Analyzing Collected Data

Action Research
Spring 2010

Methods Notebook

- You will be receiving a small spiral notebook to use as a Methods Notebook. What you record in this notebook will eventually end up in the Methods section of your final paper. It will also greatly aid in your data analysis.
- This notebook will have a few purposes. First, use this notebook to record what data you collected on which days. Also, use this notebook to record things that may have interrupted your data collection (4 of the 5 students who were supposed to be interviewed in a focus group were absent on the scheduled day of the interview; there was a fire drill). Also use this notebook to keep track of any tensions you may feel between your role as teacher and your role as researcher. In cases where the two roles seem to be in conflict, you have to come down on the side of teaching first. Use your weekly journal to describe these tensions in detail, and to reflect on them.

Research Buddy

You will select one-two “research buddies” for the semester. There can be a real epidemic of missing the forest for the trees when teachers conduct research in their own classrooms—it is extremely difficult to step back and see the big picture. So, you will keep in touch (at least weekly) with your buddies to keep each other on top of data collection, and to run ideas past each other. Possibilities for keeping in touch with your buddies: in person, via phone, via email. In the week before each analytic memo is due, take time to run your hypotheses and assertions past your buddy; show them (or tell them about) the data you’ve collected to support each assertion and hypothesis. Your buddy will help you decide if what you’re doing makes sense, and help you see patterns that are emerging in your data.

Your buddy will read your final paper before you turn it in. As an option, you can ask your buddy to read your Analytic Memos before you turn them in as well. For your final paper, you will email it to your buddy, along with your Author’s Notes (see handout). Buddies are responsible for giving specific feedback to the authors to help them improve their writing. You will get a specific checklist for final papers that you will use as a buddy to give your peers feedback. You will need to coordinate with your buddy to send each other drafts of your final paper (and possibly memos) prior to the due dates, in order to allow enough time for buddies to read the papers and send feedback, and for you then to revise your papers to reflect the feedback. It is expected that you will exchange more than one round of feedback/revisions of your final paper.

As an author, you will include a section of “Author’s Notes” at the end of your paper. See the handout Author’s Notes for more information about this. After the Author’s Notes, you will also include the Buddy feedback you received. You may also wish to add a paragraph explaining how you incorporated the feedback you received. If you choose to not incorporate some of the feedback, please explain why not.
Wendy will also be available (via phone, email, Blackboard, and sometimes in person) to also help you analyze your data.

**Analyzing Various Types of Data**

*Cautionary note: You are conducting your action research project over approximately 12 weeks. In terms of making major change in teaching and learning, this is a very short time. The major aim of this project is not to show improvement in student learning with your data. We want you to tell us what’s going on with your students (the good, the bad, and the ugly) as a result of what you are trying to do in your classroom. What are you learning from trying these new things in your teaching? There is value in a project like this beyond getting instant results. It is likely that meaningful student gains in achievement would show up next year, or after a full year of attempting changes in your teaching. The goal here and now is to do a project that informs your teaching.*

**Student Interviews**
- While you conduct the interviews, be sure to ask the same questions in the same order (this will help you later). If someone starts answering a question you will ask later, do still ask that question later and ask them to repeat their answer, so that you will be able to more easily find answers to specific questions.
- After all of the interviews are complete, without listening to the tapes, you will use your Methods Notebook to write some notes (or type them on a computer). Write down your impressions of the overall interview experience for each student.
  - Go through your interview questions one at a time and compare and contrast across students the types of answers given. What were typical answers to each question? Did it seem as if all of the students answered in similar fashion to certain questions? Did any answers stand out to you? What similarities and differences did you see among student answers?
  - Also compare and contrast what a student tells you during an interview with what you know about the student: did the answers make sense based on the student’s work habits? Homework? Classwork? Test scores? Class participation? Behavior?
  - What did you learn in the interviews that you didn’t know before?
- Now, go back and listen to the tapes. Ideally, you have all the tapes together, and then listen to question 1 for all students, making additional notes. Then, listen to all of the responses to question 2 for all students, etc. While you listen to the tapes, go back and fill in details in the notes you already have written; you may want to write down phrases to quote some answers. Listen especially for similarities across students (did any students use the exact same or very similar phrases?).
- You can turn some interview data into quantitative data by counting up instances of ____. This depends on the types of questions you asked.

**Adult Interviews**

Use the same principles as with the student interviews, but you won’t be comparing what an adult says in an interview to his/her homework completion in your class. You will be comparing what these individuals tell you in the interviews to what you know about them in general. Again, you want to ask your questions in the same order, and compare answers to each question. Which
questions generated similar answers from all adults? You do want to write up notes after the interviews before listening to the tapes. Then, listen to the tapes and fill in details in your notes.

**Teacher Journals**

**NOTE: You will be turning in your teacher journal** (either handwritten or printouts of what you typed) with your final action research paper. It is expected that you will have a minimum of 10 weekly entries in your teacher journal to use as data for your action research paper. Your teacher journal has two parts to it: one part about your teaching and one part addressing the rest of your research questions.

For the part about your teaching, you need to use this gather data based on your reflections to eventually create a picture of your teaching. If we had been there to observe your class daily during your action research project, what would we have seen? What did the “average” day look like? What usually happened first? What usually happened next? How long did you typically spend on each part of the lesson? How did each lesson typically end? What were some high points? What were some low points? In what ways did lessons vary from this “average” lesson? Change is challenging and involves uncertainty—we want to see these difficulties, fears, and uncertainty reflected in your description of your teaching (along with the highlights, of course). You will need to quote your own journal to provide the evidence to support the description you write in your memos and final paper.

For the parts of your teacher journal focused on the rest of your research questions (about students), what themes do you see in your journal? Refer to the other data analysis handout about making data lumpy. Try to “lump” your answers in your teacher journal in some fashion. What types of things surprised you? What types of tensions did you feel? What types of changes did you see in your students? What types of things went well?

**Student Work**

Collect work from the whole class, but for each assignment or problem you plan to analyze, choose 3-6 students’ work (1-2 high, 1-2 middle, and 1-2 low) to look at more closely. You will want to analyze details of the papers you choose; you will probably want to use a rubric to help analyze the student work. You can use the whole class worth of papers to count up instances of ______. (How many low/middle/high? How many used a correct strategy for a certain problem? How many found multiple solutions to a problem? How many turned in the assignment?). Please note that in your final paper, you are expected to include samples of various student work as data to support your assertions and hypotheses. Depending on your level of technological expertise (and on your access to technology), you may scan student work and include sections within the body of your paper, take pictures of student work with a digital camera and include these pictures within the body of your paper, or just photocopy student work and attach as an appendix. Since you will be emailing drafts of your paper to your buddies and instructors, having the student work in a digital form is preferred, but not required.

**Student Journals**

If you are having students keep math journals, read this section. It will help your data collection if all students write answers to the same questions each week. You may want to create a journal template for them to use. Think about what you want students to write about based on your
research questions. Talk to Ruth, Wendy, or David if you need help with coming up with student journaling questions. You may have 3-5 questions, and choose 2 each week to ask students to write about. Or, you may decide you want 10 different questions, and ask a different one each week.

**Surveys & Tests**

For surveys you give, you will want to tabulate answers. For the Likert-type surveys (strongly agree, agree, etc.), assign a number value to each answer (1-5 or 1-7 or whatever). Then, you can calculate the mean and standard deviation for each question. In your paper, you may include a table that summarizes the results of your survey(s) by giving the number of students surveyed \( n \) and then the mean and standard deviation for each question [your calculator can do this; talk to Wendy if you need help]. You do need to include at least a representative sample of your survey questions in your final paper.

For tests & quizzes or objectives, you can record student percentages. You will want to calculate means, medians, and standard deviations. Especially if you are doing pre- and post-tests, these types of basic statistics are what you will report. For tests and quizzes, you also need to include a representative sample of items from these assessments, so the reader of your paper knows more about what the scores represent that you are reporting. For instance, telling us that 25 students scored an average of 80%, with a standard deviation of 6% on a test doesn’t tell us if that is good or bad, unless we know something about the test questions/content/etc. You do not need to include every test and quiz question (although you may decide to do this as a series of appendices), but you do need to include enough for the reader to understand what kinds of assessments these were.