



**SOCS 5080W1 and EDUC 5750W2**

**Topics in Education: Statistics/Research in Social Science**

Term: Summer 2007

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**Course Text**

Jaeger, R. M. (1990). *Statistics: A spectator sport* (2<sup>nd</sup> edition). Newbury Park, CA: Sage.

Other readings will be posted on electronically on WebCT as PDF files.

**Course Description**

This course is designed to serve as an introduction to reading and understanding the knowledge and claims made in social science research. The course readings and online discussions will examine fundamental issues of research design and practice from a variety of quantitative and qualitative methodologies. We will widely read research in education and the social sciences that make use of these methodologies. While rigorous mathematical understandings of statistical methods are beyond the scope of this course, students are expected to become literate in the major quantitative tools used for hypothesis testing in educational research. Course content also covers an introduction to the five qualitative traditions. The course further strengthens the knowledge base of future researchers, teachers, and administrators who may be required to read and synthesize research literature in their roles as education professionals.

Upon completion of this course participants will be able to

- Conceptually understand the basic statistical tools used in educational research including mean, median, mode, standard deviation, simple linear regression, multiple linear regression, Student's t-test, the chi-squared test, and the one-way analysis of variance and covariance.

- Understand the five basic qualitative traditions of inquiry: biographies, phenomenological studies, grounded theory studies, ethnographies, and case studies.
- Understand how educational (i.e., social science) researchers come to make knowledge claims.
- Critically analyze research literature in education and evaluate their conclusions and generalizations based on the empirical evidence given.
- Understand the complexities involved in conducting educational research and how research can be used to improve practice.

## **Course Requirements**

*Online Participation.* Since this is an online course our discussions will take place via virtual WebCT and are equally important as face to face classroom discussion. Indeed, since this is our single means of interaction it makes this course element even more important. As with any other course, students and instructors must share mutual responsibility for the course qualities and outcomes. While the instructor assumes full responsibility for the topics and overall design of the course, participants will each need to share equally and consistently in the strong and rich intellectual dialogue via class discussions.

Course participants are required to post at least four messages weekly throughout the course. One of the required postings is to respond to a question posted by the instructor regarding the readings. The second posting must raise an important question or issue about the readings. The final two postings must demonstrate a careful response to a classmate's posting. Course participants are welcome to place more than four postings. Indeed, participants are encouraged to discuss and debate salient issues and questions with classmates. Participant's four (minimum) postings must be substantial and must bring new information to the conversation. Posts which say "I agree", "Good Point", or simply reiterate a prior post do not count as substantial postings. I invite you to enjoy the online discussion throughout the session. This is one of the strengths of distance education since participants can choose which messages to respond to and when to log onto WebCT. That is, participants are free to log onto WebCT when it is convenient. Participants' first two posts must be completed by 11:59 PM on Friday evening in order to give everyone ample time to read and respond. The final two postings must be made by 11:59 PM on Sunday night. The quality of students' online participation will be worth 20% of the final grade.

*Weekly Assignments.* Each week, the instructor will post a variety of assignments relevant to the topic of study. These will usually involve an in-depth analysis and critique of an article but may also include review questions from the text, collaborative group work, and other mini-assignments (see assignment section). During certain weeks, students will have the responsibility of reading and critically synthesizing articles for the entire class. Weekly assignments are due at 11:59 PM on Sunday night. The weekly assignments will be worth 35% of participant's grade.

*Quizzes.* Each Monday a brief quiz is made available on WebCT for the purpose of assessing participant's understanding of the statistical procedure covered from the previous week. These formative assessments are meant for participants to assess their understanding of the statistical measure and for the instructor to provide feedback for misconceptions and misunderstandings. This instructor feedback will also offer a determination for further instruction. The quizzes will contribute 5% to the course grade.

*Midterm Assessment.* A midterm evaluation that assesses participant's understanding of the statistical procedures studied during weeks 1- 4 and students ability to critically evaluate research literature will be worth 15% of the final grade.

*Final Article Critique.* Participants will develop a final 8-page double spaced paper providing an in-depth critique of Steele and Aronson's (1995) *Stereotype Threat and the intellectual test performance of African-Americans*. Guidelines and a grading rubric for the final paper will be given near the end of the course. The final paper will contribute 25% to the course grade.

Grading Scale: The following numeric grading scale will be used to compute the final course grades:

92 – 100	A
90 – 91	A-
88 – 89	B+
82 – 87	B
80 – 82	B-
78 – 79	C+
72 – 77	C
70 – 71	C-
68 – 69	D+
62 – 67	D
60 – 61	D-
< 60	F

### **Course Policies**

Any work that is received late will lose one full letter grade (10%) for every day it's late. After three late assignments, no further late work will be accepted. The exceptions are the midterm exam and the final paper which must be completed by the due date. Unless otherwise noted, assignments are due at 11:59 PM on the due date and assignments submitted even one minute after this deadline are considered late.

It is assumed that any work that participants do for this class reflects his/her own work. This means that participant assignments and exams reflect one's own understanding of the material. Although participants are encouraged to communicate and collaborate with peers/colleagues, the final product submitted must be reflect one's own work.

In our current electronic age we have all become lax when posting to discussion forums or when sending e-mail messages. However, correct grammar and spelling are important. As a courtesy to your classmates please check all postings for spelling and grammatical errors prior to submission. Also, you may wish to type or input posts in a word processor prior to submission so that you may run a spell check. Upon completion of running the spell check, you may copy and paste into WebCT. Participants are further expected to undergo a similar process for any other form of coursework in the online environment and should be considered as assessed by a potential employer or another professional.

Participants are to use the APA formatting style (<http://www.apastyle.org>) for all formal assignments, papers, and projects in the class. Please list all page numbers/texts in the online discussions so that others may go to that page/text. APA Style is the most widely used in education and it is imperative that students are made aware of how to properly cite scholarly work. Most of the literature that we read will use the APA format so you may wish to view how professionals quote research. There is also a handout on APA available on WebCT which will help to see formats most commonly used in citing work.

## ACADEMIC HONESTY POLICY

**Students at Webster University are expected to practice academic honesty.**

### **Avoiding Plagiarism**

Plagiarism is intentionally claiming that another person's work is his/her own or implying that another person's work is his/her own (through inadequate or inaccurate citations of reference material.)

#### **Students:**

- Should not copy whole portions of text from another source as a major component of papers or projects.
- Should identify the title, author, page number/webpage address, and publication date of works when directly quoting small portions of texts, articles, interviews, or websites.
- Should appropriately identify the source of information when paraphrasing (restating) ideas from texts, interviews, articles, or websites.
- Should follow the guidelines of the American Psychological Association Style Guide when referencing all research sources.

Consequences of Academic Dishonesty:

Students will receive a lowered grade appropriate to the infraction. Written work suspected of plagiarism will be submitted to “Turnitin.com”. Please note the levels of plagiarism stated at the site.

For further information about the consequences of academic dishonesty please consult the Webster University Student Handbook.

### ACCESSIBILITY/ACCOMMODATIONS POLICY

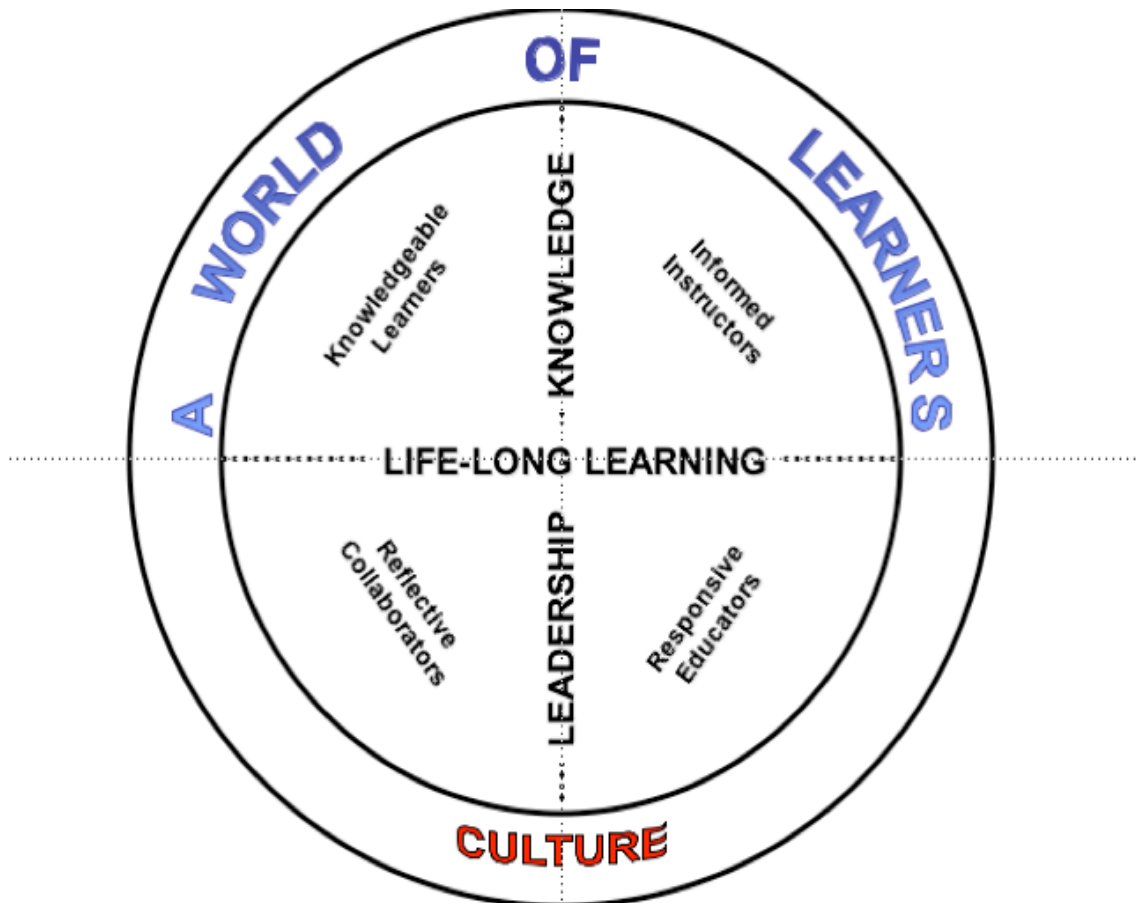
If you have a disability that may have some impact on your work in this class and for which you may require accommodations contact the Director of the Academic Resource Center, Dr. Pat McLeese, at (314) 968-7495.

### Webster University School of Education

**Vision:** “. . . We all must work to make this world worthy of its children.” (Casals, 1970)

**Mission:** The School of Education at Webster University provides its students with the knowledge, experiences, and practical tools that help them guide both themselves and others toward lifelong learning. The School of Education is a community of educator-scholars who apply critical reflections and creative energies to enhance learning in schools and other educational settings. The faculty strives to support this community by modeling effective teaching practices based on sound theory and research. Personalized approaches create a challenging, yet supportive environment that permits the risk-taking necessary for learning and growth. The School of Education encourages its faculty and students to work actively toward this end, keeping in mind that action must be rooted in visionary, yet realistic, thinking. This thought and action process underscores the development of an inner-directed self-understanding, an outer-directed global perspective, and an appreciation of human diversity that arises from both.

**Theme:** Developing a world of learners through knowledge, leadership, and life-long learning.



graphically represents the conceptual framework of the School of Education. The outer circle provides the framework for a “world of learners” in cultural settings. The two axes represent the theme components of knowledge, leadership, and life-long learning. These lines are broken to emphasize the fluid relationship of the goals and integrated concepts. Each quadrant represents one of the school’s four goals for its candidates: to develop knowledgeable learners, informed instructors, reflective collaborators, and responsive educators.

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## School of Education Goals

1. Education candidates will demonstrate knowledge of the subject matter, knowledge of the learner, and knowledge of pedagogy based on inquiry and scholarship.

### The knowledgeable learner:

- 1.1 knows content that supports conceptual understanding;
  - 1.2 applies tools of inquiry to construct meaningful learning experiences;
  - 1.3 identifies developmental factors in student learning; and
  - 1.4 understands theoretical principles of effective instruction to plan learning experiences.
2. Education candidates will incorporate multiple assessment and instructional strategies to support effective educational practices based on research and theory.

### The informed instructor:

- 2.1 designs curriculum based on students' prior knowledge, learning styles, strengths, and needs;
  - 2.2 understands and uses a range of instructional strategies;
  - 2.3 uses a variety of communication modes, media, and technology to support student learning; and
  - 2.4 employs a variety of formal and informal assessments to monitor learning and modify instruction.
3. Education candidates will reflect on the roles educators take as leaders of change through collaboration with colleagues, students, and families in schools and communities.

### The reflective collaborator:

- 3.1 values and integrates reflection to grow as a professional;
  - 3.2 promotes communication and collaboration with colleagues, families, and community leaders;
  - 3.3 seeks relationships with families and students to support student learning; and
  - 3.4 initiates change that benefits students and their families.
4. Education candidates will demonstrate respect for diversity through responsive teaching and learning that values individual differences.

### The responsive educator:

- 4.1 understands and responds appropriately to issues of diversity
- 4.2 acknowledges social and cultural contexts to create effective teaching and learning environments;
- 4.3 adapts instruction to the learner's knowledge, ability, and background experience; and
- 4.4 identifies resources for specialized services when needed.

## School of Education Dispositions

NCATE defines dispositions as “the values, commitments and professional ethics that influence behaviors toward students, families, colleagues, and communities and affect student learning, motivation, and development as well as the educator’s own professional growth. “ (Professional Standards, p. 53) There is significant value in focusing attention on qualities that make an effective teacher.

1. Understands and Respects Self
  - 1.1 Understands and respects that s (he) may be different from others
  - 1.2 Embraces an openness to change (adaptability, flexibility)
  - 1.3 Exhibits curiosity
  - 1.4 Engages in reflection
  
2. Understands and Respects Others
  - 2.1 Understands, respects, and responds appropriately to diversity in a variety of settings
  - 2.2 Exhibits empathy
  - 2.3 Commits to fairness and honesty
  - 2.4 Listens respectfully to other points of view
  
3. Understands and Respects Professional Communities
  - 3.1 Commits to professional behavior in university and school cultures
  - 3.2 Practices informed decision-making in university and school cultures
  - 3.3 Communicates and collaborates in university and school cultures
  - 3.4 Accepts academic rigor (willingness to work/ high expectations)
  - 3.5 Affects change with courage and confidence

### Course Schedule

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Week 1 – x/xx/xx: Introduction to the Course—What is social science research? Review of basic statistics.

#### *Readings*

1. Jaeger, Chapters 1 – 2
2. Lagemann, E. C. (2000). *An elusive science: The troubling history of education research*. Chicago: University of Chicago Press. **Preface and Introduction.**
3. Shapiro, T. M. (2004). *The hidden cost of being African American: How wealth perpetuates inequality*. Oxford: Oxford University Press. **Chapter 2.**

#### Key Questions to Consider

1. *What is statistics? What is a statistic?*

2. *What are mean, median, mode, and standard deviation? Under what circumstances can these statistics be misleading?*
3. *What are some ways that social science researchers make knowledge claims?*
4. *What are the major tensions between educational research and practice? Why does Lagemann call this tension “troubling”?*

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Week 2 – x/xx/xx: Correlation

*Readings*

1. Jaeger, Chapters 3 – 5
2. Shapiro, T. M. (2004). *The hidden cost of being African American: How wealth perpetuates inequality*. Oxford: Oxford University Press. **Chapter 3**.
3. Powerpoint handout on the algebra of simple linear regression.

Key Questions to Consider

1. *What is the purpose of correlation?*
2. *Interpret the correlation equation  $Y = a + bX$ . What is the meaning of  $a$  and  $b$  in this equation?*
3. *What are the two meanings of  $r^2$ , the regression coefficient?*
4. *How is correlation presented in an article?*

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Week 3 – x/xx/xx: Validity & Inference

*Readings*

1. Jaeger, Chapters 6 – 8
2. Doerr, H.M., & Zangor, R. (2000). Creating meaning for and with the graphing calculator. *Educational Studies in Mathematics*, 41, 143-163.

Key Questions to Consider

1. *What is a confidence interval?*
2. *What is validity? What are some ways to test for validity?*
3. *What questions should Participants ask when evaluating a piece of educational research?*
4. *What does a score of 1350 on the SAT correspond to?*

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Week 4 – x/xx/xx: Introduction to Hypothesis Testing and Midterm Week

*Readings*

1. Jaeger, Chapter 9
2. Tufte, E.R. (2003). *The cognitive style of PowerPoint*. Cheshire, CT: Graphics Press LLC.

Key Questions to Consider

1. *What is the purpose of hypothesis testing?*
2. *What is the null hypothesis testing for?*
3. *Why would one want to reject a null hypothesis?*

4. *What are Type I and Type II errors?*

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Week 5 – x/xx/xx: Inferences

*Readings*

1. Jaeger, Chapters 10 – 12
2. Frank, D. J., Schofer, E., & Torres, J. C. (1994). Rethinking history: Change in the university curriculum, 1910-90. *Sociology of Education*, 67, 231-242.

Key Questions to Consider

1. *What information do I need to have before making an inference?*
2. *Why is it difficult to make an inference about an entire population?*

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Week 6 – x/xx/xx: Introduction to Analysis of Variance

*Readings*

1. Jaeger, Chapters 13 – 14
2. Klahr, D., & Nigam, M. (2004). The equivalence of learning paths in early science instruction: Effects of direct instruction and discovery learning. *Psychological Science*, 15(10), 661-667.

Key Questions to Consider

1. *What is an F-statistic? How can we make claims about it?*
2. *What happens when a F-statistic gets large? Small? What does this tell us about the data?*
3. *What is problematic about doing an analysis of variance on too many variables?*

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Week 7 – x/xx/xx: Introduction to Qualitative Research

*Readings*

1. Creswell, J. W. (1998). *Qualitative inquiry and research design: Choosing among five traditions*. London: Sage. **Chapters 1, 3-4.**
2. National Research Council (2002). *Scientific research in Education*. Washington, DC: National Academies Press. **Chapters 1 – 2.**

Key Questions to Consider

1. *How are knowledge claims different in qualitative versus quantitative research?*
2. *How would Participants decide on choosing between the five qualitative traditions?*
3. *What might be problematic about each of the five qualitative traditions? How do Participants contrast this with the problems with quantitative research that we have talked about in class?*
4. *Do Participants agree with the authors of SRE that the quantitative versus qualitative debate does not help research?*

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Week 8 – x/xx/xx: An example of an Ethnography in Social Science Research and Conclusions

*Readings*

1. Anderson, E. A. (1999). *Code of the street*. New York: W.W. Norton & Company. **Chapter 7**.

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**Final papers are due on Date at 11:59 PM. Late papers will not be accepted!**

This course syllabus subject to change at any time.

Last update: 3/8/2007