typically offer a wide range of baccalaureate programs, and they are committed to graduate education through the master's degree. They awarded 20 or more master's degrees per year. Examples: Savannah State Univ., Univ. of Tampa// Concordia Univ., Florida Metropolitan Univ.

Baccalaureate Colleges—Liberal Arts 228 or 5.8%

These institutions are primarily undergraduate colleges with major emphasis on baccalaureate programs. During the period studied, they awarded at least half of their baccalaureate degrees in liberal arts fields.
Examples: Antioch College, Ohio Wesleyan Univ., Harvey Mudd College

Baccalaureate Colleges—General: 321 or 8.1%

These institutions are primarily undergraduate colleges with major emphasis on baccalaureate programs. They awarded less than half of their baccalaureate degrees in liberal arts fields.
Examples: Athens State Univ., Flagler College, West Virginia Univ. Inst. of Technology

Baccalaureate / Associate's Colleges: 57 or 1.4%

These institutions are undergraduate colleges where the majority of conferrals are below the baccalaureate level (associate's degrees and certificates). During the period studied, bachelor's degrees accounted for at least ten percent of undergraduate awards.
Examples: CUNY New York City Technical College, Pennsylvania College of Technology

Associate's Colleges: 1,669 or 42.3%

These institutions offer associate's degree and certificate programs but, with few exceptions, award no baccalaureate degrees. This group includes institutions where, during the period studied, bachelor's degrees represented less than 10 percent of all undergraduate awards.

Examples: Athens Area Technical Inst., Carroll Technical Inst., Dalton State College, DeKalb Technical Inst., Edison Community College, Ivy Tech State College(IN, 13 campuses), Louisiana Technical College, Northern Maine Technical College, SUNY College of Technology

Specialized Institutions:

These institutions offer degrees ranging from the bachelor's to the doctorate, and typically award a majority of degrees in a single field. Specialized institutions include:

Schools of engineering and technology: 66 or 1.7%

These institutions award most of their bachelor's or graduate degrees in technical fields of study.
Examples: DeVry Inst. of Technology, Colorado School of Mines, Cooper Union , ITT Technical Inst., Northwestern Polytechnic Univ., Oregon Inst. of Technology, Rose-Hulman Inst. of Technology, South Dakota School of Mines and Technology, Southern Polytechnic State Univ., Vermont Technical College

Session 2:
Teaching Portfolio Design Specs/ Teaching Philosophy Statement-1st Draft

Handouts

"Strategies for Developing a Teaching Statement"

"Anonymous Teaching Philosophy Statement"

Strategies for Developing a Teaching Statement

Many graduate students find it difficult to write a teaching statement for the first time. The strategies described below have successfully been used as aids to get started writing first drafts. You can use any one of these activities or simply read them for inspiration.

Role Models for Teaching[*]

- Who is the best teacher or mentor you have ever known?
- What did this teacher expect you to do in the course? How were these expectations communicated to you?
- What did this teacher do to help you master the subject matter?
- What do you remember doing in their class? What has stayed with you?
- What do you remember doing in the class that helped you learn the most?
- How did this instructor interact with students?

Teaching as Decision-Making[*]

1. Identify a course you have taught or would like to teach.
2. Brainstorm the decisions you made/will make about teaching and learning for the course.
3. Arrange the decisions into a pattern that makes sense to you. Not only will you gain insight from the topics of your decisions, but also from the pattern.

Working from Teaching "Artifacts"[*]

A teaching "artifact" is any item that that reflects or represents any aspect of your teaching (e.g. syllabus, assignment, examples of student work).

1. Identify a number of artifacts that you would want to be sure to include in your portfolio.
2. What is important about these artifacts?
3. What do they say about student learning in your courses?
4. Why did you make the teaching choices that these artifacts reflect?
5. What themes emerge or cut across your answers to the above questions?

Critical Points in Teaching[†]

1. Identify a course you have taught.
2. Draw a line across a piece of paper representing the duration of the course.
3. Mark points along the arrow where a learning opportunity opened up for your students.
4. Mark points along the arrow where learning opportunities were "shut down" for your students.
   Examples: the first day of class, the first student question, the first graded assignment, the first time the class understands a complex concept…

Teaching and Learning Trigger-Questions[†]

- Have you ever taken a course in which in your mastery of the material was less than optimal? If <u>you</u> were going to teach that class, what would you do differently?
- What do you hope to accomplish when you teach? What does this say about you as a teacher?
- What is a "personal best" achievement for you as a teacher?
- If you were writing a book about teaching, what would the title be? What three points about teaching would you make?
- Create a list using the following as a prompt: "When I teach, I…:"
- How would you describe the learning process? What steps do people go through to learn something?

Teaching Models[*]

1. Identify a model a) that describes you as a teacher or b) for how students learn, and then identify how you fit into it as a teacher. This model can come from any field or part of life.
2. Brainstorm characteristics of the model.
3. Draw links between those characteristics and the teaching & learning environment.

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[*] A. Linse, J. Turns, & J. Yellin, Program for Enhancing Engineering Teaching, Center for the Advancement of Engineering Education, University of Washington.

[†] Adapted from Ellis, D. and Griffin, G (2000) Developing a Teaching Philosophy Statement: A Special Challenge for Graduate Students, *Journal of Graduate Teaching Assistant Development*, 7(2): 85-92.

Teaching Philosophy Statement

As an instructor, I am motivated by the "a-ha!" experiences of my students. Students breathing out the words "Oh, I get it!" while contemplating their own work at the board is extremely gratifying. One of my primary goals is to help students maximize the number of "a-ha!" moments in my courses. Four principles guide my interactions with students as I help them learn: knowledge, respect, variability, and connections.

My commitment to teaching begins with knowledge. It is my responsibility to students to maintain up-to-date knowledge of my field and its broad applications. Continued study and research in both my field and in engineering education will maintain the knowledge necessary to insure that I include high quality material and applications in my courses. It is also critical for me continuously review how my field connects with other fields. This helps me to ensure that learning in my field enhances learning in other areas and find ways that knowledge from other fields can benefit engineering and inspire learning.

The second principle that guides my teaching is respect. Good teaching relationships begin with respect for students as individuals who have come to learn–each with rights, merits, and responsibilities. I find that communicating my respect for students is important for creating an effective learning environment. I show respect for students by making my expectations clear, being consistent, and providing regular feedback. I also strive to attend to student reactions during class, so that my pace is appropriate.

I believe that it is important for engineering material be presented so that it is useful for students of all backgrounds, regardless of their learning style. Students need to be trained as engineers, whether or not they end up working in the field because a background in engineering and technology is useful in fields as varied as law, medicine and politics. In the past, engineering courses were presented to students as hurdles to be surmounted. Rather than saying "Look to the left, look to the right, only one of you will graduate as an engineer," we should be saying "even if only one of you may work as an engineer, all of you will gain knowledge and skills useful to your future."

Variability is a cornerstone of my teaching philosophy because using varied teaching methods ensures no one kind of student or learner is privileged over another. I vary my methods so that students' different experiences and learning styles enhances their learning. I acknowledge the different ways students approach problems and realize that this can come from different experiences and expectations and that these may not match my own. It is my responsibility to guide learning and empower students to be able to ask questions until they "get it."

The principles of knowledge, respect, and variability help me to build connections – between students and me, between students and the course material, and between the material and real-life applications. As an engineer, I see how my field can help build improve our society by increasing the technical knowledge of citizens and by increasing socio-economic opportunity for individuals. However, many students find it difficult to see its relevance and generate enthusiasm for theory. In my courses, I regularly ask students to identify "real-world" examples and applications of theoretical concepts. This not only helps students make connections between research and their world, but it also provides me with feedback about their developing knowledge and skills.

Session 3:
Teaching Philosophy Statement-1st Draft/Teaching Artifact Annotation I

Handouts

"What counts as Teaching?"

"What are Teaching Artifacts?"

"Guidelines for Reporting Student Ratings for Review"

"Student Ratings Explanation Example"

"Guidelines for Reading and Interpreting University of Washington Student Ratings Summary Sheets"

*E*ngineering *T*eaching *P*ortfolio *P*rogram

What counts as Teaching?

Any activities and/or interactions that you have with students, team members or others count as teaching. Teaching can be in an informal and/or formal environment. Teaching can be done in a group setting or even in one-on-one meetings. Some examples of teaching activities are listed below, but don't limit your teaching activities to what's on the list. The examples are not in any particular order, elaborate on something that you think resonates with your teaching philosophy and/or teaching experiences.

Formal	Informal
• Holding office hours • Constructing quizzes/exams • Grading • Volunteering in centers that focus on helping students • Conducting lab sessions • Assisting students in solving problems • Lecturing • Running departmental or college activities • Advising • Developing curriculum	• Mentoring • Leading discussions • Facilitating group activities • Coaching sports • Teaching classes outside your discipline (e.g. Mountaineers, bible study, music dance, art, language lessons) • Volunteering in youth groups • Facilitating community outreach programs • Tutoring • Consulting engineering

What if you cannot find a teaching artifact?

Many of us might not be able to find a teaching artifact because we: (1) did not save those artifacts when we were teachers; (2) were not able to find our old teaching materials; (3) think we do not have formal teaching experiences; (4) think we do not have enough teaching experiences at all; (5) do not have any artifact that you particularly like, and so on.

However, it is important to document your teaching experiences that you have whether you think it is formal or informal. You can write these experiences into a form of narrative/story where you describe what you have done during these teaching related activities. These are examples showing how you approached a teaching activity; therefore, a narrative as a form of a teaching artifact can be very powerful.

People of all ages spend a lot of time listening, reading and writing stories in school settings. Usually, a discussion of these stories and narratives are conducted between the storyteller and their audience, i.e. understanding ambiguity, analyzing the elements of story, evaluating the story's worth and so forth. Stories are prominent in many educational curriculums. Teachers from a wide range of disciplines may use stories in their classrooms and other learning environments to transfer the content knowledge. These stories may take the form of jokes, recollections, testimony, anecdotes, illustrations, examples, experiences and more. Therefore, it is hard to imagine any educational experience without a narrative in one form or another.

*E*ngineering *T*eaching *P*ortfolio *P*rogram

What are Teaching Artifacts?

Anything that you have prepared as part of teaching a class or any other teaching activity is a product of your teaching. These products of your teaching are called artifacts. Some examples of teaching artifacts are below, but don't limit your artifacts to what's on this list. The examples are not in any particular order – and which artifacts you choose to present will depend on which strengths you wish to document and demonstrate in your portfolio.

- Teaching Awards/Honors
- Student evaluations
- Mid-quarter evaluations
- New courses or curriculum that you have developed
- Letters of recommendation or support
- Lesson plans
- Any notes that you have prepared for class or for students
- Handouts/worksheets
- Quizzes
- Example problems
- Assignments
- Examples of mentoring
- Example of outreach activities (K-12 outreach, diversity work)
- Video or audio clips of your teaching
- Scholarly articles you have written about teaching
- Articles (newspaper, magazine, journal, etc.) someone has written about your teaching
- Descriptions of activities that students do in your class
- Descriptions of what you have done during your office hours
- Descriptions of your mentoring activities and/or experiences
- Anything else that you created or found to help you teach

Teaching Artifact Annotation and Reflection

For each artifact, consider answering the following questions in order to explain what the artifact is, how you used it, and to reflect about your teaching. Your explanation should be clear, concise, and easily understandable to someone who is not familiar with your artifact.

1. Describe the artifact. What was its purpose?
2. How or why did you decide to do this lesson/worksheet/activity etc.? Why did you think you needed to do this?
3. What worked well when you used/did this in class?
4. What if anything would you change or do differently next time?
5. If you used any resources, i.e. textbooks, course notes, websites, example problems etc. consider providing a citation or a copy of the resource and adding it to your annotation.

Guidelines for Reporting
Student Ratings for Review

Annotate Your Student Ratings (~ ½ page)

Course Data

Course Title & Number
Instructor
Term(s) and year(s)

Student Ratings Form (e.g. A, Small Lecture/Discussion)
Enrollment
Respondents (#, %)

Course Description

- brief description of course content, goals, etc. (1 short paragraph)
- primary teaching methods (1-2 lines)
- class format (# sessions/week; duration of each session)
- brief description of students (e.g. % juniors/seniors, % non-majors, etc.)

Student Ratings

- Is the respondent rate representative?
- What were the primary issues raised by students?
- Identify themes from the summary data report or from the Student Comments forms. This is your opportunity to direct reviewers' attention to particular results or comments that are most useful or informative*. Help reviewers read and interpret your results rather than leaving it up to them!
  - – strengths (2-3 themes)
  - – challenges (2-3 themes)
- What changes did/will you make to address student concerns?

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* Identify areas that students see as needing improvement in your quantitative results. Compare these to themes that you have identified in students' written comments. One method for identifying themes in written comments is to create an electronic document with all of the students' answers to a question. Reading students' responses in electronic form, rather than individual handwritten responses, can help create the distance necessary to focus more on the instructional content than personal criticisms. Sort the comments into groups based on similarity and label the group with a subject heading. Then rank the groups based on the frequency of comments in each. Common themes include: Labs, Homework, Groupwork, Lecture, Instructor Style, Availability, Textbook, Exams. Another, quicker approach is to list themes that repeatedly arise as you read students' written comments. Keep a cumulative tally of the comments that could be assigned to each theme. Let the frequency of the comments under each theme guide your course revisions.

Student Ratings Explanation Example

ME 300CD: **Advanced Mechanical Engineering Analysis**
Autumn Term 1990

Student Ratings Form	X
Enrollment	60
Respondents	32 (53%)

Course Description
Mathematical modeling, analysis, and design of physical dynamic systems involving energy storage and transfer by lumped-parameter linear elements. Time-domain response by analytical methods and numeric simulation. Laboratory experiments. Prerequisites: Linear Algebra, Differential Equations, Probability & Statistics, Engineering Dynamics.

This is a 10-week advanced lecture and laboratory course that meets in three 1-hour time blocks and one 2-hour lab (taught by TAs). The 1-hour sessions include lectures about the primary theoretical material of systems dynamics, with derivations of fundamental principles, followed by worked examples similar to assigned homework problems. The lab sessions include 5 lab assignments and 5 discussion sessions. The lab assignments require students to conduct hands-on experiments relating to problems discussed in the regular course sessions. Students were also required to devote time outside of class to assigned readings, lab write-ups, and homework.

Students: The course is a required undergraduate course for mechanical engineering majors and is a prerequisite for many of the required capstone sequences. About 50% of the students were juniors, 45% seniors, and 5% new graduate students.

Student Ratings
Students appreciated that expectations were clear and grading processes were implemented fairly. They also took advantage of frequently scheduled office hours for myself and my Teaching Assistants. Students written comments provide similar information. For example, "Availability of Prof & TA is good" "Office hours & e-mail help a lot; lots of communication with students" "very approachable, very positive attitude."

Students requested more time in class to practice solving problems similar to those in homework assignments and exams. Students written comments provide similar information. For example: "More interaction, but not as intense/involved as lab" and "More interaction w/ lecture notes prior to class, so we can expect more out of lecture."

Changes
One change I plan to make in this course is to decrease the amount of time I spend lecturing and provide time at the end of each session for student questions. Rather than solving every derivation in class, I will leave a portion of it incomplete and revisit it during the next class when I'll ask students to help complete the solution. A number of the topics covered in this course are particularly challenging for students, thus I will occasionally provide opportunities for students to work tough problems in class, when the TA and I are there to provide guidance.

Instructional
Assessment
System

M E 300 CD
Mechanical Engineering
Engineering
University of Washington

John Doe
Professor

Autumn 1990
Instructor Copy

STUDENT EVALUATION OF INSTRUCTION

E=Excellent; VG=Very Good; G=Good; F=Fair; P=Poor; VP=Very Poor

	No. Resp's	E	VG	G	F	P	VP	MEDIAN	Adjusted Median
1. The course as a whole was:	32	19	44	34	3			3.79	3.60
2. The course content was:	32	31	44	22	3			4.07	3.88
3. The instructor's contribution to the course was:	32	38	41	16	6			4.19	4.04
4. The instructor's effectiveness in teaching the subj. matter was:	31	32	42	16	10			4.08	3.89
COMBINED ITEMS 1-4	127	30	43	22	6			4.03	3.85

PERCENTAGES [1]

How frequently was each of the following a true description of this course?	No. Resp's	Always			About Half			Never	MEDIAN	Relative Rank
5. The instructor gave very clear explanations.	31	35	35	16	13				6.09	7
6. Instr. successfully rephrased explanations to clear up confusion.	32	34	31	12	19		3		6.00	10
7. Class sessions were interesting and engaging.	31	29	23	13	19	13	3		5.57	11
8. Class sessions were well organized.	31	35	35	23	6				6.09	8
9. Student participation was encouraged.	32	44	28	22	6				6.28	9
10. Students were aware of what was expected of them.	32	53	22	12	6	6			6.56	2
11. Extra help was readily available.	30	63	20	13	3				6.71	3
12. Assigned readings and other out-of-class work were valuable.	31	39	26	29	6				6.06	5
13. Grades were assigned fairly.	31	58	16	10	3	13			6.64	1
14. Meaningful feedback on tests and other work was provided.	31	45	35	10	6	3			6.36	4
15. Eval. of student perform. was related to important course goals.	31	42	23	26	3	3	3		6.14	6

Relative to other college courses you have taken, how would you describe your progress in this course with regard to:	No. Resp's	Great			Average			None	MEDIAN	Relative Rank
16. Learning the conceptual and factual knowledge of this course.	31	32	29	16	16	6			5.89	7
17. Dev. an appreciation for the field in which this course resides.	31	42	29	16	6	6			6.22	5
18. Understanding written material in this field.	31	32	35	19	10	3			6.00	4
19. Dev. an ability to express yourself in writing or orally in this field.	29	34	31	17	14	3			6.00	3
20. Understanding and solving problems in this field.	31	39	32	13	10	6			6.15	2
21. Applying the course mat'l to real world issues or other disciplines.	31	52	35	10	3				6.53	1
22. General intellectual development.	32	34	34	12	12	6			6.05	6

Relative to other college courses you have taken:	No. Resp's	Much Higher			Average			Much Lower	MEDIAN
23. Do you expect your grade in this course to be:	30	17	33	33	17				5.50
24. The intellectual challenge presented was:	30	10	33	43	13				5.35
25. The amount of effort you put into this course was:	31	23	39	23	13		3		5.79
26. The amount of effort to succeed in this course was:	31	19	29	29	16	6			5.44
27. Your involvement in course (assignments, attendance, etc.) was:	30	27	20	30	23				5.39

28. On average, how many hours per week have you spent on this course, including attending classes, readings, reviewing notes, writing papers and any other course related work? (Percentages)

Under 2	
2-3	
4-5	
6-7	16
8-9	12
10-11	19
12-13	16
14-15	9
16-17	16
18-19	
20-21	9
22 or more	3
No. Resp's	32
Class median	11.90
Hours per credit	2.97

29. From the total average hours above, how many do you consider were valuable in advancing your education? (Percentages)

Under 2	
2-3	7
4-5	13
6-7	20
8-9	10
10-11	10
12-13	13
14-15	7
16-17	10
18-19	3
20-21	7
22 or more	
No. Resp's	30
Class median	9.50
Hours per credit	2.38

30. What grade do you expect in this course? (Percentages)

A	(3.9-4.0)	7
A-	(3.5-3.8)	47
B+	(3.2-3.4)	33
B	(2.9-3.1)	10
B-	(2.5-2.8)	
C+	(2.2-2.4)	
C	(1.9-2.1)	
C-	(1.5-1.8)	
D+	(1.2-1.4)	
D	(0.9-1.1)	
D-	(0.7-0.8)	
E	(0.0)	
	Pass	3
	Credit	
	No Credit	
	No. Resp's	30
	Class median	3.49

31. In regard to your academic program, is this course best described as: (Percentages)

In your major?	92
A distribution requirement?	
An elective?	4
In your minor?	
A program requirement?	4
Other?	

Enrollment: 60
Returned forms: 32
Form: X
Chair Copy: No

1. Percentages are based on the number of students who rated each item.

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Guidelines for Reading and Interpreting
University of Washington
Student Ratings Summary Sheets

General

Questions 1-4 are constant across all forms. Forms dating before Autumn 1995 use the mean as the measure of central tendency. Beginning in Autumn 1995, medians became the measure of choice because they are less sensitive to extreme values.

The reported percentages reflect the percentage of the total number of respondents to a particular question that selected each rating category.

Relative Ranks (post-1998)

Items 5-22 are assigned a relative rank between 1 and 18, with 1 the item to which students responded most favorably and 18 the item ranked most negatively by students. The rankings can serve as a guide for focusing your instructional improvement activities. According to student perceptions, the items with low ranks (higher numbers) are those in greatest need of improvement.

The ranks have been standardized to remove differences in the "difficulty" of the questions. Some questions consistently receive lower scores in all courses. If the ranks were not standardized, those "difficult" items would be ranked lowest on every form and therefore provide no useful information. The scores are standardized by subtracting the average across all courses and dividing by the standard deviation across all courses. Because items are standardized, rankings may not correspond to the raw magnitude of each median. For example, a median of 4.1 may receive a better ranking than a median of 4.3 if, across all users, the former is typically rated lower, on average, than the latter.

Decile Ranks (pre-1998)

Rankings are based on comparisons by form. For example, when you choose the 'small lecture' form (Form A), you are compared to all instructors, regardless of academic rank, who chose to use the small lecture form over the previous two years.

The first column of deciles, Institution, compares your scores to the socres of all users of the same form throughout the university wide over the previous two years. The second column, College/Division, compares you to all users of the same form within your college (Engineering, Forestry) or, for the College of Arts & Sciences, the college subunit (e.g. Natural Sciences, Social Sciences, Arts).

Since Autumn of 1998, the decile rankings have not been included on the student ratings summary reports. Many faculty and administrators questioned the appropriateness and meaning of the comparisons and the potentially inappropriate weight given to these graphic representations. Readers eyes were drawn the decile ranks because of to their graphic nature (i.e. the black bars, or lack of them, were hard to miss). The decile ranks are difficult to interpret with respect to an individual instructor. For example, a low decile ranking could indicate that the instructor challenges her students, or that she asks too much relative to other faculty. Alternatively, a high decile ranking could indicate that an instructor is an excellent teacher or that he gives undeservedly high grades in comparison with other faculty.

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Session 4:
Teaching Artifact Annotation I/ Teaching Artifact Annotation II

Handouts

(Same as Session 3- see previous)

"Guidelines for Reporting Student Ratings for Review"

"Student Ratings Explanation Example"

"Guidelines for Reading and Interpreting University of Washington Student Ratings Summary Sheets"

Session 5:
Teaching Artifact Annotation II/ Diversity Statement

Handouts

"It's All in What You Ask: Questions for Search Committees"

"Factors contributing to undergraduate decisions to switch from science, mathematics, and engineering (SME) majors, by sex: 1994"

"NSF Merit Review Broader Impacts Criterion"

"NSF Broader Impacts Criterion 2 Rationale" (Organizational Infrastructure – College of Engineering, University of Washington)

"NSF Broader Impacts Criterion 2 Examples" (Organizational Infrastructure – College of Engineering, University of Washington)

It's All in What You Ask:
Questions for Search Committees

By Bernice R. Sandler, Jean O'Gorman Hughes, and Mary DeMouy

- Research shows that women in science often have lower aspirations than their male colleagues. Have you encountered this trend in your classes or your lab? What do you do about it?
- How have you encouraged women students to enter traditionally male fields?
- In most classes women students don't participate as much as men. What do you do to encourage women to participate in your classes? Has it worked?
- What differences have you perceived between men and women in the laboratory? In many fields, there is a tendency toward single-sex labs or teams. Is this the case in your discipline, labs, or courses? What do you think is the reason?
- What is your experience with faculty (and/or student) resistance to women and the issues they face in the academy that are different from men? Have you heard people deny the existence of these challenges, in effect, saying "I don't want to hear about it"? How do you deal with this denial or even hostility toward issues of diversity?
- Have any students ever complained to you about sexual harassment or discrimination in any work with professors, staff, or other students? If so, how did you respond? If not, how would you respond?
- How many teaching or research assistants have you hired in the last two years? How many were women?
- Approximately how many men have you nominated for fellowships, awards, and prizes? How many women?
- How do you feel about teaching students older than yourself?

http://www.bernicesandler.com/id15.htm

Factors contributing to undergraduate decisions to switch from science, mathematics, and engineering (SME) majors, by sex: 1994

Table 5-1

Issue	Rank importance among students switching majors		% students switching majors who cited issue	
	Men	Women	Men	Women
Reasons for choice of SME major prove inappropriate	2	1	74.2	91.4
Poor teaching by SME faculty	1	2	92.1	89.2
Inadequate advising or help with academic problems	3	3	68.5	83.9
Non-SME major offers better education/more interest	5	4	57.3	60.2
Lack of/loss of interest in SME: "turned off science"	4	5	61.8	58.1
Rejection of SME careers/associated life styles	11	6	37.1	49.5
Inadequate high school preparation in basic subjects/study skills	8	7	41.6	40.0
SME career options not worth effort to get degree	7	8	48.3	38.7
Curriculum overloaded, fast pace overwhelming	6	9	53.9	37.6
Discouraged/lost confidence due to low grades in early years	13	10	31.5	36.6

SOURCE: Seymour and Hewitt 1994, pp. 258-259.
Women, Minorities, and Persons with Disabilities in Science and Engineering: 1994
http://www.nsf.gov/sbe/srs/wmpdse94/chap5/tt5_1.htm

Table 5-2

Students switching majors Issue	Rank importance		% students who cited issue	
	Minority	White	Minority	White
Non-SME major offers better education/more interest	1	2	36.5	42.0
Reasons for choice of SME major prove inappropriate	2	15	34.6	6.1
Shift to more appealing non-SME career option	3	6	32.7	22.9
Conceptual difficulties with one or more SME subject(s)	4	16	30.8	5.3
Lack of/loss of interest in SME: "turned off science"	5	1	28.9	48.9
Rejection of SME careers/associated life styles	6	4	26.9	29.8
Inadequate high school preparation in basic subjects/study skills	7	10	25.0	10.7
Discouraged/lost confidence due to low grades in early years	8	6	23.1	22.9
Poor teaching by SME faculty	9	2	21.1	42.0
Curriculum overloaded, fast pace overwhelming	10	3	19.2	41.2

Women, Minorities, and Persons with Disabilities in Science and Engineering: 1994
http://www.nsf.gov/sbe/srs/wmpdse94/chap5/tt5_2.htm
Original source: Seymour and Hewitt 1994, pp. 258-259.

Merit Review Broader Impacts Criterion: Representative Activities

Proposals submitted to the National Science Foundation are evaluated through use of two merit review criteria, which all proposals must address explicitly. Experience shows that while most proposers have little difficulty responding to the criterion relating to intellectual merit, many proposers have difficulty understanding how to frame the broader impacts of the activities they propose to undertake.

The examples provided below are organized by the set of potential considerations used in assessing the broader impacts of the proposed activity. They illustrate activities that, when successfully incorporated in a project description, will help reviewers and NSF program staff address the broader impacts criterion in the review and decision process.

The list is not intended to be exhaustive, nor is any particular example relevant to all proposals. Proposers can draw from the examples but are urged to be creative in their approaches to demonstrating the broader impacts of their projects. Proposers already undertaking similar kinds of activities should carefully consider how to link these examples to the research and education projects they are proposing for funding. Proposers also should consider what types of activities best suit their interests, while enhancing the broader impacts of the project being proposed.

The components of the broader impacts criterion as defined by the National Science Board are listed below. The list is followed by short sections on each component that provide background information and representative activities.

Broader Impacts Criterion: What are the broader impacts of the proposed activity?

- How well does the activity advance discovery and understanding while promoting teaching, training and learning?
- How well does the proposed activity broaden the participation of underrepresented groups (e.g., gender, ethnicity, disability, geographic, etc.)?
- To what extent will it enhance the infrastructure for research and education, such as facilities, instrumentation, networks and partnerships?
- Will the results be disseminated broadly to enhance scientific and technological understanding?
- What may be the benefits of the proposed activity to society?

Advance Discovery and Understanding While Promoting Teaching, Training and Learning

Background:

Integration of research and education is one of "three core strategies that guide [NSF] in establishing priorities, identifying opportunities, and designing new programs and activities.... Effective integration of research and education at all levels infuses learning with the excitement of discovery and assures that the findings and methods of research are quickly and effectively communicated in a broader context and to a larger audience" (NSF GPRA Strategic Plan 2001 - 2006)

Examples of Activities:

- Integrate research activities into the teaching of science, math and engineering at all educational levels (e.g., K-12, undergraduate science majors, non-science majors, and graduate students).
- Include students (e.g., K-12, undergraduate science majors, non-science majors, and /or graduate students) as participants in the proposed activities as appropriate.
- Participate in the recruitment, training, and/or professional development of K-12 science and math teachers.
- Develop research-based educational materials or contribute to databases useful in teaching (e.g., K-16 digital library).
- Partner with researchers and educators to develop effective means of incorporating research into learning and education.
- Encourage student participation at meetings and activities of professional societies.
- Establish special mentoring programs for high school students, undergraduates, graduate students, and technicians conducting research.
- Involve graduate and post-doctoral researchers in undergraduate teaching activities.
- Develop, adopt, adapt or disseminate effective models and pedagogic approaches to science, mathematics and engineering teaching.

Broaden Participation of Underrepresented Groups

Background:

One of NSF's five-year strategies is to "broaden participation and enhance diversity in NSF programs. At present, several groups, including underrepresented minorities, women, certain types of academic institutions, and some geographic areas are less than full participants in the science and engineering enterprise. NSF is committed to leading the way to an enterprise that fully captures the strength of America's diversity." (NSF GPRA Strategic Plan 2001-2006)

Examples of Activities:

- Establish research and education collaborations with students and/or faculty who are members of underrepresented groups.
- Include students from underrepresented groups as participants in the proposed research and education activities.
- Establish research and education collaborations with students and faculty from non-Ph.D.-granting institutions and those serving underrepresented groups.
- Make campus visits and presentations at institutions that serve underrepresented groups.
- Establish research and education collaborations with faculty and students at community colleges, colleges for women, undergraduate institutions, and EPSCoR institutions.
- Mentor early-career scientists and engineers from underrepresented groups who are submitting NSF proposals.
- Participate in developing new approaches (e.g., use of information technology and connectivity) to engage underserved individuals, groups, and communities in science and engineering.
- Participate in conferences, workshops and field activities where diversity is a priority.

Enhance Infrastructure for Research and Education

***Background*:**

The NSF Act of 1950 authorizes and directs the Foundation "to foster and support the development and use of computer and other scientific and engineering methods and technologies, primarily for research and education in the sciences and engineering;..."

"NSF investments provide state-of-the-art tools for research and education, such as instrumentation and equipment, multi-user facilities, ... telescopes, research vessels and aircraft, ... Internet-based and distributed user facilities, ... research networks, digital libraries and large databases." (NSF GPRA Strategic Plan 2001-2006)

Examples of Activities:

- Identify and establish collaborations between disciplines and institutions, among the U.S. academic institutions, industry and government and with international partners.
- Stimulate and support the development and dissemination of next-generation instrumentation, multi-user facilities, and other shared research and education platforms.
- Maintain, operate and modernize shared research and education infrastructure, including facilities and science and technology centers and engineering research centers.

- Upgrade the computation and computing infrastructure, including advanced computing resources and new types of information tools (e.g., large databases, networks and associated systems, and digital libraries).
- Develop activities that ensure that multi-user facilities are sites of research and mentoring for large numbers of science and engineering students.

Broad Dissemination to Enhance Scientific and Technological Understanding

Background:

"NSF advocates and encourages open scientific communication. NSF expects significant findings from supported research and educational activities to be promptly submitted for publication.... It expects PIs to share with other researchers, at no more than incremental cost and within a reasonable time, the data, samples, physical collections and other supporting materials created or gathered in the course of the work. It also encourages grantees to share software and inventions . . . and otherwise to make the innovations ... widely useful and usable." (GPG; NSF 01-2a)

Examples of Activities:

- Partner with museums, nature centers, science centers, and similar institutions to develop exhibits in science, math, and engineering.
- Involve the public or industry, where possible, in research and education activities.
- Give science and engineering presentations to the broader community (e.g., at museums and libraries, on radio shows, and in other such venues.).
- Make data available in a timely manner by means of databases, digital libraries, or other venues such as CD-ROMs.
- Publish in diverse media (e.g., non-technical literature, and websites, CD-ROMs, press kits) to reach broad audiences.
- Present research and education results in formats useful to policy-makers, members of Congress, industry, and broad audiences.
- Participate in multi- and interdisciplinary conferences, workshops, and research activities.
- Integrate research with education activities in order to communicate in a broader context.

Benefits to Society

Background:

NSF is committed to fostering connections between discoveries and their use in service to society. The knowledge provided by NSF-funded projects offers a rich foundation for its broad and useful application. For example, projects may contribute to understanding the environment, commercial technology, public policy, health or safety and other aspects of the public welfare. (NSF GPRA Strategic Plan 2001-2006)

Examples of Activities:

- Demonstrate the linkage between discovery and societal benefit by providing specific examples and explanations regarding the potential application of research and education results.
- Partner with academic scientists, staff at federal agencies and with the private sector on both technological and scientific projects to integrate research into broader programs and activities of national interest.
- Analyze, interpret, and synthesize research and education results in formats understandable and useful for non-scientists.
- Provide information for policy formulation by Federal, State or local agencies.

Organizational Infrastructure

CoE Logo

Academic Misconduct
Facilities
International Exchange
Diversity & Student Services
Staff
Emerging Leaders in Engineering

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RATIONALE

This website focuses on diversity (highlighted text below) although the activities identified overlap with many of the approaches for demonstrating broader impacts. Examples of all NSF suggested activites can be found at the link at the end.

REVIEW CRITERIA

Text from NSF Grant Proposal Guide June 2003: Chapter III Processing and Review

All NSF proposals are evaluated through use of two National Science Board approved merit review criteria

What is the intellectual merit of the proposed activity?

What are the broader impacts of the proposed activity? [34]

How well does the activity advance discovery and understanding while promoting teaching, training, and learning? How well does the proposed activity broaden the participation of underrepresented groups (e.g., gender, ethnicity, disability, geographic, etc.)? To what extent will it enhance the infrastructure for research and education, such as facilities, instrumentation, networks, and partnerships? Will the results be disseminated broadly to enhance scientific and technological understanding? What may be the benefits of the proposed activity to society?

NSF staff will give careful consideration to the following in making funding decisions:

Integration of Research and Education

Integrating Diversity into NSF Programs, Projects, and Activities

Broadening opportunities and enabling the participation of all citizens, women and men, underrepresented minorities, and persons with disabilities, are essential to the health and vitality of science and engineering. NSF is committed to this principle of diversity and deems it central to the programs, projects, and activities it considers and supports.

[34] Examples illustrating activities likely to demonstrate broader impacts are available electronically on the NSF Website at http://www.nsf.gov/pubs/2003/nsf032/bicexamples.pdf.

Organizational Infrastructure

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NSF EXAMPLES

Use the following table to get ideas on how to address Criterion 2 ("Broaden Participation of Underrepresented Groups") in NSF proposals (see Rationale) and how to collaborate with College of Engineering diversity and student services.

NSF Suggested Activities **Focused on Diversity** Examples illustrating all activities likely to demonstrate broader impacts are available electronically on the NSF Website at http://www.nsf.gov/pubs/2003/nsf032/bicexamples.pdf.	**COE Diversity Services** Contact R&R Coordinator Cindy Bush to set up consultation with group of interest below. CONTACT BEFORE BUDGET IS SUBMITTED.
Partner with members of under-represented groups at the researcher's home institution in RESEARCH	• ALVA *Examples: UWEB & GenOM*
Partner with members of under-represented groups at the researcher's home institution in EDUCATION	• Academic Workshops • Pre-Major Program • Mentoring Program • Professional Development Seminars
Partner with members of under-represented groups at the researcher's home institution in OUTREACH ACTIVITIES	• K-12 Outreach
Partner with members of under-represented GROUPS FROM OTHER INSTITUTIONS	• LSAMP Pacific Alliance • NW Alliance AccessSTEM

Make CAMPUS VISITS at colleges and universities that serve under-represented groups	• All Nations Coalition of Tribal Colleges
Establish collaborations with underserved groups, institutions and GEOGRAPHIC REGIONS in order to encourage new entrants into student and proposal applicant pools	• ALVA • LSAMP Pacific Alliance • NW Alliance AccessSTEM
Develop partnerships with COMMUNITY COLLEGES, which serve approximately half of all U.S. undergraduates and close to half of every minority and ethnic group	• WCERTE *Example: CAEE*
MENTOR EARLY-CAREER SCIENTISTS who are submitting NSF proposals for the first time	• Mentoring Programs
DOCUMENT THE IMPACT OF RESEARCH in terms of relevance to under-represented groups	• CWD
Participate in developing strategies that involved new approaches, such as use of INFORMATION TECHNOLOGY and CONNECTIVITY, to engage underserved individuals, groups, and communities in science and engineering	• TALPA • DO-IT
Participate in CONFERENCES, workshops and field activities where diversity is a priority	• NAMEPA • NACME • WEPAN

Session 6:
Diversity Statement/ Teaching Philosophy Statement-2nd Draft

Handouts
(Same as Sessions 2 and 5 - see previous)

Section 2 Handouts:

"Strategies for Developing a Teaching Statement"

"Anonymous Teaching Philosophy Statement"

Session 5 Handouts:

"It's All in What You Ask: Questions for Search Committees"

"Factors contributing to undergraduate decisions to switch from science, mathematics, and engineering (SME) majors, by sex: 1994"

"NSF Merit Review Broader Impacts Criterion"
"NSF Broader Impacts Criterion 2 Rationale"
(Organizational Infrastructure – College of Engineering, University of Washington)

"NSF Broader Impacts Criterion 2 Examples"
(Organizational Infrastructure – College of Engineering, University of Washington)

Session 7:

Teaching Philosophy Statement-2nd Draft/ Portfolio Completion

Handouts

Session 8:
Portfolio Completion/
Professional Development Plan

Handouts

"Skills Acquired During A Graduate Education"

"References for Future Faculty"

"Grad-Initiated Professional Development Activities"

Skills Acquired During a Graduate Education

Research/Analytical Skills

- Ability to locate and assimilate new information rapidly
- Ability to break-down and understand complex content
- Ability to think on one's feet
- Ability to reach and defend independent conclusions
- Problem-solving tools and experience
- Intellectual maturity

Communication Skills

- Ability to convey complex information to non-expert audiences
- Ability to write at all levels: brief abstracts to book-length manuscripts
- Editing and proofreading
- Ability to speak before large groups

Interactive Skills

- Persuasion
- Leadership
- Ability to cope with and manage complicated personalities
- Ability to thrive in a competitive environment
- Ability to navigate complex bureaucratic environments

Entrepreneurial Skills

- Ability to work independently and in self-directed manner
- Ability to acquire funding and write successful grant proposals

Individual Skills

- Exceptional intellectual horsepower
- Track record of achievement
- Ability to perform under pressure
- Ability to learn and adapt at a high level
- Ability to meet high expectations
- Focus, tenacity, stamina, discipline

(adapted from http://career.berkeley.edu/PhDs/PhDskills.stm)

Selected Resources for Future Faculty

Teaching

Angelo, Thomas A., Cross, K. Patricia, 1993. *Classroom Assessment Techniques: A Handbook for College Teachers*, 2nd Edition. San Francisco: Jossey-Bass.

Davis, Barbara Gross, 1993. *Tools for Teaching.* San Francisco: Jossey-Bass.

McKeachie, Wilbert J., 11th Edition, 2002. *Teaching Tips: Strategies, Research, and Theory for College and University Teachers.* Boston: Houghton Mifflin College.

Walvoord, Barbara E., & Anderson, V. J., 1998. *Effective Grading: A Tool for Learning and Assessment.* San Francisco: Jossey-Bass.

Faculty Career

Bianco-Mathis, Virginia and Neal Chalofsky (editors), 1999. *The Full-Time Faculty Handbook.* Thousand Oaks, CA: Sage.

Gibson, Gerald W., 1992. G*ood Start: A Guidebook for New Faculty in Liberal Arts Colleges.* Bolton, Massachusetts: Anker Publishing.

Davidson, Clifford, and Susan A. Ambrose, 1994. *The New Professor's Handbook: A Guide to Teaching and Research in Engineering and Science.* Bolton, Massachusetts: Anker Publishing.

DeNeef, A. Leigh and Craufurd Goodwin (editors), 1995. *The Academic's Handbook*, 2nd edition. Durham, NC: Duke University Press.

Hostetler, Karl D., R. McLaran Sawyer, and Keith W. Prichard (editors), 2001. *The Art and Politics of College Teaching: A Practical Guide for the Beginning Professor*, 2nd edition. New York: Peter Lang Publishing.

Menges, Robert J., 1999. *Faculty in New Jobs: A Guide to Settling in, Becoming Established, and Building Institutional Support*. San Francisco: Jossey-Bass.

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Balancing Workload and Priorities

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Graduate Student Initiated Professional Development Activities

Recent changes in academia have highlighted the need for new Ph.D.s to prepare for jobs in a broad range of academic institutions. To have a degree from a prestigious institution and letters of recommendation from eminent scholars is simply no longer enough. A vast majority of the faculty (80%) work for colleges and universities other than research institutions[1]. We know our research training is superior. However, we also want to take advantage of every opportunity to ensure that we aim for excellence in teaching and service. We know that the better prepared we are for the diversity of available faculty positions, the more competitive we will be in today's academic job market.

All of the activities listed below were initiated by advanced graduate students in a single UW department. These senior graduate students were familiar with the system and far enough along in the program to recognize graduate student needs. The ideas and their implementation could, however, be implemented by any persistent graduate student or group of grad students. As a result of these efforts, faculty interest has been heightened and intradisciplinary communication between graduate students and faculty has improved.

Ask for what you need, be willing to organize it, and it can happen!

Examples from one department:

Activity	What was the need?	How was the need met?
Teaching Workshops	Ongoing development of teaching skills for Graduate Student Instructors (GSIs) and experienced TAs.	Quarterly workshops on topics of interest to participants. Graduate students work with CIDR consultants to facilitate workshops on teaching portfolios, course planning, leading discussions, and classroom assessment.
Summer Teaching Group	Instructional support for Summer Quarter GSIs teaching stand-alone courses.	GSIs meet biweekly to discuss instructional issues of immediate concern, e.g. assessment of student learning, grading, student participation, and student feedback.
Publishing Seminars	Subdiscipline specific information about the process of publishing articles in peer-reviewed journals.	1) Two faculty members with extensive experience as journal editors were asked to give a brief overview of the publishing process, give advice, and answer questions. 2) Participants and one faculty member provided comments on completed drafts, then each grad provided a final peer-review for one other paper.

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[1]National Center for Education Statistics, May 1999, *Digest of Education Statistics 1998*, Chapter 3 Postsecondary Education.

Professional Development Activities, cont.

Activity	What was the need?	How was the need met?
Journal Club	Up-to-date knowledge of disciplinary issues and current research topics.	Graduate students select articles on a quarterly basis. One or two of the participants facilitates biweekly discussion sessions.
Research Seminar	Knowledge of student and faculty research in the department. Learning from others' methods and research experiences.	Students, and occasionally faculty, meet weekly. One student discusses their own research and teaches the group a particular method or technique (e.g. designing questionnaires, specimen collection).
Peer-Mentoring Group	Motivation, support, and guidance on research, departmental issues, and the graduate experience.	Weekly meeting to report progress, set goals, and ask for feedback. Grad students discuss research, communicating with faculty, funding strategies, and future plans.
Academic Job Search Seminar	What to expect and how to prepare for the job search. Background knowledge about conference and campus interviews, the job talk, the two-body problem (e.g. spousal hires), etc.	1) Three new faculty were asked to discuss their recent experiences, give advice, and answer questions. 2) Seminar with chair of recent search committee who offered to meet with graduate students about the search committee perspective on the hiring process and what they look for in applicants.
Pre-Meeting Paper Presentations	Pre-conference feedback on presentations and papers.	Grad students present their papers to a group of faculty and students as if at a national conference. The audience provides constructive feedback to improve the content and the presentation.
Brown Bag Seminars	Knowledge of recent or current projects by department members. Help newer graduates learn about the research and culture of the department in a casual, collegial atmosphere.	Quarterly or bi-quarterly presentations, by faculty, advanced or new graduate students, and occasionally, by guest speakers. Topics usually focus on a previous or current field project.
Dissertation Writing Forum	Feedback on dissertation chapters. Learning how to talk about the dissertation to a wider audience. Motivation to write!	Monthly sessions. Participants read completed chapter in advance. Author makes a 10-minute presentation followed by 30 minutes of discussion and feedback.

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