

suitable than traditional materials. There is much interest in a new source of entangled photons to replace the crystals currently used, as a robust, high-output source is needed to take the quantum technologies from the laboratory into everyday use.

Fundamental studies of quantum mechanics will also be explored on the entangled photon pairs generated by the processes, comparing their properties with those generated by down-conversion crystals. The PI has extensive experience in such studies. Initial phases of the study with traditional crystals are currently underway in the PI's laboratory.

The project will also aid in the development and creation of courses in nonlinear and quantum optics. These courses will incorporate the experimental aspects of the study to make the concepts more accessible to undergraduate students as they prepare for advanced study.

The PI's previous research experience and current projects, which have him in possession of much of the equipment and materials needed for the studies, make him uniquely capable of pursuing the very important research proposed.

SAMPLE Abstract #2

Project CSI—Collaborative Science Investigations is a collaborative professional development program for 6–12th grade science teachers from Ohio and New York. Dr. () from Wright State University will recruit 12 teachers from the Cincinnati and Springfield school districts, and Dr. () from Adelphi University will recruit 12 teachers from western Nassau County (New York City area) to collaborate on CSI. Project CSI will consist of three phases: Phase I—an intensive summer field and laboratory experience, Phase II—a four week internet based interactive follow up component in the fall semester, and Phase III—four bi-monthly web conferences between participants and project personnel during the balance of the academic year. Project CSI will increase student achievement by increasing teachers' knowledge of science content based upon the National Science Education Standards, and supporting teachers in collaborative long-term efforts to infuse inquiry science and authentic assessment into their classrooms. The field experience will bring participants to the New Jersey Marine Lab, which is an area of modern ocean and fossil collection sites. Teachers will acquire specimens in great numbers and varieties in different time periods as well as different chemical environments, and develop their own Chemistry and Earth Science inquiry-based activities to be used by their students. Additionally, water quality tests will be processed in order to make connections between the geology samples and the chemical ions found in the water. Annual conferences will be held for three years at Adelphi University and Wright State University presenting the accomplishments of Project CSI participants to the broader audience of secondary teachers in order to disseminate and replicate our model among the other school districts in both states. This project will serve over 15,000 teachers in Ohio and New York areas.

Statement of Need

The statement of the problem or need is the reason behind your proposal. This section should be a well-documented description of the problem, why it needs to be addressed, why it is significant, and who will benefit. This is usually where you review the literature, describe other attempts to address the problem, use data to back your claims, and provide a “transition” to your proposed solutions to address the problem. There should be a logical flow from the problem/need to your research or project. The following questions are guides for writing the problem section:

- Is the magnitude and significance of the problem established?
- Is a thorough understanding of the problem/need demonstrated?
- Is there a logical transition from the need to the proposed solution?
- Has other research in the area been acknowledged?

SAMPLE Statement of Need

The present nursing shortage has been labeled as the worst shortage since the 1980's, and it is predicted to continue and worsen. The nursing shortage in New York is reflective of that in the United States as a whole. A report from the American Hospital Association in April 2006 indicated that U.S. hospitals need approximately 118,000 Registered Nurses (RNs) to fill vacant positions nationwide. This would translate to a national RN vacancy rate of 8.5% (<http://aacn.nche> 2006). Furthermore, 49% of hospital CEOs reported that they had more difficulty recruiting RNs in 2005 than in 2004, and 85% of the CEOs reported that this shortage is one of the top issues faced by hospitals today (<http://aacn.nche>, 2006).

As the population ages, there is a need to prepare professional nurses with increased education and skills to work within complex systems of care and with patients who require greater nursing skills. In addition, because of the advancement in healthcare technology, and the explosion of knowledge about disease states, clinical interventions and especially psychopharmaco-therapeutics, nursing care of all clients has become more complex and requires greater skills and critical thinking capabilities. Aikens (2006) highlighted this in her ground breaking research which demonstrated better selected outcomes for a group of patients when care was provided by registered professional nurses with a baccalaureate degree compared to care provided by RNs without a baccalaureate degree.

The diversity of the population for whom nurses care is constantly changing. Nurses need to understand the ethnic, cultural and racial diversity of their clients. More importantly members of the profession of nursing need to better reflect the diversity of the population for which they care. Therefore, the need to recruit students into nursing with diverse backgrounds, as well as those for whom English is a second language is of great importance.

Project Design

The project design is a comprehensive discussion of how you will address the problem. It is the heart of your proposal, and is sometimes referred to as the research plan, the project description, the approach, or the proposal narrative, depending on the funding agency. The design section contains subsections for objectives, work-plan, timeline, activities, and methods. All funders are especially interested in how well you have defined measurable objectives and their expected outcomes. Reviewers usually report that proposers confuse goals and objectives. Objectives should be specific and usually seek to increase or decrease some phenomenon, such as "Increase the number of certified special education teachers in District 1 by 25%," "Increase the number of female undergraduates majoring in computer science;" "Increase the rate of mammography screenings for women of color." If possible and applicable to your proposal, your objectives should indicate the timeframe and the amount of increase/decrease involved. Some guiding questions for writing objectives are:

- Do your objectives indicate precisely what will change because of your project?
- Do they indicate the time frame involved?
- Do they logically follow one another?
- Do they indicate what you would accept as proof of project success?
- Are they measurable?

The project design or description also contains the workplan—the methods and activities—you will use to achieve your objectives. Many federal agencies ask for a person-loading chart or timeline and responsibilities in this section or in the management plan. You should describe your activities in narrative form, and then in an abbreviated chart or table that lists the responsible project staff and dates for implementation/completion of the activities. Writing in this chart/table form will help you to think through what you need to do to get your project started and keep it running smoothly.

SAMPLE Project Design

Hypotheses/Questions

Because the scope of the proposed research focuses on validation of previous studies on professional