

**Date:** July 19, 2002

**To:** James J. Madden, C)-Director of NSF Grant Math for Future Secondary Teachers Project

**From:** (Name withheld), Advisory Panel member

**RE:** Response to document and recommendations for future

Jim,

I have reviewed the document you sent describing the LSU Team's project and also reviewed the original proposal. You will find comments below in three areas 1) response to your project document, 2) recommendations and suggestions for the other teams, and 3) comments regarding next stages of the project.

Also, a response to your questions regarding Jane, I would suggest Steve Benson since he is familiar with the project, your time frame, and in light of his future plan. Should you decide to ask Jane I am sure she could give you beneficial feedback. If you bring in someone else you would need to review the entire project with him or her.

### **1. Response to LSU Team Project**

- The format is good and easy to follow with the introduction, math discussion, pedagogical discussion, and presentation of actual lessons. I would add a final section to summarize and tie it all together. This section could briefly revisit the basic lesson, learnings, suggestions, questions raised, suggestions for future implementation, etc.
- Part II. Pedagogical Discussion provides a good background connecting to NCTM Content Standards and curriculum placement. I would ,however, argue that because the NCTM Standards document is a framework it does not provide details that are needed at the school level. This is true for all the content standards, not just measurement. But it does address the area of your project. Combining the following measurement expectations fro 9-12
  - analyze precision, accuracy, and approximate error in measurement situations;
  - apply informal concepts of successive approximation, upper and lower bounds, and limit in measurement situations;

with the number and operations standard

- judge the effects of such operations as multiplication, division, and computing powers and roots on the magnitudes of quantities;
- judge the reasonableness of numerical computations and their results.

I think that your topic fits well within the 9-12 curriculum particularly the extent you go to in the college level class, which is further than most high school classes would actually go. Preservice teachers need that strong background in order to approach lessons such as the one Ed Lamy proposes. It may be that the reason it does not appear in-depth in the NSF-sponsored projects is that the connection between the two content standards is not being made. Okay—I digress from the report!

- I would include a more on in the pedagogical section related to the “how to” teach the measurement topic and a discussion of how the NCTM Process Standards figure into this topic. I believe that is critical. Also the proposal states that you will connect to state standards (LA Framework). Perhaps you should include this.
- A few times you comment on the issues of “capturing” what was said or done and relying on memory. For future lessons & project I would consider an observer who is recording, videotaping, or audiotaping. This would help in the analysis.
- Ed presents his lesson in a planning format, which is helpful. Consider doing this for the college lessons also. This will be useful when sharing in a public format. Decide on what should be included to eventually have some consistency across reports.
- You give a good description and discussion of the lesson implementations and sample student work. One thing to add is to add a discussion of the processes going on as well as the content you so richly describe. In particular there are processes related to communication of math ideas, problem-solving approaches, etc. This would be good to connect to the NCTM Process Standards. I would definitely include this with the lesson discussions. In fact the processes have a direct impact on what is happening in the math development.
- At the end of the Lesson section you give three closing points for the first lesson and Ed’s lesson just ends. This seems rather limited given the depth of all of the work. Perhaps revisit the purpose of the project and the lesson and write a summary related to that or conclusions.
- In B. part of lesson ( perimeter & area). Related to your comment” As a mathematical observer, I saw some modest conceptual content .....” You do not give any supporting evidence. This would be helpful. In addition since the team worked on this lesson—offering modifications for the reader would be beneficial. This was done in Ed’s case. It was interesting when reading the implementation (which I read prior to the revised outline)—I made notes of modifications and then when I read the revised lesson he had noted most of them!
- There were a few grammatical errors and issues to address. Some include the “back and forth” between “I” and “We”. This is only an issue if these are put out for public view in some form. Just something to think about. The other spelling/grammar things—I can give you those if you are interested. It would be easier to do if you sent it in MS Office Word format and then I could just e-mail it back to you.
- You may want to document the “workbook for introductory college chemistry” you refer to on page 8 under D. Significant Digits for future reference.

## **2. Recommendations/suggestions for other team project reports**

- Use a 5 part format: Introduction, Mathematical Discussion, Pedagogical discussion, Lesson Reports & student work, and Summary
- Use a Lesson Plan type format that others could follow since the purpose is to eventually distribute this information (print & web). Will give consistency.

- In Pedagogical Section: address NCTM Content **and** Process Standards (and LA Framework also), issues from research on both general pedagogy and math specific content pedagogy. The “how to teach” the topic is important
- In Lesson Presentation section: Be sure to address both math content and processes such as communication, problem-solving, reasoning and proof, etc (see NCTM Standards for more detail).
- Include a closing summary section at the end of the Lesson presentation.
- Include suggested modifications based on your experience

### **3. Comments for future of project**

- Begin thinking of a specific lesson plan type format (allowing for diversity)
- Include way of capturing lesson implementation and the team’s discussions—such as outside observer/recorder, video or audiotaping.
- Consider select student interviews related to their work. You noted several times that you did not always know what the student was thinking even from their writing. Interviews would give you further insight.
- May consider focusing on a small unit as opposed to an isolated lesson. This would give more strength to later use by others OR choosing one math area for all to work on and focus the project more to develop curriculum
- Have a plan in place of how to get out on web or others means of dissemination. This is time consuming—budget for it.
- Consider way of bringing teams together at least once during year—even if it is a rep from the team.
- Keep the team of university math & math ed, preservice, and classroom teacher. This is powerful!

If you are in need of additional information just let me know. Again if you want the grammar type things, send me the file as a word document---that would be helpful.