College of Education and Psychology
School of Education
Ed.D. in School Improvement

EDRM 6352: Quantitative Research Methods in the Education Setting
Summer 2021

Instructor: Christopher L. Thomas, Ph.D.
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Course Description (as listed in the catalog):
This course focuses on the field of quantitative research and statistics. It focuses on the stages of quantitative research including the development of educational research questions, research designs, conceptual frameworks, methodological stances, data collection and analysis, statistics, and instrument design, and implementation in education settings. The course will focus on the interpretation and use of quantitative data with emphasis on the implications for school improvement, educational policy and research design.

Prerequisite: HRD 6351 or equivalent graduate statistics course at another institution.

Student Learning Outcomes
After completion of this course, students will be able to:

1. Read and critically evaluate educational research.
2. Identify and describe different types of quantitative research methodology.
3. Discuss the influence of research data on pedagogy and accountability practices.
4. Formulate clearly stated, important research questions
5. Design and conduct research studies with the potential to improve teaching and learning experiences, counseling and support services, school leadership, and educational organizations and structures.

Program Goals
a. Produce the next generation of educational leaders who understand the philosophical and historical perspectives of school reform, diversity, learning opportunities for all, and can address educational issues using a variety of strategies.
b. Develop critical reasoning and a deep understanding of change theory to address challenges in school improvement contexts. This will include the skills to provide transformative leadership to schools that are failing to meet academic, social, and emotional standards.

c. Provide opportunities to develop doctoral students' ability to approach challenges in innovative data-driven ways, including the use of interdisciplinary teams, as well as expand their problem solving, creative design, communication, and collaboration skills.
d. Challenge the norms within educational systems using data and the engagement of other educators and stakeholders in professional learning to lead disruptive change through interdisciplinary work with experts in other educational fields.
e. Conduct research of practice and responsiveness to improve teaching and learning experiences, counseling and support services, school leadership, educational organizations and structures, and all other educational disciplines.
f. Prepare the next generation of educators with the knowledge, skills and tools to utilize data to guide school improvement and policy and to improve learning outcomes leading to college and career readiness.
g. Prepare educators with a deep understanding of assessment and accountability systems.
h. Produce scholar practitioners that have a P-20 perspective of the education system to address school improvement in the broader perspective including educator preparation, teaching and learning.

Required Resources

Textbooks

Strunk, K. K., & Mwavita, M. (2020). *Design and analysis in educational research: ANOVA designed in SPSS.* Routledge.

ISBN: 9781138361164 (Available from the UTT bookstore or online.)

Goss-Sampson, M. A. (2020). *Statistical Analysis in JASP 0.14: A Guide for Students*.

Available for free at https://jasp-stats.org/wp-content/uploads/2020/11/Statistical-Analysis-in-JASP-A-Students-Guide-v14-Nov2020.pdf

Privitera, G. J. (2019). *Essential statistics for the behavioral sciences (2nd edition).* Sage.

Select readings from this text will be provided by the instructor.

Required Software:

JASP (v. 0.14.1 or later) - Available for free at https://jasp-stats.org/download/

Additional Readings (to be distributed by instructor):

Burkhardt, H., & Schoenfeld, A. H. (2003). Improving educational research: Toward a more useful, more influential, and better-funded enterprise. *Educational researcher*, *32*(9), 3-14.

Gibbons, B., & Herman, J. (1996). True and Quasi Experimental Designs. *Practical Assessment, Research & Evaluation*, 4
Available at: https://scholarworks.umass.edu/pare/vol5/iss1/14

Labaree, D. F. (2003). The peculiar problems of preparing educational researchers. *Educational researcher, 32*(4), 13-22.

Navarro, D.J., Foxcroft, D.R., & Faulkenberry, T.J. (2019). Learning Statistics with JASP: A Tutorial for Psychology Students and Other Beginners.

Available for free at https://learnstatswithjasp.com/

Thompson, B (1994). The concept of statistical significance testing. *Practical Assessment, Research & Evaluation*, 4(5). Available online: http://PAREonline.net/getvn.asp?v=4&n=5.

Vance, D. E., Talley, M., Azuero, A., Pearce, P. F., & Christian, B. J. (2013). Conducting an article critique for a quantitative research study: perspectives for doctoral students and other novice readers. *Nursing: Research and Reviews*, *3*, 67-75.

Supplemental Readings:

Campbell, D. T., & Stanley, J. C. (1963). *Experimental and quasi-experimental designs for research*. Rand McNally & Company.

de Winter, J.C.F. (2013). Using the Student's t-test with extremely small sample sizes. *Practical Assessment, Research, and Evaluation*, 18,
Available at: https://scholarworks.umass.edu/pare/vol18/iss1/10

Course Policies and Expectations:

Course Environment: This is an online course that is delivered through the Canvas Learning Management System. As such, it is imperative that you check Canvas for necessary information and course materials. If you experience technical problems or have a technical question about this course, you can obtain assistance by emailing itsupport@patriots.uttyler.edu. When you email IT Support, be sure to include a complete description of your question or problem including: (1) the title and number of the course, (2) the page in question, (3) If you get an error message, a description and message number, and (4) what you were doing at the time you got the error message.

Written Assignments: All written assignments should be typed (double-spaced, Times New Roman, 12-point font) and submitted by midnight Central Standard Time on the due date. All written assignments should be submitted through the assignment link that I will provide. Please name written assignments using the following convention: last name, first initial, assignment title (ex. Last_F_Assignmenttitle). Assignments completed for other

courses may **NOT** be turned in for this course and will be considered **academic dishonesty**.

Email: Questions and concerns about course content and assignments should be submitted to my email. I will make every effort to respond quickly to your emails. Generally speaking, I check email twice a day during the workweek and less frequently on the weekend. If my schedule makes me unavailable to answer emails for an extended period, I will try to post an announcement so that you can plan accordingly. My priority is communicating with you and providing you with the tools needed to be successful in the course, so if there are any problems, we will work to solve them.

Late Work Policy: Late work refers to any course assignment that is submitted after the stated deadline. **Late work will be accepted in this class. However, there will be a 10% penalty for each late day.** Practically, this means that you will not receive credit for an assignment if you submit after 10 or more days. Importantly, the late work policy does not apply to discussion board posts. Discussion board posts and replies will not be accepted after the stated deadline.

Student Assignments & Projects:

The course is designed to be delivered in a "module format." This means that there will be a few different modules that you will work through that include their own readings, assignments, quizzes, and tests. The modules will be presented in a standardized format. The following are standard activities that will be included in the modules:

Readings: This course requires a considerable degree of independent reading to ensure that you develop content mastery. There will be two main reading requirements throughout the semester. Specifically, you will be required to read selections from the course textbooks and research articles that I will assign. All research articles will be available on the Canvas site. I will also be posting supplemental readings for some of the topics that we will cover this semester. These readings are optional and are provided for those who would like to explore the course topics in more detail.

Lecture Videos: Each week, I will post short lecture videos to the Canvas site to support the development of content mastery. The topic of each lecture video(s) will be related to key concepts found within the readings for that week. The lecture video(s) for each topic will be available on the Canvas site each Monday morning beginning at 9:00 am Central Standard Time.

Quizzes: There will be several short quizzes this semester. These will be delivered online and will serve to provide a check of your understanding.

Data Analysis Assignments: Students will be expected to conduct and interpret the results of basic statistical procedures conducted using the JASP software.

Article critique: It is critical that all educational researchers have the ability to critically evaluate the quality published research. As such, students will be expected to complete a written critique of a single published educational research article. The focus of this critique will be on the questions that the researcher(s) hoped to answer using statistical methods discussed in the course, the approach selected and the suitability (or lack thereof) of their application of this method to the question(s) at hand, and the appropriateness of the authors interpretation of the statistical results. More information about the article critique assignment will be posted later in the semester.

Project: Students are expected to write a "research paper" based on their analysis of "real-world" data. Ideally you will use data of personal interest to you or related to an interesting problem of practice. However, it is acceptable to make use of a general dataset. This assignment will be graded on APA format, overall writing quality, alignment among the research questions and selected statistical technique, and the overall interpretation of the statistical findings. More information about the final project will be provided later in the semester. However, I am available to meet with each of you prior to the beginning of the paper writing process, to provide help and guidance.

Self-Reflections. Research shows that metacognition (the ability to reflect on study success and make changes) is critical for success in doctoral programs. As such, I will be asking you to complete several low-stakes reflections designed to increase metacognitive ability. I will provide information about these assignments later in the semester.

Buddy System. Each of you has been assigned to a "buddy group" for the duration of the course. This means that you now have a small group of peers to reach out to if you are uncertain about something, you need some help, you are struggling, or you need some words of encouragement. Your job is to help each other succeed in this course. You will receive points for creating a plan to support one another and will graded on how "well" you support the success of your peers. More information regarding the buddy system will be provided.

Discussion Boards: You will participate in 1 discussion board across the semester. The discussion board will allow us the opportunity to do introductions and discuss questions/concerns about the course.

Research Pool Requirement: Students must fulfill a research pool requirement. The research pool requirement must be completed before the final week of the academic semester. The research requirement for these courses can be satisfied in one of two ways. First, students can fulfill the research pool requirement by volunteering to participate in approved research studies offered by the School of Education. Alternatively, students can satisfy the research pool requirement by completing alternative assignments that are equal in time and effort to the research opportunities. Detailed information about the research requirement can be found on the CANVAS page for the course.

Due Date: Unless stated otherwise, all assignments are due before Midnight on Sunday the week that they appear on the course schedule. Stated another way, each week's assignments are due before Midnight on Sunday.

Grade Item	% of final grade	Total Points
Quizzes	5%	2 quizzes x 25 points per quiz = 50 total points
Discussion Board Post	1%	10 points
Data Analysis Assignments	60%	12 Assignments x 50 points per assignment = 600 points
Article Critique	10%	100 points
Final Project	15%	150 points
Buddy System	2%	10 points for support plan 10 points for quality of support across semester
Self-Reflection Assignments	2%	2 reflections x 10 points per reflection
Research Requirement	5%	50 points
Course Total		1000 points

Please note: The number, content focus, and point value of all assessments and assignments is an approximation and may change.

Letter Grades: Letter grades will be assigned using the following guidelines:
A: 90.00% of points or above, B: 80.00% -89.999% of points, C: 70.00% - 79.999% of points, D: 60.00% -69.999% of points, F: 59.999% of points or below

Proposed Semester Schedule					
Date	**Topic(s)**	**Required Reading(s)**	**Supplemental Readings (Optional)**	**Discussion Board Post**	**Assignments**
Week 1					
May 10th – May 16th	Introduction to Quantitative Educational Research	Strunk & Mwavita – Ch. 1 Labaree (2003)	Blom-Hoffman et al, 2009 Ethics resources (Common Rule, FERPA, human subjects research, etc.)	Introductions & Syllabus Reconnaissance	Buddy System Support Plan
Week 2					
May 17th – May 23rd	Research Design, Sampling, levels of measurement, reliability, validity	Strunk & Mwavita – Ch. 2 Gross-Sampson – pgs 1 -13 Gibbons & Herman (1996).	Navaro et al. – Ch. 3 Campbell & Stanley, 1963.		Quiz: Sampling and Basic Issues in Research Design
Week 3					
May 24th – May 30th	Measures of Central Tendency and Variability	Strunk & Mwavita – Ch. 3 Gross-Sampson – pgs. 14 - 24			Data Analysis Assignment #1

Proposed Semester Schedule					
Date	**Topic(s)**	**Required Reading(s)**	**Supplemental Readings (Optional)**	**Discussion Board Post**	**Assignments**
Week 4					
May 31st – June 6th	Introduction to NHST	Strunk & Mwavita – Ch. 4 Thompson, 2004	Navaro et al. – Ch. 8		Quiz: NHST
Week 5					
June 7th – June 13th	Single Sample Tests (z – test & one-sample t-test)	Strunk & Mwavita – Ch. 5 Gross-Sampson – pgs. 40 - 43			Data Analysis Assignment #2 Self-Reflection #1
Week 6					
June 14th – June 20th	Comparing means from 2 independent groups	Strunk & Mwavita – Ch. 6 Strunk & Mwavita – Ch. 7 Gross-Sampson – pgs. 40 - 43	Navaro et al. – Ch. 10 Winter, 2013		Data Analysis Assignment #3

Proposed Semester Schedule					
Date	**Topic(s)**	**Required Reading(s)**	**Supplemental Readings (Optional)**	**Discussion Board Post**	**Assignments**
Week 7					
June 21st – June 27th	Comparing 3 or more independent means (one-way ANOVA)	Strunk & Mwavita – Ch. 8 Strunk & Mwavita – Ch. 9 Gross-Sampson – pgs. 85 – 91	Navaro et al. – Ch. 12		Data Analysis Assignment #4
Week 8					
June 7th – June 13th	Factorial ANOVA	Strunk & Mwavita – Ch. 10 Strunk & Mwavita – Ch. 11 Gross-Sampson – pgs. 111 – 118	Navaro et al. – Ch. 13		Data Analysis Assignment #5 Buddy System Peer Review
Week 9					
June 14th – June 20th	Paired samples analysis with 2 measurement points	Strunk & Mwavita – Ch. 12 Strunk & Mwavita – Ch. 13 Gross-Sampson – pgs. 56 – 58			Data Analysis Assignment #6

Proposed Semester Schedule					
Date	**Topic(s)**	**Required Reading(s)**	**Supplemental Readings (Optional)**	**Discussion Board Post**	**Assignments**
Week 10					
June 21st – June 27th	Paired samples analysis with 3 or more measurement points	Strunk & Mwavita – Ch. 14 Strunk & Mwavita – Ch. 15 Gross-Sampson – pgs. 95 - 99			Data Analysis Assignment #7
Week 11					
June 28th – July 4th	ANOVA with between and within subjects variables	Strunk & Mwavita – Ch. 16 Strunk & Mwavita – Ch. 17 Gross-Sampson – pgs. 127 - 134			Data Analysis Assignment #8
Week 12					
July 5th - July 11th	Correlation and Bivariate Regression	Privitera – Ch. 13 Gross-Sampson – pgs. 61 – 72	Navaro et al. – Ch. 11		Data Analysis Assignment #9

Proposed Semester Schedule					
Date	**Topic(s)**	**Required Reading(s)**	**Supplemental Readings (Optional)**	**Discussion Board Post**	**Assignments**
Week 13					
July 12th – July 18th	Multiple Regression	Gross-Sampson – pgs. 73 – 79		Article Critique	Data Analysis Assignment #10
Week 14					
July 19th – July 25th	Chi-Square & Non-parametric alternatives	Privitera – Ch. 14 Gross-Sampson – pgs. 135 – 142			Data Analysis Assignment #11 Self-Reflection #2
Week 15					
July 26th – August 1st	Survey design & assessing reliability/validity	TBD			Data Analysis Assignment #12 Research Requirement Due
Finals Week					
August 2nd – August 7th					Final Project Due