Rubrics to communicate expectations and guide assessment

Rubrics serve a number of different roles.[30, 31] For the faculty member, they provide guidance about the communication principles to discuss with students, and they offer the criteria by which student work will be evaluated. The details of a rubric provide a grader (either the faculty or teaching assistant) with specific characteristics by which to differentiate between excellent and novice student work. For the student, a rubric acts as a statement of expectations for a work product. In addition, a rubric can be used as a specification of the relation between outcomes and student achievement of those outcomes. For instance, in the rubric provided in Table 3, different traits can be directly related to this outcome: "The student can give an effective oral presentation of requirements."

Table 3. Rubrics for a Requirements Presentation Assignment.

Grading:

1. Presentation dry run (2 pts): 2 pts if a complete dry run is given to the instructors prior to the dinner, 1 pt if a dry run is given where the presentation was thrown together hastily, 0 if no dry run is performed.
2. Presentation introduction (3 pts): 2 pts if a slide or two is given introducing the project and why it is valuable to the clients. This serves as the motivation for the rest of the talk. 1 pt if the introduction is not clear, 0 otherwise.
3. Requirements description (7 pts): 7 pts if requirements (functional and nonfunctional) are clearly described in nontechnical language and are organized logically, 4 pts if requirements are not clear or lacking in detail, 2 pts if requirements are incomplete, 0 otherwise.
4. Task descriptions (7 pts): 7 pts if all the major tasks (or task categories) are described clearly in nontechnical language, 4 pts if some parts of the system appear to be missing, 2 if descriptions are vague, 0 otherwise.
5. Storyboards (7 pts): 7 pts if storyboards are legible and provide enough detail for the client to visualize how someone would interact with the system, 4 pts if some storyboards are confusing or if one or two are

missing, 2 pts if storyboards are incomplete, 0 otherwise.
6. Presentation flow (2 pts): 2 pts if the flow of the presentation is easy to understand with clear transitions, 1 pt if there is a spot where a listener can get lost, 0 if it is difficult to follow the presentation.
7. Team Presenting (2 pts): 2 pts if team members introduce each other and all team members speak, 1 pt if not all team members speak or if some team members appear unengaged while their teammates are speaking, 0 if the presentation was not developed as a team.
8. Professionalism (2 pts): 2 pts if the team presents themselves professionally, 0 otherwise.
9. Audience aware (4 pts): 4 pts if any technical terms are explained clearly for a nontechnical audience, 2 pts if one or two spots are not clear, 0 pts if the talk is not accessible to non CS people.
10. Visuals (4 pts): 4 pts if all graphics and text are clearly readable, 2 pts if there are any "eye test" slides, 0 if the presentation is difficult to read.
11. Speaking (4 pts): 4 pts if all speakers speak clearly and enthusiastically, make eye contact with the audience, and appear to have rehearsed the talk, 3 pts if one person appears disengaged, etc. Note that nervousness will not be penalized nor will the use of notes as long as the speaker still attempts eye contact.
12. Questions (4 pts): 4 pts if the team actively solicits and accurately responds to questions and feedback, 2 pts if questions are dodged or dismissed out of hand, 0 pts if no attempt is made to actively solicit questions.
13. Peer evaluation summary (5 pts): 5 pts for a summary that lists responses to all the major points made by the peer evaluations plus an overall summary of how the presentation could be improved, 4 pts if some points are missing, 3 pts if the overall summary is missing or if some peer evaluation comments are not given a thoughtful response, 0 otherwise.

In addition, significant point reductions may occur if any of the following are detected:

1. Use of any graphics, pictures, text without appropriate citations (the source MUST be

> given for any graphics used, etc.).
> 2. Lack of sensitivity towards the clients using the project.
> 3. Inappropriate responses to audience questions.

Instructor Supports

The August 2010 workshop contained four sessions on teaching each of the four communication skills—reading, writing, speaking, and teaming. These were designed to help project participants get started in teaching their students these skills. This was a good start towards training one set of instructors, but the goal of this project is to provide assistance so that other instructors can incorporate communication into their courses as institutions adopt more communication skills into their curricula. To facilitate this, we will be developing a variety of instructional supports.

Instructor supports are required to assist with three issues encountered in teaching and using communication skills. One issue is that it is not always clear how or when students need to be trained in writing, speaking, teamwork, or reading. Faculty members may not be comfortable teaching these topics (which they may not have been taught themselves). Another issue is that while some instruction is necessary if the students are to be successful, it needs to be done in a way that minimizes the impact on the time given to technical topics and avoids repeating the same (nontechnical) instruction in multiple courses. The third issue is assessment, which we hope to address through the use of rubrics. While some rubrics are assignment specific, there are some generic ones that can be defined for common types of assignments that can then be tailored as needed.

The instructor supports are being designed and developed based on the experience of piloting the first set of communication-based assignments. Some supports have already been requested, suggested or employed:

- Instructional materials, such as PowerPoint slides, to teach each communication skill.
- Rubrics for assessing presentations.
- Rubrics for assessing peer review.
- Document templates (those already defined include status reports, meeting agendas/minutes, requirements specifications).

- Podcasts of training materials so instruction will not involve class time.
- A quick reference guide on communication skills that can be provided to students.
- Examples of good student work to accompany assignments.

As additional assignments are piloted, instructors are reporting back on where they require additional assistance. The CAC experts on the project are working with the instructors to design, evaluate, and refine supports needed.

Framework for Assignment Development

The project had eighteen faculty from eight different institutions developing assignments. A framework was defined to guide assignment development by requesting that faculty define the following information along with each assignment:

- Which communication abilities the assignment would develop (writing, speaking, reading, teaming, and listening).
- Course learning outcomes addressed: both technical and communication (separate sections were given, however faculty were encouraged to combine these when possible).
- An explanation that could be given to the students on how the assignment benefits them. This explanation should relate the assignment to their future professional practice, a key factor in providing them with motivation for doing the assignment and taking it seriously. When possible, assignments are mapped to the specific communication skills that our industry partners identified (as listed in Table 1).
- Technical tasks that the assignment would be used with.
- The genre of the assignment. Genre, in this context, refers to the type of communication. For example, a Software Requirements Specification would be a genre.
- The audience for the assignment. Audience is critical in communication. A document or presentation designed for a technical audience would use terminology that would be inappropriate for a nontechnical audience.
- The purpose of the assignment. For example, a requirements specification is written to define what the finished system is required to do, while a status report is written to keep a