

Helpful Hints and Fatal Flaws:

Writing More Effective NSF Proposals

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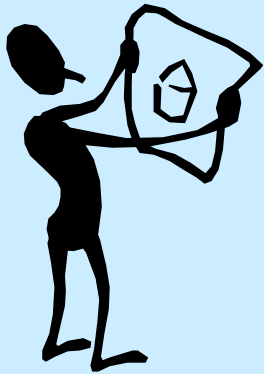
St. Louis Community College at Florissant Valley



Reflective Exercise

Identify the single most important piece of advice you would give to a colleague writing a proposal

- This will be a continuing exercise**
- Write your answer**
- Leave space for more answers**



Helpful Hint Number 1: Read the Program Announcement

- **NSF has no hidden agendas. It's all there in the program announcement.**
- **Talk with a program officer to make sure that your ideas fit in the program. If the program officer tells you that your ideas are too narrow or don't fit a program, look for other sources.**
- **Make sure that your project is worthwhile, realistic, well-planned, and innovative.**



*Helpful Hint Number 2:
Work on Projects
You Care Deeply About*

- **Let that commitment come through in the proposal.**
- **Make sure reviewers can understand the importance of this work to your institution and to others.**
- **Caveat: But don't become such a one "song" person that you can't listen to others.**

Helpful Hint Number 3: *Build on What Others Have Done*



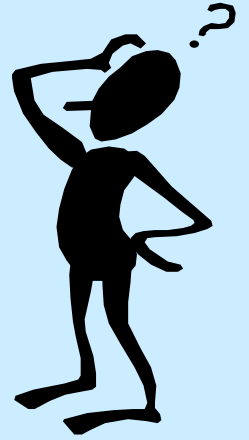
- **Like any research project, you must build on what others have done before you and then add to the base of knowledge. Don't reinvent the wheel.**
- **Read the literature, go to workshops, talk with others.**
- **Be current.**
- **Discuss the value added of your project. What are you adding to the knowledge base?**



Helpful Hint Number 4: Think Global, Act Local and Global

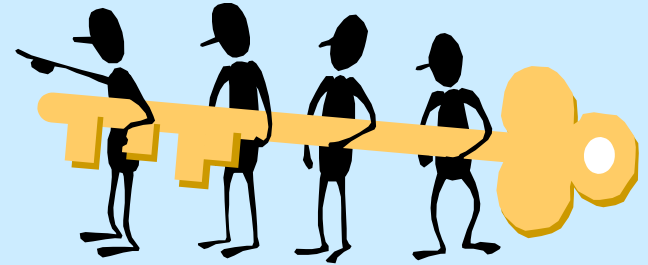
- **Your project must have more than just a local impact. It must impact more than just your students and your institution. How can others use and build on your work?**
- **But, we really do want you to be a “prophet in your own land”. If the project is not good enough for you and your institution to use, why should others?**

Helpful Hint Number 5: *Have Measurable Goals and Objectives*

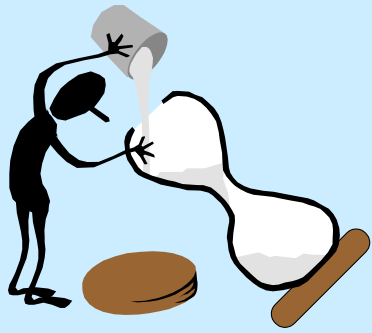


- **Enhancing student learning, improving undergraduate education, and other similar things are lofty, but not measurable. Make sure that you have measurable goals and objectives. What will be delivered? What is needed to convince others that this works and is worth supporting or emulating?**
- **Tie your goals and objectives to your activities to your evaluation.h**

Helpful Hint Number 6: Think Teamwork



- **Successful projects are team efforts, although individuals matter too. Your project team should be greater than the sum of the parts.**
- **You work in a department. Department efforts are more likely to be successful than 1 person efforts.**
- **You must have support of administrators. Keep them involved, make them look good, give them credit, find out what they need to support you.**
- **Get a good group of internal and external advisors and an outside evaluator (or evaluation team).**



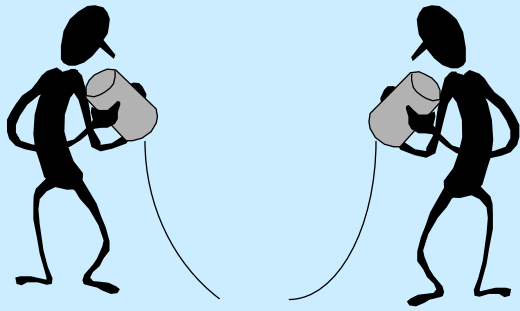
Helpful Hint Number 7: Build in Good Management

- **Have a realistic time line and implementation schedule.**
- **Have milestones and specific deliverables (with dates)**
- **Use carrots when you can (but be prepared to use the baton when you must). Don't reward until people deliver.**
- **Assign responsibilities, but also give folks needed authority to do them, and then hold them accountable .**



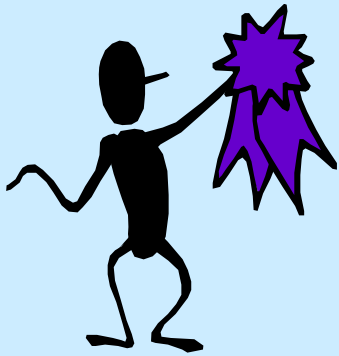
Helpful Hint Number 8: Evaluation is Impact and Effectiveness

- **You do need numbers. How many students are impacted? How many faculty? How many students succeed in the next course?**
- **But that is not enough. You need evidence that your project is having an impact and that it is effective. How do you know the project is working and that it is worthwhile?**
- **Ask who needs to be convinced and what evidence will they accept.**
- **You cannot evaluate yourself. You have to have outside validation.**
- **Build in evaluation from the beginning.**



Helpful Hint Number 9: Spread the Word

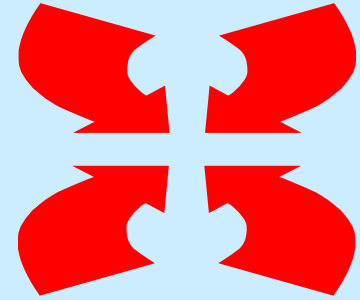
- **Work with other faculty and support them as they try to implement your materials. Doing new things is not easy.**
- **Try to get a team of folks who have used your materials to help spread the word.**
- **Work with not only with your discipline, but reach out to other disciplines.**
- **Have a proactive dissemination plan. A website is necessary, but not sufficient.**



Helpful Hint Number 10: Pay Back Time

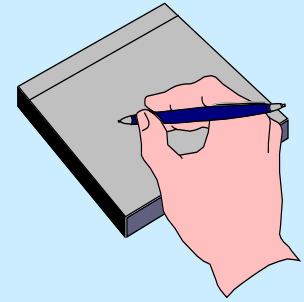
- **Keep NSF or your funder informed. They have to report too. It's all a cycle.**
 - Send in reports on time. Use the required format.
 - Send in “nuggets”, information about awards, student impact, pictures, etc.
- **Give credit to NSF or other funders, your administrators, your team members, your department, etc. Giving credit to others makes you look better and get you better support later.**
- **Offer to be a reviewer and to help others.**

WHAT MAKES A GOOD PROJECT?



- ◆ **INNOVATIVE**
- ◆ **REALISTIC**
- ◆ **WORTHWHILE**
- ◆ **WELL-PLANNED**

The Proposal: Criteria for Evaluation



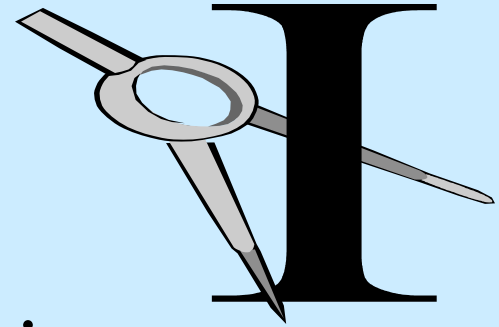
- **Peer Reviewed**
- **Criteria for Evaluation**
 - **What is the intellectual merit of the proposed activity?**
 - **What are the broader impacts of the proposed activity?**

Intellectual Merit



- **Addresses a major challenge**
- **Supported by capable faculty and others**
- **Improved student learning**
- **Rationale and vision clearly articulated**
- **Informed by other projects**
- **Effective evaluation and dissemination**
- **Adequate facilities, resources, and commitment**
- **Institutional and departmental commitment**

Broader Impacts



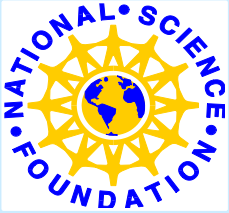
- **Integrated into the institution's academic programs**
- **Contributes to knowledge base and useful to other institutions**
- **Widely used products which can be disseminated through commercial and other channels**
- **Improved content and pedagogy for faculty and teachers**
- **Increased participation by women, underrepresented minorities, and persons with disabilities**
- **Ensures high quality STEM education for people pursuing careers in STEM fields or as teachers or technicians**
- **See NSF website for additional thoughts.**

Beyond a Good Idea

- **A proposal must describe a good idea**
- **It must be explained and developed**
- **This session will assume a good idea**
- **Focus on areas for enhancing a proposal that contains a good idea**
- **Specific example will be for STEP proposals**

Scenario – Developing a Proposal Idea

- **Prof. Imapi has taught mathematics for several semesters**
- **Prof. Imapi has an idea for “greatly increasing” majors in STEM field by improving the mathematics success of students by adding or adapting *new stuff***
 - *new stuff* = laboratories, web experiences, interactive sets of material, workbooks, new text, ...
- **Prof. Imapi has tried some preliminary material**
- **Based on this, Prof. Imapi decides to prepare an NSF proposal**



Prof. Imapi's Proposal Outline

1. **Develop or adapt *new materials or methods* to increase student success in mathematics and enhance student learning at *Grant College***
2. **Observed shortcomings in the current experience of the students & felt that *new materials or methods* would improve situation**
3. **Provide “details of *new stuff*”**
4. **Conduct evaluations when using *new stuff***
5. **Describe *new stuff* using conference papers, journal articles, and web site**

What Can Be Improved?

- **TASK:**

- Prepare a list of ideas for improving what has been written.
- What advice would you give Prof Imapi?

- **PROCESS:**

- Individually prepare a list (Think)
- Share ideas with neighbor (Share)
- Report neighbor's best idea (Report)

Improving Goals, Objectives, & Rationale

- **Relate goals to student objectives**
- **Write measurable goals**
 - Use specific, goal-oriented verbs like develop, create, evaluate, etc.
 - “Enhance” and “acquaint” are vague
- **Be more specific**
 - Use clear and focused goals
 - Eliminate the “apple pie” goals
- **Bullet key items**
- **Objectives are primarily focused on a local problem**
Focus beyond just effects on students at Grant College

Going Beyond a Local Problem

- **Broaden focus – expand from a local focus**
 - Discuss shortcomings & problems described by others
 - Discuss general need for the new material
 - Discuss the need at other schools
- **Emphasize what's new**
- **Build on previous work**
 - STEM education journals & conferences
 - Education sessions at discipline meetings
 - General education literature
 - Lay scientific press (e.g. - *NY Times* science section)
- **Industry or advisory board input**

How to Learn About What Others Have Accomplished

- **NSF website**
 - DUE award database
 - PIRS
 - NSDL
- **Education oriented web sites (e.g., professional societies)**
- **Colleagues at other schools**
- **Course web sites at other schools**
- **Panel reports**
 - “What’s Wrong with Education in _____”

Ready to Go!

If you start with a good idea:

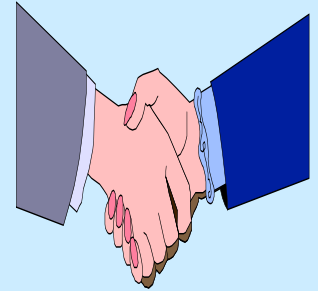
- Broaden the objective**
- Relate the ideas to the literature**
- Evaluate it**
- Disseminate it**

The good idea will improve!!

- Now identify the most important pieces of advice you would give to a colleague writing a proposal**

WAYS TO PARTICIPATE

- **Grant Holder**
 - **Principal Investigator**
 - **Member of Project Team**
 - **Member of a coalition**
 - **Member of an Advisory Board**
 - **Test Site**
- **User of Products**
- **Participant in Workshops and Symposium**
- **Reviewer of Proposals!!!**



But Most Important!

Have fun!

