


Handout #1

Proposal Strategies

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Important Notes

- Most of the information presented in this workshop represents the opinion of the IWBW project team and is not an official NSF position.
- Participants may ask questions using the *QUESTION BOX* on the meeting screen.
- Responses will be collected from a few sites at the end of each Group Activity. At the start of the Group Activity, we will identify these sites in the *CHAT BOX* and then call on them one at a time to provide a few of the ideas their group discussed.

Preliminary Comments on Workshop

- Not a recipe for writing a good proposal
- Intended to change the way you go about developing an educational project
 - Improve your understanding
 - Help you learn
- Engagement makes learning most effective
 - Good learners are not simply listeners.
- Active, collaborative process to improve your learning

Active & Collaborative Learning

- Effective learning activities
 - Recall prior knowledge – actively, explicitly
 - Connect new concepts to existing ones
 - Challenge and alter misconceptions
 - Reflect on new knowledge
- Active & collaborative processes
 - *Think* individually
 - *Share* with partner
 - *Report* to local and virtual groups
 - *Learn* from presenter’s response
 - *Learn* from the IWBW team’s response

Participant Activities

Two types of activities

- Group Activity ~ 6 min
 - Think individually ~ 2 min
 - Share with a partner ~ 2 min
 - Report in local group ~ 2 min
 - Report to virtual group
 - A few institutions selected
 - Check Chat Box for your Institution’s name
- Individual Activity ~ 2 min

Workshop Goals and Expected Outcomes

Goal: Enhance the participants' knowledge of essential elements of an educational proposal, or education component of more general proposal, and their understanding of strategies for developing more effective proposals.

Expected Outcomes: At the end of the workshop, participants should be able to:

- Discuss the review process and how it influences their proposal development.
- List questions that a good rationale should answer.
- List the essential elements of a clear and cogent implementation plan and describe why these elements are important.
- Identify the major strengths and weaknesses of the management plan and suggest improvements.
- Discuss the role of the evaluator in the proposal development process.

Elements of a Competitive Proposal

- Competitive proposals have
 - An understanding of the review process reflected in them
 - Great idea(s) that addresses important problems in the field and are significant to relevant stakeholders
 - Well designed project developed around the idea
 - A coherent narrative that integrates each component of the project, including evaluation
- Noncompetitive proposals lack one or more of these elements
- IWBW focus: Taking a good idea and turning it into a well designed project that could result in a competitive proposal.
 - The "project and proposal development" phase
 - Not the "idea generating" or "writing phases"

Elements of a Competitive Proposal

- Goals and Expected Outcomes (What?)
- Rationale (Why?)
 - Introduction
 - Background (prior work, theoretical basis)
 - Justification (importance, impact, need)
- Project Plans (How?)
 - Implementation plan (how and when things are done)
 - Management plan (who, and when, is doing something)
 - Evaluation plan
 - Dissemination plan

NSF Review Process for Education Proposals

Reviewers have:

- *Many proposals*
 - Ten or more from several areas/disciplines
- *Limited Time* for your proposal
 - Read proposals and write reviews prior to arrival at NSF
 - On top of regular teaching, research, and service schedule
- Different *experiences* in review process
 - Veterans to novices
- Different *levels of knowledge* in proposal area
 - Experts in specific or related areas
 - Different disciplinary expertise
- *Discussions* about a proposals' merits during the panel meeting
 - Share expertise and experience

Individual Activity: Review Process

- Create a list of proposal writing suggestions (guidelines) that an applicant should follow to deal with these practical aspects
 - Think individually ~ 2 min and write your responses

Handout #2

- 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* and white space (avoid dense, compact text)
 - Use *figures* and *tables* appropriately
 - Reinforce your ideas
 - Summarize them; *Highlight* them (bolding, italics –but not overdone)
 - Give *examples*

- Response: Review Process (cont.)
- Provide appropriate level of *detail*
 - Pay special attention to the Project Summary
 - Summarize goals, rationale, methods, and evaluation and dissemination plans
 - Address *intellectual merit* and *broader impacts*
 - *FastLane* will provide separate text boxes
 - *Summary*
 - *Intellectual Merit*
 - *Broader Impacts*

Response: Review Process (cont.)

- Follow the solicitation and *GPG*
 - Adhere to page, font size, and margin *limitations*
 - Use *allotted space* but do not 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

Response: Review Process (cont.)

- Prepare a *credible budget*
 - Consistent with the scope of project
 - Clearly explain and justify each item
- Address *prior funding* when appropriate
 - Emphasize the outcomes
- Make sure various proposal elements are aligned to support the overall project goal(s)
- *Proofread* the proposal
- Sell your ideas but do not over promote
- “Tell a story” and turn a good idea into a competitive proposal

Elements of a Competitive Proposal

- Goals and Expected Outcomes (What)
- **Rationale (Why)**
 - Introduction
 - Background (prior work, theoretical basis)
 - Justification (importance, impact, need)
- Project Plans (How)
 - Implementation plan (how and when things are done)
 - Management plan (who, and when, is doing something)
 - Evaluation plan
 - Dissemination plan

Proposal Rationale

- Provides:
 - Background and context
 - Justification and significance
- Connects the “Goals and Expected Outcomes” to the “Project Plan”

Group Activity: Proposal Rationale

Think of an educational proposal/project you may be considering developing

- List the important questions that the rationale should address in order to convince a reviewer that the proposal is fundable
 - Background and context
 - Justification and significance
- Think individually ~ 2 min
– Share with a partner ~ 2 min
– Report in a local group ~ 2 min

Handout #3

Overview: Project Rationale

- Ultimately the rationale should convince the reader that the proposal
 - Has placed the proposed work in the context of prior work and relevant theory
 - Has identified a problem of significance and proposed a viable solution.

Response: Developing the Rationale

Background and context:

- How does the proposed work fit into and relate to prior work by others? By the applicant?
- How does the proposed work fit into and relate to relevant theories?

In both cases, there must be references to the literature

Response: Developing the Rationale

Justification and significance

- How does the proposal incorporate the current understanding of teaching and learning?
- How does the proposal incorporate new disciplinary knowledge?
- How does the proposal address an emerging area or known problem?
- How does the proposal address an industry/scientific/societal need?
- How many students will be directly impacted by the proposed work?
- How easily is the proposed work transportable to other institutions and contexts?
- What are the potential contributions to the teaching & learning knowledge base?
- What are the potential limitations and alternate approaches?

Elements of a Competitive Proposal

- Goals and Expected Outcomes (What)
- Rationale (Why)
 - Introduction
 - Background (prior work, theoretical basis)
 - Justification (importance, impact, need)
- **Project Plans (How)**
 - *Implementation plan (how and when things are done)*
 - *Management plan (who, and when, is doing something)*
 - Evaluation plan
 - Dissemination plan

Group Activity: Implementation Plan

What should be included in an implementation plan for an educational project?

- Describe the essential elements or features of the plan.
 - Think individually ~ 2 min
 - Share with a partner ~ 2 min
 - Report in a local group ~ 2 min

Handout #4

Response: Implementation Plan

- Strategies and activities to achieve the goals and expected outcomes (supported by appropriate formative evaluation in the evaluation plan)
- “Products” to be developed
- Equipment, materials, and other resources required
- Summary of prototypes or pilots for the strategies and activities
- Timeline

All of these are important for the same reason: allow for determination of key aspects of the feasibility of the project

Response: Implementation Plan (cont.)

A timeline for project activities is often included and the timeline typically:

- Integrates and shows connections between the Implementation Plan, the Management Plan, the Evaluation Plan, and the Dissemination Plan
- Illustrates when different assessment components will occur
- Shows the overall “flow” of the project

Response: Implementation Plan (cont.)

The implementation plan (like all other aspects of the project plan) should convince proposal readers that the applicant has the

- Intellectual capacity,
- Disciplinary knowledge,
- Strategies, means, and resources to accomplish the project goals.

Project Management Plan

- Management plans are typically concerned with the who, what, and when of specific project activities.
 - Need to demonstrate that the funds will be responsibly managed with a high probability of project success.
 - Need to demonstrate that appropriate resources (people, equipment, space, time) are in place to maximize the likelihood of the project's success.

Group Activity: Project Management Plan

Read the Project Management plan provided as a pre-workshop reading

- What are the strengths and weaknesses of the plan?
- What are any suggestions for improvement?
 - Think individually ~ 2 min and write your responses

Handout #5

Response: Strengths of Project Management Plan

- Qualifications of the researchers as they relate to the project are explicitly stated
- Each PI/co-PI is tasked with specific components of the project
- Utilizes an independent evaluator who is external to the project

Response: Weaknesses of Project Management Plan

- Evaluator is not named
 - “Trust us” to hire the right individual for this
- No provision for coordination of different activities and personnel
- Role of the student researchers and other faculty and graduate students not described
- No external advisory board
 - This may or may not be an issues depending on the funding program
- No timeline is given for when tasks will be completed
 - May be included elsewhere, e. g., in the implementation plan
- Few specific details regarding evaluation activities
 - Written in broad generalities
 - These might be given elsewhere in the proposal

Group Activity: Role of Evaluator

A project proposes to teach a science course by integrating social media activities and in-class projects done by student groups.

- Describe the role(s) of the evaluator in the development process as the project team constructs the proposal.

- Think individually ~ 2 min
- Share with a partner ~ 2 min
- Report in a local group ~ 2 min

Handout #6

Response: Role of Evaluator

1. During development of the Project Goals and Expected Outcomes

- Check that project goals are linked to measurable and achievable expected outcomes.
- Check that valid instruments exist or can be developed to assess anticipated project outcomes.
- Provide advice on selecting the number of students involved and on control or comparison groups

Response: Role of Evaluator (cont.)

2. During development of Project Rationale

- Help interpret evaluation results of prior projects

3. During development of Project Plans

- Provide literature review of the relevant evaluation work
- Help develop the Implementation and Management Plans and the required Data Management Plan
- Lead the development of the Evaluation Plan.

Response: Role of Evaluator

- The evaluator should be involved in complete project/proposal development process.
- The evaluator role may vary with different aspects of the project/proposal.
- Remember that proposal development is an *iterative process* with refinement and improvement during each iteration. The Evaluator and Project Team may iterate some sections of the proposal more than others.

Thanks for your participation!

- This concludes the virtual session. Thanks for your participation.
- You will be receiving a survey request from an online survey site regarding this workshop. Please take the time to fill the survey out so that we can improve future offerings of this workshop.
- There will be a concluding local session where participants will reflect on their experiences in the virtual session
- All participants will receive an email message with a link to the post-workshop evaluation survey. Please go to the site and complete the survey so that we can identify areas for improvement and have information to report to NSF

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Pre-workshop Handout

Project Management Plan

Dr. X, PI, will serve as the lead on this project. She has backgrounds in both engineering and education with expertise in educational research methods. She will have overall responsibility for administering the project and for interacting with NSF. She also will serve as the primary researcher for this project, will work with student researchers, and will serve as the liaison to faculty and graduate students. She also will oversee the data collection process and will direct the dissemination of research findings locally and nationally.

Dr. Y, Co-PI, is Assistant Professor in the area of applied measurement and research methodology. She has expertise in educational measurement and statistics including survey design and multilevel analyses. She has worked on NSF-funded STEM research projects as a data analyst, published in major journals and contributed to the development of institutional and pre-service teacher questionnaires as a senior researcher. Dr. Y will assist in the validation of the instrument and will advise the research team on the feasibility of the tool so that it can be disseminated to other universities in the future. She also will assist the team in the dissemination of research findings to engineering, education, and measurement audiences.

An external evaluator will be hired assess and evaluate the project goals using both formative and summative assessment methods. A number of different methods (direct and indirect, qualitative and quantitative, and formative and summative) will be employed to ensure goals are met, stakeholders are informed, and processes are improved. Examples include portfolio development and review, pre- and post-surveys, and focus groups.