Developing a Competitive Proposal

(An Interactive, Web-Based Workshop)

Russell Pimmel
Division of Undergraduate Education
National Science Foundation

October, 2010

Caution!

Most of the information presented in this workshop represents the presenter's opinion and not an official NSF position

Preliminary Comments
Workshop Goal & Expected Outcomes

GOAL: Enable participants to prepare competitive proposals

OUTCOMES: Participants should be able to describe:

- Common proposal strengths and weaknesses
- Strategies for developing various aspects of the project/proposal
- Strategies for dealing with the practical aspects of the review process

Workshop Topics

- Introduction
- TUES Solicitation
- Common Strengths and Weaknesses
- Developing a Proposal
  - Goals and Expected Outcomes
  - Rationale
  - Evaluation Plan
  - Dissemination
- Practical Aspects of Review Process

Preliminary Comments

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 program directors' responses

Participant Activities

- Long Exercise ---- 6 min
  - Think individually -------- ~2 min
  - Share with a partner ----- ~2 min
  - Report in local group ---- ~2 min
- Short Exercise ------ 4 min
  - Think individually --------- ~2 min
  - Report in local group ---- ~2 min
- Individual Exercise ---------- 2 min

Facilitator's Duties

- Coordinate the local activities
- Watch the time
  - Allow for think, share, and report phases
  - Reconvene on time -- 1 min warning slide
- Ensure the individual think phase is devoted to thinking and not talking
- Coordinate the asking of questions by local participants

Activity

Reflection

- What are the three most important pieces of advice for a colleague writing a curriculum development proposal (i. e., a TUES proposal)?

- *Activity Guidelines:*
  - *Allotted time is 1 min*
  - *No discussion*
  - *Write your ideas on your "Reflections" sheet*
    - *Add to this list later*

Overview of TUES Solicitation

Transforming Undergraduate Education in Science, Technology, Engineering and Mathematics

Replaces Course, Curriculum, and Laboratory Improvement (CCLI)

NSF 10-544

Proposal Deadlines

- For Type 1 -- states or territories beginning with A through M.
  - May 26, 2010
  - May 26, 2011
  - May 28, 2012
- For Type 1 -- states or territories beginning with N through W.
  - May 27, 2010
  - May 27, 2011
  - May 29, 2012
- For Type 2 and 3 and Central Resource Project
  - January 14, 2011
  - January 13, 2012
  - January 14, 2013
- Central Resource Project proposals for small focused workshops
  - Submitted at any time after consulting with a program officer

TUES vs CCLI

- Title changed to emphasize the special interest in projects that have the potential to transform undergraduate STEM education
- Modified review criteria
  - Propose approaches that enhance student learning and can be adapted easily by other sites
  - Involve a significant effort to facilitate adaptation by others
  - Institutionalize the approach at the investigator's school
  - Have the potential to contribute to a paradigm shift

Activity

TUES Proposal Areas

- What kinds of proposals are appropriate for the TUES Program? What could a proposal address?
  - Individually identify a few examples
  - Report to the group

- Short Exercise ---- 2 min
  - Think individually --------- ~1 min
  - Report in local group ---- ~1 min

Activity

TUES Proposal Areas

- What kinds of proposals are appropriate for the TUES Program? What could a proposal address?
  - Individually identify a few examples
  - Report to the group

- Short Exercise ---- 2 min
  - Think individually --------- ~1 min
  - Report in local group ---- ~1 min

ONE Minute

TUES Project Components

- Creating Learning Materials and Strategies:
  - Guided by research on teaching and learning
  - Incorporate and be inspired by advances within the discipline
- Implementing New Instructional Strategies:
  - Contribute to understanding on how existing strategies
    - Can be widely adopted
    - Are transferred to diverse settings
    - Impact student learning in diverse settings
- Developing Faculty Expertise:
  - Enable faculty to acquire new knowledge and skills in order to revise their curricula and teaching practices
  - Involve a diverse group of faculty

TUES Project Components (cont)

- Assessing and Evaluating Student Achievement:
  - Develop and disseminate valid and reliable tests of STEM knowledge
  - Collect, synthesize, and interpret information about student understanding, reasoning, practical skills, interests, attitudes or other valued outcomes

- Conducting Research on Undergraduate STEM Education:
  - Explore how
    - Effective teaching strategies and curricula enhance learning and attitudes,
    - Widespread practices have diffused through the community
    - Faculty and programs implement changes in their curriculum

Project Types

- Type 1
  - Total budget up to $200,000 for 2 to 3 years
    - $250,000 when 4-year and 2-year schools collaborate
- Type 2
  - Total budget up to $600,000 for 2 to 4 years
- Type 3
  - Budget negotiable -- not to exceed $5,000,000 over 5 years
- Central Resource Projects
    - Small focused workshop projects -- Budget negotiable -- up to $100,000 for 1 to 2 years
    - Large scale projects -- Budget negotiable -- $300,000 to 3,000,000 for 3 to 5 years

NSF Review Criteria

- All proposals are evaluated using the NSB-approved review criteria of *intellectual merit* and *broader impact*

- The TUES Solicitation provides two sets of suggested questions to help define these criteria
  - Standard NSF set
  - TUES-specific set

NSF Suggested Questions for *Intellectual Merit*

- *Will the project*
  - Include activities important in advancing knowledge?
  - Involve qualified proposer(s)?
  - Contain creative, original, and potentially transformative concepts?
  - Have a well conceived and organized plan?
  - Include sufficient access to resources?

NSF Suggested Questions for Broader Impacts

- *Will the project*
  - Advance discovery – promote teaching & learning?
  - Broaden participation of underrepresented groups?
  - Enhance the infrastructure?
  - Include broad dissemination?
  - Benefit society?

TUES Suggested Questions for *Intellectual Merit*

Will the project

- Produce one or more of the following:
  - Exemplary materials, processes, or models that enhance student learning *and can be adopted by other sites*
  - Important findings related to student learning?
- Build on existing knowledge about STEM education?
- Have explicit and appropriate expected measurable outcomes integrated into an evaluation plan?
- Include an evaluation effort that is likely to produce useful information?
- *Institutionalize the approach at the investigator's college or university as appropriate for the Type*

NOTE: Oversized red type indicates changes from CCLI solicitation

TUES Suggested Questions for Broader Impacts

Will the project

- *Involve a significant effort to facilitate adaptation at other sites?*
- Contribute to the understanding of STEM education?
- Help build and diversify the STEM education community?
- Have a broad impact on STEM education in an area of recognized need or opportunity?
- *Have the potential to contribute to a paradigm shift in undergraduate STEM education?*

NOTE: Oversized type indicates changes from CCLI solicitation

TUES Program – Information Sites

- Solicitation
  http://www.nsf.gov/funding/pgm_summ.jsp?pims_id=5741&org=DUE&from=home

- Search awards
  http://www.nsf.gov/awardsearch/tab.do?dispatch=4
  - Use "Search All Fields" tab
    - Enter key words
    - Enter "Element Code" -- use "Lookup" link on right
    - Select "Any" vs "All"

- Can request copy of proposal from PI or NSF through FOIA
  http://www.nsf.gov/policies/foia.jsp
  - Use examples carefully – Not as "templates" for your idea

Proposal Strengths and Weaknesses

TUES Review Processes

- PD sorts by disciplines and sends to group of reviewers
- Reviewers rate each proposal and submit written reviews
  - Describe the strengths and weaknesses in terms of the intellectual merit and broader impacts criteria
- Panel meets
  - Discusses the strengths and weaknesses in terms of the intellectual merit and broader impacts criteria
- Panel writes a summary of the discussion
  - Highlights strengths and weaknesses
  - Called Panel Summary

Proposal Strengths and Weakness

- Analyzed Panel Summaries for 471 CCLI proposals
- Identified the most common strengths and weaknesses

Activity

Strengths & Weaknesses

- Pretend you analyzed a stack of panel summaries to identify the most commonly cited strengths and weaknesses
- List what you think will be
  - Most common strengths (*Proposal was innovative*)
  - Most common weaknesses (*Proposal was not innovative*)

Predict the results of our analysis

- Long Exercise ---- 6 min
  - Think individually --------- ~2 min
  - Share with a partner ----- ~2 min
  - Report in local group ---- ~2 min
- Watch time and reconvene after 6 min
- Use THINK time to think – no discussion
- Selected local facilitators will be asked to report to virtual group– look at Chat Box to see if you will be called

Activity

Strengths & Weaknesses

- Pretend you analyzed a stack of panel summaries to identify the most commonly cited strengths and weaknesses
- List what you think will be
  - Most common strengths (*Proposal was innovative*)
  - Most common weaknesses (*Proposal was not innovative*)

Predict the results of our analysis

- Long Exercise ---- 6 min
  - Think individually -------- ~2 min
  - Share with a partner ----- ~2 min
  - Report in local group ---- ~2 min
- Watch time and reconvene after 6 min
- Use THINK time to think – no discussion
- Selected local facilitators report to virtual group

ONE Minute

Top Ten Strengths

Topic is important and timely, introduces new material; or is responsive to industry or a community need

PIs were experienced, strong, and technically sound

Proposed collaboration with other organizations (diverse 4-year schools, community colleges, K-12, etc.) is detailed and believable

Proposal has good potential for involving minorities or women

Dissemination plan is excellent and will contribute to STEM education knowledge base.

Proposed ideas are likely to have a large impact (Number of students, broadness of idea, etc.)

Proposed ideas build on prior work or existing products

Evaluation plan is excellent, outstanding, or good

Proposed ideas are novel or innovative

Proposed activities include non-traditional pedagogy

Top Ten Weaknesses

Proposed activities are not described in sufficient detail with clear plans

Evaluation plan is missing or incomplete

Proposed activities are not doable or they will not result in expected outcomes

Dissemination plan is inadequate and will not contribute to STEM education knowledge base

Proposal does not have good potential for involving minorities or women

Proposed ideas do not build on prior work or existing products

Proposed ideas are not novel or innovative

Proposed ideas are not likely to have a large impact (Number of students, broadness of idea, etc.)

Proposed collaboration with other organizations (diverse 4-year schools, community colleges, K-12, etc.) is not detailed or believable

Topic is not important and timely, does not introduce new material; or is not responsive to industry or a community need

Areas of Strength and Weakness

- **Important, timely, responsive to need**
- **Large impact**
- **Novel or innovative**
- **Prior work**
- **Non-traditional pedagogy**
- **Details**
- **Doable**
- **Collaboration**
- **Minorities or women**
- **Evaluation**
- **Dissemination**
- ***Transportability***
- ***Institutionalization***

Dealing with Common Strengths and Weaknesses

- Describe project's goals and expected outcomes
- Describe the project's relationship to prior work, theoretical basis, pedagogical approach, importance, impact, timeliness, innovativeness
  - Specific
  - Evidenced-based
  - Referenced
  - Related to goals and outcomes
- Describe project's plans for implementation, evaluation, dissemination, collaboration, impacting underrepresented groups
  - Clear
  - Detailed
  - Doable
  - Related to goals and outcomes

Developing a Proposal

(Converting a Good Idea into a Fundable Project)

Elements of a Competitive Proposal

- Competitive proposals contain
  - Great idea
  - Well designed project developed around the idea
  - Convincing description of the project
- Non-competitive proposals lack one or more of these elements
- Workshop focus: Converting a good idea into a well designed project
  - The “project development” phase
  - Not the “idea generating” or “writing phases”

Preliminary Comments

Organization of a Project

- Goals and expected outcomes
- Rationale
  - Introduction
  - Background (prior work, theoretical basis)
  - Justification (importance, impact, need)
- Project Plans
  - Implementation plan
  - Evaluation plan
  - Management plan
  - Dissemination plan

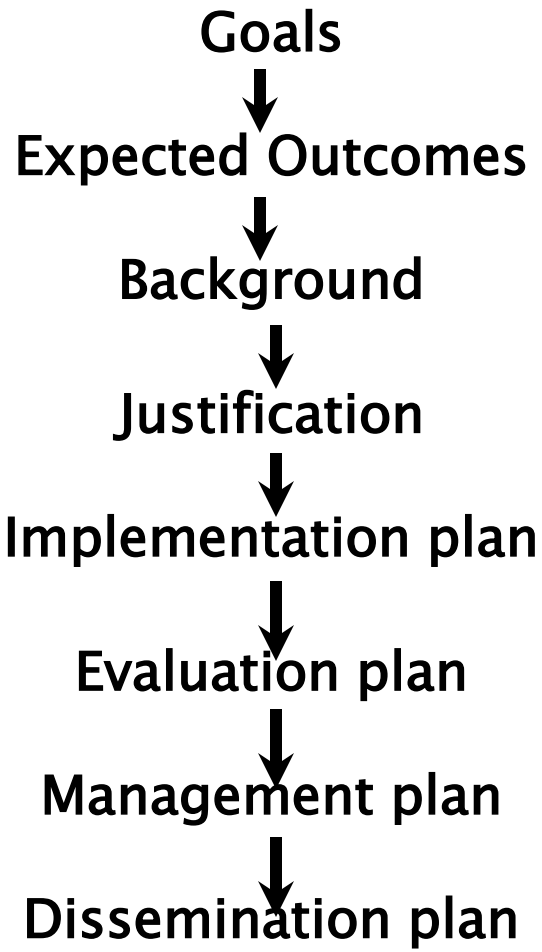
Note: There are other organizations- may be stipulated by program solicitation

Project Development Model

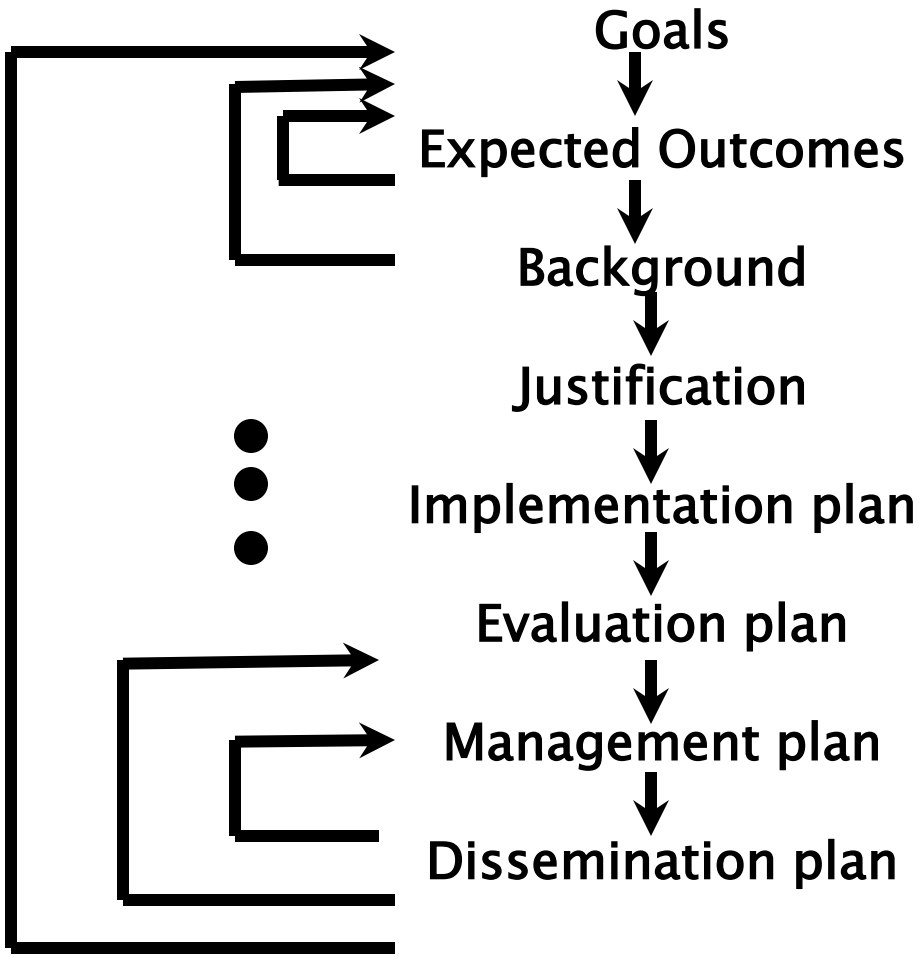
- Think of the project as a single integrated entity, not a group of individual (independent) elements
- Design the project in an iterative process with "successive refinement"

Preliminary Comments

Linear Model



Iterative Model



Questions

"Hold-up your virtual hand" and you will be called upon after we unmute your mike.

Project Goals & Expected Outcomes

Project Goals

- **Goals: define your ambition or intention**
  - ***What is your overall ambition?***
  - ***What do you hope to achieve?***
  - ***Goals provide overarching statements of project intention***
- ***Two types of goals***
  - ***"Project management" goals***
    - ***Start or complete some activity or product***
  - ***Student behavior goals***
    - ***Change the students' or instructors' knowledge, skills or attitudes***
    - ***Change the students' success rates or increase the diversity of the students***

Project Expected Measurable Outcomes

- **Learning goals identify the intended change in knowledge, skills or attitudes**

- **Expected measureable outcomes**
  - **Identify the observable changes in behavior if goal is obtained**
  - **One or more specific observable results for each goal**
    - ***How will achieving your "intention" reflect changes in student or faculty behavior?***
    - ***How will it change student learning? Students' attitudes? Students' successes? The diversity of the students?***

Activity

Developing Project Goals

Consider an idea aimed at integrating 3-D visualization software and small group discussions and presentations of homework problems into an engineering mechanics course

- List possible goals for this project
  - Use student perspective not instructor or material perspective
    - Not "Develop material…" or "Incorporate material …"
- Short Exercise
  - Think individually --------- ~2 min
  - Report in local group ------ ~2 min
- Watch time and reconvene after 4 min
- Use THINK time to think – no discussion
- Selected local facilitators will be asked to report to virtual group- check the Chat Box

Activity

Developing Project Goals

Consider an idea aimed at integrating 3-D visualization software and small group discussions and presentations of homework problems into an engineering mechanics course

- List possible goals for this project
  - *Use student perspective not instructor or material perspective*
    - *Not "Develop material…" or "Incorporate material …"*
- *Short Exercise*
  - *Think individually ---------- ~2 min*
  - *Report in local group ------ ~2 min*
- *Watch time and reconvene after 4 min*
- *Use THINK time to think – no discussion*
- *Selected local facilitators report to virtual group*

ONE Minute

PD's Response

Types of Project Goals

- Goals may focus on
  - Cognitive behavior
    - Conceptual understanding
    - Processing skills
  - Affective behavior
  - Success rates
  - Diversity
    - Cognitive, affective or success goals in underrepresented groups

PD's Response

Goals for Cognitive Behavior

Within the context of the course

- **Improve ability to**
  - **Describe or utilize course concepts**
  - **Solve textbook problems**
  - **Verbally explain solutions**
  - **Use the visualization software tool**

Beyond the context of the course

- **Improve ability to**
  - **Extend course concepts to other areas**
  - **Solve out-of-context problems**
  - **Discuss technical issues**
  - **Work effectively in teams**
  - **Visualize 3-D models**
  - **Exhibit critical thinking skills**

PD's Response

Goals for Affective Behavior

Improve students':

- **Self-confidence**
- **Intellectual development**
- **Interest in or attitude about engineering**

PD's Response

Goals on Success Rates

- Improve
  - Recruitment rates
  - Retention or persistence rates
  - Graduation rates

PD's Response

Goals on Diversity

Increase a target group's

- Understanding of concepts
- Achievement rate
- Attitude about profession
- Self-confidence

"Broaden the participation of underrepresented groups"

Expected Measureable Outcomes

- Achieving a cognitive or affective goal should change the way students behave and/or perform
  - They will demonstrate changes in their behavior reflecting changes in their knowledge, skills or attitudes
- Consider a room full of students where some had achieved the goal and some had not
  - How would you determine if a particular student achieved the learning goal?
  - What questions, activities, or tasks would uncover these changes?

Activity 5

Transforming Goals into Expected Outcomes

- **Write one expected measurable outcome for each of the following goals:**
  - **Increase the students' out-of-context problem solving skills**
  - **Improve the students' attitude about engineering as a career**

- *Short Exercise ------ 4 min*
  - *Think individually --------- ~2 min*
  - *Report in local group ------ ~2 min*
- *Watch time and reconvene after 4 min*
- *Use THINK time to think – no discussion*
- *Selected local facilitators will be asked to report to virtual group- check the Chat Box*

Activity

Transforming Goals into Expected Outcomes

- **Write one expected measurable outcome for each of the following goals:**
  - **Increase the students' out-of-context problem solving skills**
  - **Improve the students' attitude about engineering as a career**

- *Short Exercise ------ 4 min*
  - *Think individually ---------- ~2 min*
  - *Report in local group ------ ~2 min*
- *Watch time and reconvene after 4 min*
- *Use THINK time to think – no discussion*
- *Selected local facilitators report to virtual group*

ONE Minute

PD's Response

Expected Outcomes

Problem solving

- ***Students will be better able to***
  - ***Draw a model, appropriate abstraction or representation***
  - ***Identify the issues, variables, parameters, etc., in a problem***
  - ***Identify and consider several alternate solution paths***
  - ***Use an iterative process to try, test, and refine an approach***
  - ***Communicate their solution and discuss its reasonableness***

Attitude

- ***Students will be better able to describe engineering as***
  - ***An exciting career***
  - ***A career that deals with the solution of real and important problems***
- ***Students will be better able to discuss the role of engineering in a current event***
- ***Students will take subsequent courses at a higher rate***

Overview

Goals and Expected Outcomes

- Ultimately the goals and expected outcomes should convince the reader that the applicant has
  - A clear understanding of what he or she is trying to achieve
  - A clear understanding what he or she expects to observe when this is achieved

Activity

Reflection II

- What are the three most important pieces of advice for a colleague writing a curriculum development proposal (i. e., a TUES proposal)?

- *Activity Guidelines:*
  - *Allotted time is 1 min*
  - *Write your ideas on your "Reflections" sheet*
  - *No discussion*

Questions

"Hold-up your virtual hand" and you will be called upon after we unmute your mike.

BREAK

15 min

BREAK

1 min

Project Rationale

Project Rationale

- Rationale provides the context for the project
- It provides
  - Background
  - Justification
- Connects the "*Statement of Goals and Expected Outcomes*" to the "*Project Plan*"

Activity

Developing the Project's Rationale

List facets that should be explored in developing the rationale for a project (*Describe prior work*)

- *Long Exercise ---- 6 min*
  - *Think individually -------- ~2 min*
  - *Share with a partner ----- ~2 min*
  - *Report in local group ---- ~2 min*
- *Watch time and reconvene after 6 min*
- *Use THINK time to think – no discussion*
- *Selected local facilitators will be asked to report to virtual group- check the Chat Box*

Activity

Developing the Project's Rationale

List facets that should be explored in developing the rationale for a project (*Describe prior work*)

- *Long Exercise ---- 6 min*
  - *Think individually -------- ~2 min*
  - *Share with a partner ------ ~2 min*
  - *Report in local group ---- ~2 min*
- *Watch time and reconvene after 6 min*
- *Use THINK time to think – no discussion*
- *Selected local facilitators report to virtual group*

ONE Minute

PD's Response

Developing the Rationale

- Collect and analyze information, data, evidence
  - The importance of the problem
    - Incorporates new disciplinary knowledge
    - Addresses an emerging area or known problem
    - Meets an industry need
  - The potential impact of the work
    - Number of students
    - Transportable to a large number of institutions
    - Serves as model for other areas

Developing the Rationale (cont.)

- Collect information, data, evidence
  - Prior work by others
    - Referenced to the literature
  - Prior work by applicant
    - Preliminary data
  - Relevant theory
    - Referenced to the literature
  - Potential contributions to teaching & learning knowledge base
  - Potential problems, limitations, alternate approaches

Developing the Rationale (cont.)

- Consider both intellectual aspects and broader impacts as rationale is developed
- Make sure project is consistent with solicitation

Overview

Project Rationale

- Ultimately the rationale should convince the reader that the applicant
  - Has identified an important, big-impact problem
  - Understands the problem and the prior work
  - Has thought seriously about broader impacts

Questions

"Hold-up your virtual hand" and you will be called upon after we unmute your mike.

Project Plans

- Project plans include
  - Implementation plan
  - Evaluation plan
  - Management plan
  - Dissemination plan

Evaluation Plan

Activity

Developing an Evaluation Plan

List facets that should be considered when developing an evaluation plan (*Identify evaluator*)

- *Short Exercise ------ 4 min*
  - *Think individually ---------- ~2 min*
  - *Report in local group ------ ~2 min*
- *Watch time and reconvene after 4 min*
- *Use THINK time to think – no discussion*
- *Selected local facilitators will be asked to report to virtual group- check Chat Box*

Activity

Developing an Evaluation Plan

List facets that should be considered when developing an evaluation plan (*Identify evaluator*)

- *Short Exercise ------ 4 min*
  - *Think individually ---------- ~2 min*
  - *Report in local group ------ ~2 min*
- *Watch time and reconvene after 4 min*
- *Use THINK time to think – no discussion*
- *Selected local facilitators report to virtual group*

ONE Minute

PD's Response

Evaluation Plans

- Evaluation expertise
- Evaluation questions
  - Derived from the expected outcomes
- Evaluation methods
  - Tools and protocols
  - Data analysis and interpretation
- Confounding factors
  - Approaches for minimizing their impact

PD's Response

Evaluation Plan (cont.)

- Formative evaluation
  - Monitoring and improving the project as it evolves
- Summative evaluation
  - Characterizing the accomplishments of the completed project

Evaluation of both intellectual aspects and broader impacts

Overview

Evaluation Plan

- Ultimately, the evaluation plan should convince the reader that the applicant will :
  - Collect, analyze, and interpret appropriate data
  - Complete an informative evaluation
    - For monitoring (formative)
    - For validating (summative)
  - Evaluate both the intellectual aspects and the broader impacts

Dissemination Plan

Activity

Dissemination Plan

- List facets that should be considered in developing a dissemination plan
- *Short Exercise ------ 4 min*
  - *Think individually ---------- ~2 min*
  - *Report in local group ------ ~2 min*
- *Watch time and reconvene after 4 min*
- *Use THINK time to think – no discussion*
- *Selected local facilitators will be asked to report to virtual group- check Chat Box*

Activity

Dissemination Plan

List facets that should be considered in developing a dissemination plan

- *Short Exercise ------ 4 min*
  - *Think individually --------- ~2 min*
  - *Report in local group ------ ~2 min*
- *Watch time and reconvene after 4 min*
- *Use THINK time to think – no discussion*
- *Selected local facilitators report to virtual group*

ONE Minute

PD's Response

Dissemination Strategy

- Standard approaches
  - Post material on website
  - Present papers at conferences
  - Publish journal articles
- Consider other approaches
  - NSDL
  - Specialty websites and list servers (e. g., Connexions)
  - Targeting and involving a specific sub-population
  - Workshops and webinars
  - Commercialization of products
  - Beta test sites

Overview

Dissemination Plan

- Ultimately the dissemination plan should convince the reader that the applicant has plans to:
  - Develop a transferable “product”
  - Inform others
  - Encourage and facilitate use by others

Summary

Proposal Development

- Competitive proposals present a clear, convincing and complete description of a project designed to explore a great idea

- Converting a great idea into a competitive proposal requires a systematic exploration of all aspects of the project in an iterative fashion

Questions

"Hold-up your virtual hand" and you will be called upon after we unmute your mike.

Review Process -- Practical Aspects

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' strengths and weaknesses at a panel meeting
  - Share expertise and experience

Activity

Practical Aspects of Review Process

Write a list of suggestions (guidelines) that a colleague should follow to deal with these practical aspects

- *Long Exercise ---- 6 min*
  - *Think individually -------- ~2 min*
  - *Share with a partner ----- ~2 min*
  - *Report in local group ---- ~2 min*
- *Watch time and reconvene after 6 min*
- *Use THINK time to think – no discussion*
- *Selected local facilitators will be asked to report to virtual group- see Chat Box*

Activity

Practical Aspects of Review Process

Write a list of suggestions (guidelines) that a colleague should follow to deal with these practical aspects

- *Long Exercise ---- 6 min*
  - *Think individually --------- ~2 min*
  - *Share with a partner ----- ~2 min*
  - *Report in local group ---- ~2 min*
- *Watch time and reconvene after 6 min*
- *Use THINK time to think – no discussion*
- *Selected local facilitators report to virtual group*

ONE Minute

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, headings, short paragraphs & bullets (Avoid dense, compact text)
- Reinforce your ideas
  - Summarize; highlight (bolding, italics)
- Give examples

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"

PD's Response

Review Process

- 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
    - "Support letters" are not allowed
    - 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

Activity

Final Reflection

- What is the most important advice that you would give to a colleague writing a TUES proposal?

- *Activity Guidelines:*
  - *Allotted time is 1 min*
  - *Write your ideas on your "Reflections" sheet*
  - *No discussion*

Activity

Final Reflection

Review your reflective statements

- How have they changed?
- What have you learned?

- *Short Exercise ------ 4 min*
  - *Think individually ---------- ~2 min*
  - *Report in local group ------ ~2 min*
- *Watch time and reconvene after 4 min*
- *Use THINK time to think – no discussion*
- *Selected local facilitators will be asked to report to virtual group- check Chat Box*

Activity

Final Reflection

Review your reflective statements

- How have they changed?
- What have you learned?

- *Short Exercise ------ 4 min*
  - *Think individually --------- ~2 min*
  - *Report in local group ------ ~2 min*
- *Watch time and reconvene after 4 min*
- *Use THINK time to think – no discussion*
- *Selected local facilitators report to virtual group*

ONE Minute

Questions

"Hold-up your virtual hand" and you will be called upon after we unmute your mike.

Thanks for your participation!

- To download a copy of the presentation- go to:
  http://www.step.eng.lsu.edu/nsf/participants/
- Please complete the assessment survey-go to:
  http://www.step.eng.lsu.edu/nsf/participants/