

ALS 882 Research Instrument Design
Robert Millward
Spring 2014

3 credits

COURSE DESCRIPTION:

This course should provide students with basic knowledge and skills in designing research instruments for qualitative and quantitative research. Both descriptive and inferential data will be presented. Emphasis will be placed on how to analyze descriptive and inferential data.

Students will develop a research methodology as they complete a draft of Chapter 3

COURSE OBJECTIVES:

Students completing this course will be able to: Write research procedures for Chapter 3 of your dissertation

1. Grasp the logic of parametric and nonparametric statistics
2. Select appropriate analysis techniques to answer given research questions
3. Analyze data presented in tables
4. Interpret data presented in tables
5. Learn how to design surveys, attitude scales, and interviews that are reliable and valid

TEXT:

Creswell, J. W. (2008). *Educational Research: Planning, Conducting, and Evaluating Quantitative and Qualitative Research*. Pearson Education (My references to page numbers are based on the Fourth Edition. The same or similar information can be found in older editions, however, the page numbers and chapters sometimes differ)

(Check on a used book at ABEbooks.com or your college library. ABEbooks.com starts at \$1.00)

Course Requirements:

1. Course Requirements: Develop your research methodology for Chapter 3 of your dissertation.

Chapter III should include:

1 Introduction: Your introduction is a short overview of your research and is usually one or two paragraphs in length. (Less than 300 words)

2. **Statement of the Problem:** Present a clear statement of the problem in one or two sentences. Your statement of the problem should clearly describe your dependent and independent variables?

3. **Research Questions:** Present your research questions. Avoid the null hypothesis. Do the research questions directly relate to your proposed research instrument?

(Submit your Introduction, Statement of the Problem and Research Questions during our first seminar on Friday, January 24th)

4. **Population:** Describe the rationale for identifying and selecting your “sample” population. Describe your population. Simple random selection? Stratified Random Selection? Etc. Your total sample, rationale for your selection procedure.

If you are going to interview 6 high school math instructors regarding X. Present a rationale of why 6 math teachers is sufficient. Females and Males? Years of Experience? AP instructors? Etc.

Quantitative Research: Surveys usually have populations in excess of 600 individuals

Qualitative Research: 4-20 individuals

Submit a narrative describing your potential sample population on **February 14th** along with a description of your research setting and a rationale for selecting your sample population.

If you are doing a qualitative study and you plan to interview 3 people, you will need to develop a rationale that would justify interviewing just 3 individuals. Likewise if you plan to interview 20 individuals you need to develop a rationale for how you intend to select your sample.

During our seminar on **March 7th** complete your Research Topic Approval Form. (Go to the School of Graduate Studies and Research web page to obtain a copy of the RTAF form.) You need not complete the section that identifies your dissertation committee because you need not form your committee until the late fall of 2014.

Go to the Graduate School web page and obtain a copy of the Human Subjects Review Protocol. Complete the following: Principal Investigator section. Project Information. Project Description section including: Purpose, Background, Characteristics of the subject population, Inclusion Criteria, Exclusion Criteria. Methods and procedures section. (You will complete the remaining sections when you submit your comprehensive exam in the Spring of 2015) Your IRB will be approved/discussed by your dissertation committee when you defend your comprehensive examination.

5. **Due on April 4th.** Describe your procedures for constructing your survey or your interview questions. Provide a rationale for the type of instrument that you are using. Did you

develop the instrument or will you use an existing instrument? Describe your piloting procedures. Describe how you intend to establish validity and reliability. Describe in detail the development of your research instrument and include actual instrument in Appendix A. If you are using a instrument that is valid and reliable, then you must show how this instrument “fits” your study as well as the procedures used to establish validity. You may find that you need to add additional questions/statements to an existing instrument. Plan to pilot and validate any additions after your Comprehensive Exam.

Pilot procedures (You must pilot your survey, attitude scale, interview questions, etc. even if you are using an already constructed valid and reliable instrument. Why? The pilot will reveal any gaps that need closed prior to conducting your actual study.(Actual **piloting will take place after you pass your comprehensive examination and prior to submitting a formal dissertation proposal**)

In both quantitative and qualitative research you need to describe how you constructed your survey or your interview questions/statements.

Do the statements/questions of your research instrument match your research questions? Present a matrix showing how your research questions match the statements or questions related to your research instrument.

Research Questions	Research Statements/Questions
1.	3, 4, 10
2.	1,7,12
3	2,3,4,11
4	4,12,14

6. Chapter 3 is due on or before **April 25th**. Submit the copy via email.

- Introduction
- Purpose of the Study
- Research Questions
- Research Setting
- Population
- Development of the instrument
- Piloting procedures
- Research Procedures
- Analysis of Data

The only section that I have not reviewed thus far has been research procedures and analysis of data:

Research Procedures: Describe how you will conduct your study and the precedent behind your procedures. (Don't describe the components of a qualitative or quantitative methodology, instead describe **your procedures** and relate your proposed research procedures to precedent research studies and/or dissertations.)

Perhaps you plan to include 5 public schools in the tri state region. When will the districts be contacted? How? When? How will they respond? etc.

Piloting procedures (After the Comprehensive you will conduct a pilot and then provide a detailed explanation of the pilot in your formal proposal. What did you learn from your pilot? (Included in your Formal Dissertation Proposal)

Actual Implementation of survey/interviews

How will you analyze your data?

Qual: Content Analysis? Describe what you will do and what the data will probably look like. Triangulation? What will you triangulate? How? What will the data look like? How will you analyze interview data?

Quan: t-test, AOV, chi square, regression analysis, correlation. Will you need to conduct a follow-up analysis. Provide a sample of your tables. Describe in at least one paragraph how you will analyze your data. Then include a sample of what your tables will look like and how your data will be presented if you intend to do a quantitative study.

Describe the kind of demographic data you intend to collect such as gender, age, education, GPA, grade level, etc. This represents your independent variables.

Present sample tables if doing a quantitative study or a short narrative analysis if you intend to conduct a qualitative study

7. Test: Expect to take a 2-3-hour examination during the 5th seminar. The examination will cover research procedures and the analysis and interpretation of data.

The research project will be graded using the following rubric:

The student presents a clear problem statement as well as a set of research questions that are clearly related to the overall problem	The students presents a somewhat clear problem statement as well as research questions that seem to be related to the problem statement	.	The student does not present a clear problem statement. The research questions do not seem to relate to the problem statement
<p>Population: The student developed a clear rationale for how the population was to be selected. The sample seems to be representative and specific procedures were developed for selecting a representative population.</p> <hr/> <p>Research Setting: The student described the research setting in great detail. The reader has a clear picture of the research setting</p> <hr/> <p>Piloting Procedures: The student described in detail piloting procedures for the survey or interview format. Included in the procedures were:</p> <p>Rationale for the instrument Rationale for an expert panel Rationale for establishing validity and reliability Procedures for piloting the instrument</p> <hr/>			<p>No clear rationale was presented in regard to the sample population</p> <hr/> <p>The research setting is not clearly presented</p> <hr/> <p>Piloting procedures were not included.</p> <hr/> <p>A rationale for using a specific data gathering tool was not included. The validity and reliability of the instrument is not clear.</p> <hr/>

<p>The student developed a specific set of research procedures that clearly describes the step-by-step procedures for conducting the study..</p>			<p>Research procedures are not presented clearly.</p>
<p>The student provided specific information on how the data would be analyzed in Chapter 4. If this is a quantitative study, then the student describes what statistics will be used to analyze the data. It would be helpful to include a sample of what one or two tables might look like in Chapter 4.</p> <p>If the student is doing a qualitative study, then how will the narrative analysis be developed? If you intend to triangulate data, then describe in detail what will be triangulated. If you are analyzing narrative themes and doing a content analysis, then describe how you developed categories for your content analysis. If you intend to use a computer to analyze narrative data, then explain how you will interpret data.</p>			<p>Specific data related to analysis of the data is sketchy.</p>

Specific Readings will be added for each seminar.

TENTATIVE COURSE OUTLINE:

SESSION 1 January 24 Qualitative Research: Constructing and Piloting Instruments

- Chapter 5: Specifying a Purpose and Research Questions p.120-149
- Chapter 8: Collecting Qualitative Data 212-270
- Chapter 16 Narrative Research Designs 511-549

SESSION 2 QUANTITATIVE RESEARCH, February 14, 2014

Chapter 6: Collecting Quantitative Data, 150-181

Chapter 7: Analyzing and Interpreting Quantitative Data 182-211

Chapter 12: Survey Designs 375- 421

Speaker:

SESSION 3 March 7, 2014

Chapter 10: Reporting and Evaluating Research 271-296

T tests, Chi Square

IUP Research Lab:

SESSION 4 April 4, 2014

Continue with analysis of data: One-way, Two-way, Three-way Analysis of Variance

SESSION 5 April 25, 2014

Test: Late Afternoon 3:000-6:00 (3-hour limit)

CHAPTER THREE is due via email.

Bibliography

Bordens, K. S., & Abbott, B. B. (2001). *Research design and methods: A process approach* (5th Ed.). McGraw-Hill.

Creswell, J. W. (2003). *Research design: Qualitative, quantitative and mixed methods approaches*. Thousand Oaks, CA: Sage Publications.

Cronk, Brian. ((2006) *How to use SPSS 4th Edition*. Glendale, California: Pyczak Publishing.

Fowler, F. J. (2001). *Survey research methods* (3rd Ed.). Thousand Oaks, CA: Sage Publications.

Gay, L. R. & Airasian, P. (2000). *Educational research: Competencies for analysis and application* (6th ed.). Englewood Cliffs, NJ: Prentice-Hall.

Kerlinger, Fred, Howard Lee. 4th ed. (2007) *Foundations of behavioral Research*. New York: Harcourt College Publisher

Merriam, Sharan. (1988) *Case study research a qualitative approach*. San Francisco: Jossey-Bass Publisher.

Miller, D. C., & Salkind, N. J. (2002). *Handbook of research design and social measurement* (6th Ed.). Thousand Oaks, CA: Sage Publications.

Salkind, Neil J. (2007) *Statistics for people who think they hate statistics*. California: Sage Publications

* In addition to the reference books above, certain journals provide an excellent source of information for instrument design.

The Mental Measurements Yearbook
American Educational Research Journal
Educational Evaluation and Policy Analysis
Educational and Psychological Measurement
Evaluation and Program Planning
Evaluation Review
Journal of Educational Measurement
Research Navigator
Pro Quest