

Department of Educational and Counseling Psychology

EDRM-505

Research Methods and Statistics in Education & Psychology

Spring 2012

Tevni Grajales, D. Sc.
Bell Hall Room 159-B
Phone 269 417-3476
Skype: tgrajales
tevni@andrews.edu

Introduction

This class covers methods and procedures in research as applied to the fields of education and psychology. The course is developed with the assumption that graduate students are active learners with the basic learning skills to develop their knowledge and skills in research. The valuable information in research methodology offered by the textbook should become personal knowledge by critical and reflective reading and through research activities that offer the opportunity to apply the acquired knowledge (learning by doing). We will focus on concrete issues of conducting research: formulating and stating the research problem; planning, designing, and implementing research; collecting and analyzing data and reporting on research.

Course relationship to AU and the School of Education

The School of Education's Mission identifies six areas for the professional development of the graduate student: 1) well-crafted worldview, 2) applied understanding of human growth and change, 3) ability to work in groups, 4) effective communication and technology skills, 5) capacity for research and evaluation, and 6) to seek personal and professional growth. This course is aimed at helping students to value and conduct disciplined inquiry for decision-making, according to the fifth area of professional development that includes the ability to: read and evaluate research (V.A), conduct research (V.B) and report research findings (V.C).

Course assumptions

1. This Online course serves to advance academic goals for a special audience that wants flexibility of time and space.
2. This Online course takes advantage of technology recognizing that students differ in their access to technological tools and knowledge of technology.
3. The objectives for this Online course can be achieved best by applying some kind of independent study strategies and constructivist-heuristic approach to learning. The teacher is a facilitator, rather than a source for knowledge and skills; students focus on both the process and the end product through "learning by doing". So, this course is more than just fulfilling requirements; it signifies why and how those requirements were completed.

Objectives

The course has four major objectives. Upon completion of the course, the student should be able to:

1. Evaluate research reports (V.A; M17; ISLLC 7.4, 7.24)
2. Elaborate a Literature Review.(V.B; N23)
3. Identify different types of research approaches and designs (V.A; N20, N21)
4. Write a research proposal (V.B)

Students completing this course are expected to demonstrate knowledge, understanding and skills in regards to the objectives indicated in course schedule, which include:

1. How to search, select, and evaluate primary sources.
2. How to write a brief Literature Review.
3. How to develop a Statement of the Problem and Research Questions.
4. How to select a research design and samples.
5. How to define variables.
6. How to select instruments and data collection procedures.
7. How to use descriptive statistic for data analysis.
8. How to write a research proposal.

Text Required

McMillan, James H. and Sally Schumacher. (2010). *Research in education: evidence-based inquiry*. Seventh Edition. New York: Pearson Allyn and Bacon.

Riley-Tillman, T. Chris and Matthew K. Burns. (2009). *Evaluating educational interventions*. New York: Guilford Press.

Procedures and requirements

The student should/can communicate with the teacher via email: tevni@andrews.edu and is required to take the followings steps:

1. Buy textbook.
2. Be registered and have access to AUMoodle and to LiveText (for SED students: <https://college.livetext.com/>)
3. Answer the questions on your “reading evaluation” and submit it accordingly to the course’s schedule.
4. Complete assignments and any other activity from each unit and **submit them via Dropbox in full before to continue with the next Unit** (Module)

5. Readings and assignments must be complete **one week** prior to submitting the final project.
6. Maintain **continuous communication with the teacher throughout the semester via: discussion forum, e-mail and skype (by appointment)**. Feel free to ask any question on the course content or the assignments.
7. Every week discussion forum will be **focusing on the current chapter (content) for the week**. One direct contribution per topic is the minimum expected participation per student. Additionally to the topic, students can ask the teacher questions in regards to the content, the assignments or due activities in order to let other students to be benefit of the answers.
8. Assignments should be written clearly and concisely, reflect graduate level English use and be neatly typed and double-spaced following the APA Manual style and format.
9. Students from or considering enrolling in the Educational Psychology program must develop a SINGLE-SUBJECT DESIGN research proposal.
10. The final document (Research Proposal) and the program oriented evaluation documents must be uploaded to LiveText web page in order to be evaluated.

Course evaluation

The final evaluation will be based on the following course requirements and grading scheme:

1.	Reading evaluation	20%	Due dates at Moodle
2.	Assignments/exams	30%	Due dates at Moodle
3.	Forum participation	10%	Due dates at Moodle
4.	Program oriented evaluation*	10%	Due date at LiveText
5.	Research proposal (Due 4/24)	30%	*Evaluated according to the criteria presented in the Rubric(s) section. @Livetext please

*This is a written exams in regards to EDRM-505 issues related to SPA objectives accordingly to the student academic program.

We have two types of evaluation: **formative evaluation** (reading evaluation, quizzes and modules' assignment) that has the objective to help you to understand the reading and how to do different sections of the final project. The focus of this evaluation is to find evidence that the student understand and know how to do the assignment (this is not in regards to the "perfection" of the work), it is assumed that for the final project the student will improve and integrate appropriately his learning. At the end of the semester we have **summative evaluation** (professional objectives assessment and final project) and the focus is to find evidence that the student achieve the course objectives. There is no one to one comparison between scores in summative and formative evaluation. Rubrics scores obtained in research proposal represent the

actual quality of the work assuming that is evaluated for proposal defense, this score will be weighted considering if the student is a MA or PhD student and in the context of the class performance.

Grading Policy

A	95-100	
A-	90-94	
B+	86-89	
B	83-83	
B-	80-82	
C+	76-79	
C	73-75	
C-	70-72	
D	60-69	
F	>60	

EDRM-505 Spring 2012 Online class schedule

Module	Objectives	Content	Assignments	Forum
1 Jan 8-21	Know how to read and evaluate qualitative and quantitative studies. Identify different types of research designs. Know how to summarize research reports. Verbalize personal understanding of research in the student's lives.	Textbook Chapter 1 & 2. "Exploring the Intersection Between Personal and Public Epistemology" Lising <i>Critical Analysis</i> <i>Research Introduction</i> <i>Article evaluation</i> Literature Review Summary Table <i>How to Search</i> <i>Databases Tutorial</i> <i>How to Search Journals</i>	Reading evaluation To evaluate a quantitative research article. To evaluate a qualitative research article. Create a summary table with 5 articles related to some specific topic in your area. Jan 22	1. What are the fundamental characteristics of quantitative and qualitative research designs? 2. What to improve your course related affect (preferences, motivation, emotions)?
2 Jan 22-28	Recognize three components of research problems: context, purpose, significance. Learn how to write specific research questions and hypotheses.	Textbook chapter 3 Research Problem Example <i>Research Problem and Hypotheses</i>	Reading evaluation To write a research problem and hypothesis for your project Enlarge the Literature review summary table with 5 additional articles in your area. Jan 29	How to know if a research question is researchable?
3 Jan 29 – Feb 4	Become skilled at using the Internet for reviewing literature. Understand the difference between	Textbook chapter 4 <i>Synthesis of Related Literature</i> <i>How to Write a Literature Review</i>	Reading Evaluation Create a Literature Review summary	What are the leading journals in your area of academic or professional

	primary and secondary sources. Be able to write a literature review.	<i>Writing Literature Review</i> How Introduce the Literature Review	table with 15 articles (primary sources) in your area. Feb 5	interest?
4 Feb 5 -11	Understand the fundamental principles of designing quantitative studies. Identify and understand types of design validity and threats to validity. Know about ethics associated with conducting research.	Textbook chapter 5 <i>Introduction to Validity Research Design Introduction Internal validity</i> “Theory and Practice: some ethical concerns about counseling and research” West & Byrne. Multicultural Issues: Barriers to Research on Violence Against Women in communities of Color” Thompson. Ethical Considerations <i>Threats to Validity Threats to Validity</i> IRB Application Guidelines	Reading Evaluation Write a Literature Review Outline for the final project. Feb 12	1. What are the differences between exempt, expedited, and full IRB review? 2. What are the social factors influencing your research project?
5 Feb 12-18	Understand the importance of determining the unit of study and unit of analysis. Identify and explain sampling procedures. Understand how sampling bias, sample size, response variability and volunteer affect results	Textbook chapter 6 <i>Sampling Sampling Introduction</i>	Reading Evaluation Write the Literature Review for your project. Feb 19	How to determine the sample size?
6 Feb 19-Mar. 3	Differentiate between different types of statistics and levels of measurement. Understand the relationship between descriptive and inferential statistics. Explain how measures of central tendency and variability are used to describe dataset. Know how bivariate correlations are used to measure relationships.	Textbook chapter 7 <i>Descriptive Statistics Descriptive Statistics/correlation Variables and Measures Analysis Flow</i> Frequency Distributions Central Tendency Measures Measures of Variability Correlation	Reading Evaluation Statistics exercise Write a Literature Review for your project. March 4	Share with your classmates one YouTube video in regards to any topic in this module.
7 March 4-10	Know what test validity and reliability mean and how these technical characteristics affect the research.	Textbook Chapters 8 & 9 <i>Construct Validity Reliability Variable, Validity and Reliability</i>	Reading Evaluation Write Research Project Chapter 1 following the outline in the	How would you communicate principles of reliability and validity without being too technical?

	Understand how types of evidence for validity and reliability match different research designs. Know about different types of test and how they are used in research. Know how to construct a questionnaire	Variables definition <i>Data collection</i> <i>Test development</i> <i>Survey development</i> <i>Direct observation</i>	attached file. March 11	
8 March 11- 17	Recognize research designs that are used for nonexperimental studies. Know advantages and disadvantages of longitudinal and cross-sectional studies. Be able to interpret correlational findings. Distinguish between bivariate, prediction, and multiple regression analyses. Know the steps in conducting survey research	Textbook Chapter 10 <i>Survey Research</i> <i>Non-experimental studies</i> <i>Two groups (sample) comparative studies.</i> <i>More than two groups comparative studies</i> <i>Predictive studies-linear regression</i>	Reading Evaluation Define the variables of the study (Conceptual, Instrumental and Operational definitions) in a Table format. March 18	What is the difference between predictive studies and cause-effect studies?
9 March 18-24	Understand key elements of experimental research. Identify strengths and weaknesses of experimental designs. Understand the difference between possible and plausible threats to internal validity. Understand essential differences between pre-experimental and randomized experimental, and quasi-experimental designs. Understand the key components of single-subject designs and threats to internal validity	Textbook Chapter 11 Evaluating Educational Interventions Textbook chapter 2 & 3 <i>Single Subject Design</i> <i>Experimental Designs</i> <i>Experimental Designs</i>	Reading Evaluation Write a description of the final project research design, population and sampling procedures. March 25	What is most important: internal validity or external validity? Why?
10 March 25- 31	Understand the logic of statistics and probability. Understand how sampling and	Textbook Chapter 12 Analyzing Statistical Inference Read and Learn about t-test and ANOVA at	Reading Evaluation Complete the Inferential Statistics exam	How the instrument description relates to the internal validity of the study?

	measurement errors affect results. Know the difference between null and research hypothesis. Be able to interpret inferential analyses. Know how to interpret level of significance. Know how t-tests are different from ANOVA. Be able to interpret inferential statistical data presented in tables and report narratives. Understand what effect size is and why it is important in reporting data results	Virtual Statistician <i>Inferential Statistics</i> <i>Inferential Statistics</i> <i>Sampling error</i> <i>Reducing measurement error</i> <i>Level of significance p value</i> <i>Statistical Power</i> <i>Data Analysis</i> <i>Hypotheses</i>	Describe the instruments for your project (report on its validity and reliability). April 1	
11 April 1-7	Understand the key characteristics of qualitative research that affect design. Understand how purpose and significance affect design. Explain differences between sampling procedures. Be able to indicate the phases of conducting qualitative studies. Understand different strategies to enhance the validity of QR. Know criteria used to describe the extensions and transferability of qualitative findings. Understand different data collections procedures. Understand the dynamic interplay between design and ongoing findings	Textbook Chapter 13 & 14 <i>Qualitative Research Designs</i> <i>Qualitative Research</i>	Reading Evaluation Describe the IRB and Data collection procedures for your project. April 8	When it is appropriate to use a Mixed-Method design?
12 April 8-14	Know the steps that are taken to analyze qualitative data. Understand the differences between data segments, codes, and categories. Understand the	Textbook Chapter 15 <i>Qualitative Data Analysis</i> <i>Qualitative Analysis</i> <i>Qualitative Data Analysis</i>	Reading Evaluation Describe the data analysis procedures for your project and write the Chapter 3 following	

	constant, recursive nature of qualitative data analysis.		instructions. April 15	
April 26	Final Evaluation	Research methods final exam. Article for evaluation and article evaluation form.	The final project document A written exam on research methods An article evaluation exam. April 26	

Course Texts

Required:

McMillan, James H. and Sally Schumacher. (2006). *Research in education: evidence-eased inquiry*. New York: Pearson Allyn and Bacon.

Riley-Tillman, T. Chris and Matthew K. Burns. (2009). *Evaluating educational interventions*. New York: Guilford Press.

Recommended:

Abelson, Robert P. (1995). *Statistics as principled argument*. Hillsdale, NJ: Lawrence Erlbaum Associates.

Andrews, Frank M., Laura Klem, Terrece N. Davidson, Patrick M. O'Malley and Willard L. Rodgers. (1981). *A guide for selecting statistical techniques for analyzing social science data*. Ann Arbor, MI: Institute of Social Research, University of Michigan.

Campbell, Donald T. and Julian C. Stanley. (1963). *Experimental and quasi-experimental designs for research*. Boston: Houghton Mifflin Company.

Creswell, John W. (1998). *Qualitative inquiry and research design. Choosing among five traditions*. Thousand Oaks, Ca: Sage Publications.

Galvan, José L. (1999). *Writing literature reviews. A guide for students of the social and behavioral sciences*. Los Angeles, Ca: Pyczak Publishing.

Heiman, Gary W. (2001). *Understanding research methods and statistics*. Second Edition. Boston, MA: Houghton Mifflin Company.

Merriam, Sharan B. and Associates. (2002). *Qualitative research in practice. Examples for discussion and analysis*. San Francisco, Ca: Jossey-Bass.

Miles, Matthew B. and A. Michel Huberman. (1994). *Qualitative data analysis: an expanded sourcebook*. Thousand Oaks, Ca: Sage Publications.

- Patten, Mildred L. (2004). *Understanding research methods. An overview of the essentials*. Fourth Edition. Glendale, Ca: Pyrczak Publishing.
- Paul, James L. (2005). *Introduction to the philosophies of research and criticism in education and the social sciences*. Upper Saddle River, NJ: Pearson Education, Inc.
- Pyrczak, Fred. (2005). *Evaluating research in academic journals. A practical guide to realistic evaluation*. Third Edition. Glendale, Ca: Pyrczak Publishing.
- Rudestam, Kjell E. and Rae R. Newton. (2001). *Surviving your dissertation*. Thousand Oaks, Ca: Sage Publications

EDRM 505 Methods of Research in Education & Psychology
Rubric for Interpreting Rating Scale
Spring 2012-Online

Conceptual Framework	Category	Unsatisfactory 1	Emerging 2	Satisfactory 3	Proficient 4	Exceptional 5	Weight	Score
V.A V.B V.C	Statement of the Problem. Research Question	There is no reference to the background of the research question. There is no researchable question.	Have some kind of explanation about the research question. There is a researchable question.	Introduce the research question in a clear way. A clear research question with variables, logic, and unit of observation	The introduction of the research question is clear and logical. A researchable question with logical connections between variables, identifies the unit of observation, time, space, and distinguishes between quantitative and qualitative design	A clear and logical introduction to the problem with bibliographical support. A researchable question with logical connections between variables, identifies the unit of observation, time, space, and distinguishes between quantitative and qualitative design. [May state additional secondary questions.]	3	15
V.A, V.B	Significance of the study	There is no reference to the significance of the study	The study's significance is not clearly stated.	The study's significance is clearly stated.	The study's significance is clearly stated and supported by references.	The study's significance is clearly stated and supported by references in a very convincing way.	1	5
V.A V.B	Literature Review	There is no clear connection between the literature review and the research problem.	There is no a logical organization or methodological discussion of the topic.	There is a clear comparison and contrast of studies related to the research problem. Sources are reputable.	There is a clear comparison and contrast of studies related to the research problem and methods. Sources are reputable.	Based on primary sources that are compared and contrasted with annotation in regards to conflicting and inclusive results related explicitly to the research problem and methods	4	20
V.B, V.C	Research design	There is no clear reference to the design.	The design is identify briefly.	There is a clear and appropriate explanation regarding the type of research and the design.	Research design is clear and discusses the different classification criteria.	The research design is clear and discusses different classification criteria, which are supported by references.	1	5
V.B, V.C	Sampling	There is unclear or incomplete information about the unit of observation, population, and sampling	The unit of observation and population are identified, with some reference to	The population is very well identified and the sampling procedures satisfy the design's expectations	The population is very well identified; the sampling procedures satisfy the design's expectations. In quantitative study the sample size is justified and in qualitative refers to	The population is very well identified and the sampling procedures satisfy the design's expectations. In quantitative study the sample size is justified and in qualitative the sampling includes the different kinds of conditions	1	5

		procedures	sampling procedures.	(quantitative or qualitative).	conditions and resources.	and resources.		
V.B, V.C	Definition of variables	There is no clear definition of variables.	Variables are clearly identified and defined conceptually.	Variables are clearly identified and defined in a such manner that support the validity of the study	The conceptual, instrumental and operational definitions of the variables facilitate the understanding of the strategy for observation and measurement of the variables.	The conceptual, instrumental and operational definitions of the variables facilitate the understanding of the strategy for observation and measurement of the variables and the creation of the database.	1.5	7.5
V.B, V.C	Instrumentation	There is some general reference to the means for data collection.	There is no evidence of the validity and reliability of the design.	Appropriate description of the instrument's validity and reliability.	The instruments are very well described; the validity and reliability sustained by different means.	The instruments are very well described; the validity and reliability sustained by different means. The format and content of the instrument are included.	1.5	7.5
V.B, V.C	Data Collection	Procedures for the collection of the data do not fulfill the ethical, legal, methodological requirements.	The procedures for the collection of data are not clearly stated.	There is a clear description of the procedures for collecting data that are in line with the type of research (design).	There is a clear description of the procedures for collecting data that are in line with the type of research design. The details fulfill ethical and legal requirements.	There is a clear description of the procedures for collecting data that are in line with the type of research (quantitative or qualitative). It is evident that the ethical and legal requirements are fulfilled, and that the validity of the design is protected	2	10
V.B, V.C	Data Analysis	The procedures for the analysis of the data do not correspond to the research questions or hypothesis.	The description of the procedures for the analysis of data is confused or incomplete.	The procedures for the analysis of the data are clear and in line with the research design.	There is a detailed description of the procedures and techniques utilized for the analysis of the data. Accordingly to the type of data (quantitative or qualitative).	There is a detailed description of the procedures and techniques utilized for the analysis of the data. Including hypothesis testing criteria in case of quantitative design. Or detailed identification of the organization, coding and categorizing process for qualitative designs.	2	10
IV.A, V.C	Overall Quality of the proposal	There is no evidence that the student understands the content, format and style of the proposal.	The document is incomplete or fails to follow the basic style and format requirements.	The document is complete in terms of basic content, format and style requirements.	The document is complete in terms of basic content, format and style requirements, and includes very good use of references and a fluent style of writing.	The document is complete in terms of basic content, format, and style requirements; it is very well written and attractive.	3	15

TOTAL SCORE 100

EDRM-505 Research Methods in Education and Psychology
Final Exam- section Article Evaluation
Rubrics

Conceptual Framework	Category	Unsatisfactory 1	Emerging 2	Satisfactory 3	Proficient 4	Exceptional 5	Weight	Score
V.A V.B V.C	Research Objectives	No mentioned at all.	Partial reference to the article text	Complete reference to the article text	The student answer is accordingly to the text in his/her words or with additional personal analysis.	The student answer is accordingly to the text in his/her words and with additional personal analysis.	1	5
V.A, V.B	Sample frame and sampling procedures	No mentioned at all.	Partial reference to the article text	Complete reference to the article text	The student answer is accordingly to the text in his/her words or with additional personal analysis.	The student answer is accordingly to the text in his/her words and with additional personal analysis.	2	10
V.A V.B	Data collection and non-response rate	No mentioned at all.	Partial reference to the article text	Complete reference to the article text	The student answer is accordingly to the text in his/her words or with additional personal analysis.	The student answer is accordingly to the text in his/her words and with additional personal analysis.	3	15
V.B, V.C	Major findings and limitations of the study	No mentioned at all.	Partial reference to the article text	Complete reference to the article text	The student answer is accordingly to the text in his/her words or with additional personal analysis.	The student answer is accordingly to the text in his/her words and with additional personal analysis.	3	15
V.B, V.C	Discussion of results	No mentioned at all.	Partial reference to the article text	Complete reference to the article text	The student answer is accordingly to the text in his/her words or with additional personal analysis.	The student answer is accordingly to the text in his/her words and with additional personal analysis.	1	5

EDRM-505 Research Methods in Education and Psychology
Literature review evaluation- Rubric
Section Critical Thinking-Summarizing Research Reports

Criteria	Unsatisfactory 1	Emerging 2	Satisfactory 3	Proficient 4	Exceptional 5
Indicate de Purpose	Does not included	Suggest some reference of purpose.	Define clearly the purpose	Distinguish between preliminary and exhaustive.	Explain in detail the preliminary or exhaustive purpose of the Review.
Defined criteria for selection of sources.	Not have any explanation about it.	Suggest in an indirect way that make some selection of sources	Specify the criteria for the selection of sources	Specify and describe the application of the criteria for inclusion or exclusion of sources	Specify and describe the application of the criteria for inclusion and exclusion of sources
Literature are relevant to the problem/topic	There is no clear identification of the problem or topic	Identify the problem but the literature seem to be not related	Identify the problem/topic and the literature is related to the topic.	Identify the problem/topic and the literature is clearly related.	Identify the problem/topic and discuss the way that the literature relate to the problem or topic
Primary Literature emphasized	There is no evidence that the literature comes from reputable sources.	There is no distinction between primary and secondary sources but sources are reputable	Primary and secondary sources are distinctively identified and come from reputable sources.	Primary and secondary sources are distinctively identified and the large portion comes from refereed journals.	Primary literature is emphasized and the secondary literature is used selectively.
Quotation format/references	There in no or few quotations/references	The quotations are not accordingly to an editorial format and style	The quotations are accordingly to an editorial format and style	The quotations are presented in a varied way and accordingly to an editorial format and style	The quotations are presented in a high level stylistic way and accordingly to an editorial format.
Complete bibliographic data.	There is no bibliography	The bibliography is incomplete	Every source has a complete bibliography	Every source has a complete bibliography and is presented accordingly to a specific editorial format.	Every source has a complete bibliography, is categorized by some criteria and presented accordingly to a specific editorial format.
Logical Organization of	No organization at all,	Review organized by	Review organized	Review organized by	Review organized by topic or

the content	just a list of abstracts or disconnected reports	author without a logical structure	by topic or ideas in a logical structure	topic or ideas in a logical structure emphasizing major studies	ideas in a logical structure discussing in detail major studies and the actual findings cited.
Comparison and contrast of studies	There is no analysis of the studies content and the relation to other studies.	Some kind of description of the relation between studies.	The studies are compared and contrasted	The studies are compared and contrasted with annotation in regards to conflicting and inclusive results.	The studies are compared and contrasted with annotation in regards to conflicting and inclusive results in a such manner that make evident the motivation, importance and significance of the study.
Major studies discussed in detail.	There is no identification of major studies.	Major studies are identified	Major studies are identified and described in details	Major studies are described in details with a particular reference to their contribution to the knowledge	Major studies are described in details with particular analyses of their contribution to the knowledge
Interpretation and understanding of prior research.	The review lacks of a summary with interpretation of prior research	The summary provides a general overview of prior research	The summary provides a overall interpretation and understanding of prior research	The summary emphasized the interpretation and understanding of prior research	The summary emphasized the interpretation and understanding of prior research and its relation to the research problem
Methodological analyses appropriate for sustain a design	There is no discussion of methodological issues at all.	There are some references to methodological issues.	The review include studies related explicitly to the research problem and methods	The review of major studies relate explicitly to the research problem and methods.	The review of major studies explicitly related to the topic (research problem) and methods and provide a rational for the design to follow.
Establish the importance and significance of the study.	There is no evidence that the research topic or question is relevant and significant	There is a brief reference that support the importance and significance of the study	The literature review helps to establish the significance of the research.	The review includes specific information that sustained the significant of the study.	The reviews discuss references that support the significance of the study.