Writing an Effective Proposal

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Workshop Agenda

- Enhancement strategies
  - General aspects
  - Goals, objectives, and outcomes
  - Rationale
  - Realities of the review process

Workshop Outcomes

After the workshop, you should be able to:
- Identify areas where proposals can be enhanced
  - Made more competitive
- Generate a list of suggestions for each area

CCLI Program

Vision:
- Excellent STEM education for all undergraduate students.

Goal:
- Stimulate, disseminate, and institutionalize innovative developments in STEM education through the production of knowledge and the improvement of practice.

Scenario: Origin of a CCLI Proposal

- Prof X has taught Signal Processing at U of Y for several semesters.
- She has an idea for greatly improving the course by adding "new stuff"
  - "New stuff"
    - Material (e.g., modules, web-based instruction)
    - Activities (e.g., laboratories, projects)
    - Pedagogy (e.g., problem based learning)
- She has done some preliminary evaluation
- She decides to prepare a CCLI proposal

Turning a Good Idea into a Competitive Proposal
Scenario: Professor X’s Initial Proposal Outline

- **Goals:** Develop “new stuff” to enhance student learning at U of Y
- **Rationale:** Observed shortcomings in educational experience of the students at U of Y and felt that new stuff would improve the situation
- **Project Description:** Details of “new stuff“
- **Evaluation:** Use U of Y’s course evaluation forms to show difference
- **Dissemination:** Describe “new stuff“ using conference papers, journal articles, and web site

Exercise

As a colleague, provide a few suggestions to guide Prof. X as she develops her proposal for the CCLI program

PD’s response to Proposal Strategies

- Read the program solicitation
  - Determine how your ideas match the solicitation and how you can improve the match
- Articulate goals, objectives, & outcomes
  - Outcomes should include improved student learning
- Build on existing knowledge base
  - Review the literature
  - Present evidence that the “new stuff” is doable; will enhance learning; is the best approach
- Explore potential collaborations

PD’s response to Proposal Strategies

- Use data to document existing shortcomings in student learning
- Describe management plan
  - Provide tasks, team responsibilities, timeline
- Provide clear examples of the approach
- Integrate the evaluation effort early
  - Build assessment tools around defined objectives and expected outcomes
  - Connect with independent evaluation experts

PD’s response to Proposal Strategies

- Identify strategies for dissemination
  - Define a plan to contribute to knowledge base
  - Address broader impacts
  - Collaborate, form partnerships (build community)

Write Proposal to Answer Reviewers’ Questions

- **Goals etc.**
- **Rationale**
- **Evaluation**
- **Dissemination**

What are you trying to accomplish?
What will be the outcomes?
Why do you believe that you have a good idea?
Why is the problem important?
Why is your approach promising?
How will you manage the project to ensure success?
How will you know if you succeed?
How will others find out about your work?
How will you interest them?
How will you excite them?
Goals → Objectives → Outcomes

**Project Goals and Objectives**

**Defining Goals**
Broad, overarching statement of intention or ambition

**Sample Goal for Prof. X**
The project is developing a signal-processing laboratory that is vertically integrated into the curriculum to illustrate theoretical concepts through application-driven exercises.

**Project Objectives**

**Defining Objectives**
Specific statement of intention
- Measurable
- More focused and specific than a goal
- A goal typically leads to several objectives

**Activity**
Think of objectives for this sample project goal

**Sample Goal for Prof. X**
The project is developing a signal-processing laboratory that is vertically integrated into the curriculum to illustrate theoretical concepts through application-driven exercises.

**PD’s Response**

**Sample Objectives**
- Create laboratory exercises that give hands-on experience to enhance conceptual understanding
- Increase student retention rates (in program) because interest in topic is increased
- Increase retention of technical material for future courses
- Improve laboratory skills of students
- Improve student confidence or attitude about profession

**Expected Measurable Outcomes**

**Defining Outcomes**
Statement of expected result
- Measurable with criteria for success
- An objective may lead to one or more outcomes

**Activity**
Think of one or more expected measurable outcomes for this objective:

*Increase student retention rates (in program)*
**Expected Measurable Outcomes**

**Objective:** Increase student retention rates
- Increase student graduation rates by ___ percent
- Increase students’ transition rates from the first to second year courses from ___ to ___
- Increase the students’ “Attitude towards discipline” as measured by surveys and interviews by ___ percent

**Project Rationale**

Rationale is the narrative that provides the context for the project
- It’s the section that connects the “Statement of Goals and Outcomes” to the “Project Plan”
- What’s the purpose of the rationale?
  - What should it contain?
  - What should it accomplish?
- What should an applicant include in their rationale?
  - What topics should a PI address?

**An Effective Rationale**

Think of questions that the Rationale for a CCLI proposal should answer
(pay particular attention to questions the reviewer will expect answered)

**PD’s Response**

An Effective Rationale

- What does the knowledge base say about the approach?
  - What have others done that is related?
  - What has worked previously?
  - What have been the problems/challenges?
- Why is this problem important?
  - Is it a global or local problem?
  - What are the potential broader impacts?
  - How will it improve quality of learning?

**PD’s Response**

An Effective Rationale

- What is the evidence that the approach will solve the problem?
  - Address the defined outcomes?
  - Achieve the defined outcomes?
  - Improve student learning?
- What are alternate approaches?
**Review Process -- Practical Aspects**

**PD’s Response**

**Review Process**

- Use good style (clarity, organization, etc.)
  - Be concise, but complete
  - Write simply but professionally
  - Avoid jargon and acronyms
  - Check grammar and spelling
  - Use sections, heading, short paragraphs, & bullets (Avoid dense, compact text)
- Reinforce your ideas
  - Summarize them; Highlight them (bolding, italics)
- Give examples

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**Practical Aspects of Review Process**

Reviewers have:

- Many proposals
  - Ten or more from several areas
- Limited time for your proposal
  - 20 minutes for first read
- Different experiences in review process
  - Veterans to novices
- Different levels of knowledge in proposal area
  - Experts to outsiders
- Discussions of proposals’ merits at panel meeting
  - Share expertise and experience

**PD’s Response**

**Review Process**

- Provide appropriate level of detail
- Pay special attention to Project Summary
  - Summarize goals, rationale, methods, and evaluation and dissemination plans
  - Address intellectual merit and broader impacts
    - Explicitly and independently
    - Three paragraphs with headings:
      - “Summary”
      - “Intellectual Merit”
      - “Broader Impacts”
- Follow the solicitation and GPG
  - Adhere to page, font size, and margin limitations
  - Use allotted space but don’t pad the proposal
  - Follow suggested (or implied) organization
  - Use appendices sparingly (check solicitation to see if allowed)
  - Include letters showing commitments from others
    - Avoid form letters
**PD’s Response Review Process**

- Prepare credible budget
  - Consistent with the scope of project
  - Clearly explain and justify each item
- Address prior funding when appropriate
- Emphasize results
- Sell your ideas but don’t over promote
- Proofread the proposal
- “Tell a story” and Turn a good idea into a competitive proposal

**Questions and Concerns During Proposal Preparation**

- Read the solicitation and the *GPG*
- Get advice from NSF program directors or Experienced colleagues
- Use an “imaginary panel” (Experts, novices, in-field/out)
  - How would they respond to a question?
  - How would they react to an idea?
  - How would they react to a written section?
  - What else would they like to see?
  - What questions will they have?
- Use your judgment

**Conclusion**

Presentation at:
http://www.nsf.gov/events/

Read the solicitation!
Read the *GPG*!

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Read the *GPG*!