GEORGE MASON UNIVERSITY
COLLEGE OF EDUCATION AND HUMAN DEVELOPMENT
INSTRUCTIONAL TECHNOLOGY

EDIT 590 Spring 2013
Educational Research in Technology
Hybrid Course

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Course Description from the University Catalog:
Focuses on developing skills, insights and understanding basics to perform research with emphasis on interpretation, application, critique and use of findings in educational settings. Students develop expertise in action research methodology, design, and implementation.

Expanded Course Description:
This course describes fundamental concepts and practices in educational research in technology. Specific applications of educational research methods to problems in instructional design, instructional and/or assistive technologies will be covered. Emphases is on reviewing and critiquing technology-based research, as well as preparing research proposals for needs assessment, usability testing, and/or classroom research for teachers.

Nature of Course Delivery:
This course is conducted as a hybrid including: (a) three mandatory face-to-face sessions (will be conducted on January 28, March 25 and April 15th at 4:30-7:10pm - see the schedule below for locations) and (b) an online component using the **Blackboard 9.1** course management system. Please plan to access the Blackboard site several times per week. Access Blackboard 9.1 at https://mymason.gmu.edu. Your login and password is the same as your George Mason e-mail login. Once you enter, select EDIT 590-202 Spring 2013 course.

The weekly learning modules will run on a Tuesday through midnight Monday schedule. All new materials, readings, and assignments will be posted on Tuesday and students will be expected to complete and **submit** due assignments by **midnight on Monday** before the deadline. The instruction will be provided via regular and/or narrated PowerPoint presentations. Presentations, case studies, videos and additional appropriate readings will be provided under **Learning Modules** tab. Assignments and weekly activities will be completed using asynchronous tools such as **Discussion Boards**, **Wikis**, and/or submitted under the **Assignments** link. Multiple **Collaboration Tools** will be offered for students to explore different research methods through the **Group Discussion/Analysis** of research articles provided by the instructor.

In order to facilitate interaction, the instructor will be available for office hours via **Blackboard Collaborate** (within Blackboard 9.1) or in person by appointment. In addition, **Frequently Asked Questions Blog** will be available to interact with each other and post questions, comments, resources related to the course.

Student Outcomes:
Upon completion of this course, students will be able to:
- Identify and understand different methods of educational research suitable for different research purposes in instructional design/technology
- Find, understand, evaluate and apply published research that is relevant to their field
- Describe and discuss basic theories and methods of survey research in technology-based research
- Describe and discuss basic theories and methods of qualitative research in technology-based research
- Describe and discuss basic theories and methods of quantitative experimental and quasi-experimental research in technology-based research
- Describe and discuss basic theories and methods of single-subject research in technology-based research
- Describe and discuss theories and methods of mixed-methods and action research in technology-based research
- Describe and implement most common tools for data analyses in quantitative and qualitative research methods
- Design a mini research study incorporating all research components such as literature review, relevant study purpose and appropriate research questions, detailed description of the methodology (e.g., quantitative, qualitative, etc.) and proposed data analysis
- Analyze and critique each element of the published research study.

Professional Standards: (International Society for Technology Education – NETS for Technology Facilitators and Leaders)
TL-II Planning and Designing Learning Environments and Experiences
Educational technology leaders:
(A) Design developmentally appropriate learning opportunities that apply technology-enhanced instructional strategies to support the diverse needs of learners. Candidates (1) research and disseminate project-based instructional units modeling appropriate use of technology to support learning.
(B) Apply current research on teaching and learning with technology when planning learning environments and experiences. Candidates (1) locate and evaluate current research on teaching and learning with technology when planning learning environments and experiences.

TL-III Teaching, Learning, and the Curriculum
Educational technology leaders:
(A) Use current research and district/state/national content and technology standards to build lessons and units of instruction. Candidates (2) investigate major research findings and trends relative to the use of technology in education to support integration throughout the curriculum.

TL-IV Assessment and Evaluation
Educational technology leaders communicate research on the use of technology to implement effective assessment and evaluation strategies. Educational technology leaders:
(B) Use technology resources to collect and analyze data, interpret results, and communicate findings to improve instructional practice and maximize student learning.
(C) Apply multiple methods of evaluation to determine students' appropriate use of technology resources for learning, communication, and productivity. Candidates (2) conduct a research project that includes evaluating the use of a specific technology in P-12 environments.

TL-VI Social, Ethical, Legal, and Human Issues
Educational technology leaders:

(B) Apply technology resources to enable and empower learners with diverse backgrounds, characteristics, and abilities. Candidates: (1) communicate research on best practices related to applying appropriate technology resources to enable and empower learners with diverse backgrounds, characteristics, and abilities.
(C) Identify and use technology resources that affirm diversity. Candidates (1) communicate research on best practices related to applying appropriate technology resources to affirm diversity and address cultural and language differences.
(D) Promote safe and healthy use of technology resources. Candidates (1) communicate research and establish policies to promote safe and healthy use of technology.
(E) Facilitate equitable access to technology resources for all students. Candidates (1) use research findings in establishing policy and implementation strategies to promote equitable access to technology resources for students and teachers.

TL-VIII Leadership and Vision
Educational technology leaders:
(D) Lead in the development and evaluation of district technology planning and implementation. Candidates (2) use evaluation findings to recommend modifications in technology implementations.

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Student Expectations

- Students must adhere to the guidelines of the George Mason University Honor Code [See http://oai.gmu.edu/honor-code].

- Students with disabilities who seek accommodations in a course must be registered with the George Mason University Office of Disability Services (ODS) and inform their instructor, in writing, at the beginning of the semester [See http://ods.gmu.edu/].

- Students must follow the university policy for Responsible Use of Computing [See http://universitypolicy.gmu.edu/1301gen.html].

- Students are responsible for the content of university communications sent to their George Mason University email account and are required to activate their account and check it regularly. All communication from the university, college, school, and program will be sent to students solely through their Mason email account.

- Students must follow the university policy stating that all sound emitting devices shall be turned off during class unless otherwise authorized by the instructor.

- Students are expected to exhibit professional behaviors and dispositions at all times.

Campus Resources

- The George Mason University Counseling and Psychological Services (CAPS) staff consists of professional counseling and clinical psychologists, social workers, and counselors who offer a wide range of services (e.g., individual and group counseling, workshops and outreach programs) to enhance students' personal experience and academic performance [See http://caps.gmu.edu/].

- The George Mason University Writing Center staff provides a variety of resources and services (e.g., tutoring, workshops, writing guides, handbooks) intended to support students as they work to construct and share knowledge through writing [See http://writingcenter.gmu.edu/].

Core Values Commitment
- The College of Education & Human Development is committed to collaboration, ethical leadership, innovation, research-based practice, and social justice. Students are expected to adhere to these principles. http://cehd.gmu.edu/values/

- For additional information on the College of Education and Human Development, Graduate School of Education, please visit our website [See http://gse.gmu.edu/].

Required Text:

McMillan J. (2011). *Educational research: Fundamentals for the consumer* (6th ed.). Boston: AB Longman.

The textbook will be used as a framework for the course. Additional readings relevant to the instructional design, instructional/assistive technology fields will be provided by the instructor.

Recommended Text:

American Psychological Association. (2009). *Publication manual of the American Psychological Association* (6th ed.). Washington, DC: Author.

Course Requirements and Performance-based Assessment, and Evaluation Criteria:

A. **Requirements –**

1. Students will complete class readings to include a supplemental set of articles that reflect current educational research trends in technology and will explore different methodologies in published instructional design/technology research.

2. Participation - 110 points:

   a. Class activities* - 90 points (5-10 points per week): Students will participate in class activities and interactive quizzes in order to practice literature searches, reviews, relevant research applications, and tools for data analysis. In addition to weekly class activities, students will be prompted to work on their Research Proposal Wiki Page. This work is designed to help students prepare for their final Research Proposal assignment one step at a time.

   b. Group Research Analysis - 20 points: Students will develop one group research analysis document, in which they will collaboratively critique a published article (provided by the instructor) in instructional design/technology research. The guidelines for research analysis will be provided and the activity will be completed in the 2nd face to face class session.

3. <u>Research Proposal</u> – 60 points: During the course of the semester, students will design a research proposal for the hypothetical needs assessment and/or usability testing and/or classroom intervention, which will include the literature review, clearly identified purpose of the study and research questions, detailed research methodology (specific research design, appropriate participants/subjects, setting, materials, implementation procedures, considered threats to internal and external validity) and detailed proposed data analysis. This project is the research **PROPOSAL ONLY**, **NOT** to include actual research implementation. <u>Students, who would like to actually implement the research study for extra points, need to contact the instructor early in the semester.</u>

   a. As part of class activities, students will provide constructive feedback to at least one classmate on their literature review table, method tweets, and the proposed research methodology draft.

4. <u>Research Consumer Report</u>: 30 points: At the end of the class, students will critique an article of their choice in preparation of research consumer report. The report will need to analyze and critique chosen article in the areas of topic/problem significance, literature review, research purpose/questions, selected research design, participants, setting, instrumentation/materials, procedures, issues with internal/external validity of the study, data analysis, results and discussion. Students will be expected to apply research terminology learned in the course of study, critical thinking skills, as well as personal opinions and reflections.

*Detailed descriptions and step-by-step instructions for each class activity and course assignments will be provided by the instructor and posted in the corresponding Learning Modules. All assignments must be submitted via Blackboard *on or before* the due date. **In fairness to students who make the effort to submit work on time, points will be deducted from your grade for late assignments. Assignments will not be accepted more than 3 days late <u>unless prior arrangements with the instructor have been made.</u>** Allow additional time for as well as plan for additional participation during activities that require constructive feedback.

B. **Performance-Based Assessments -** This course includes four performance-based assessments: Online participation in class activities, the group research analysis, the research proposal, and the research consumer report.

C. **Criteria for evaluation** - Assessment of each performance assessment are guided by a rubric. The rubrics are as follows:

Rubric for Participation in Class Activities

Exemplary (5 points): The student:
- ☐ Correctly completes and posts all activities on time;
- ☐ Actively participates and supports the members of the learning group and the members of the class. When appropriate provides constructive feedback to at least one of the classmates in a respectful manner.

Adequate (1-3 points): The student:
- ☐ Completes and posts the majority of the activities that are partially correct;
- ☐ Occasionally participates in discussions and provides feedback.

Inadequate (0 points): The student:
- ☐ Does not complete class activities;
- ☐ Does not actively participate in discussions and does not provide constructive feedback;
- ☐ The student may fail to exhibit professional behavior and dispositions.

Research Proposal Rubric

	Points Possible	Points Received	Comments
Appropriate, significant, <u>clearly described and justified</u> research topic/problem (introduction)	**4**		
Appropriate previous research (lit. review section)	**16**		
• at least 5-7 primary empirical research studies present	(2)		
• studies are summarized and briefly analyzed noting limitations of previous research	(8)		
• previous research is related to the proposed study (similar features across) and <u>there is an explicit statement about how existing research with its limitations justifies the proposed study</u>	(6)		
Appropriate, clearly described research purpose and research questions that fit the research problem	**4**		
Appropriate and clearly described methodology for the proposed study (method)	**28**		
• appropriate research design that fits the research questions described in detail	(4)		
• appropriate participants, selection method, as well as setting described in detail	(4)		
• appropriate variables/phenomenon/data sources clearly described including operational definitions and how they will be measured	(4)		
• instrument/materials clearly described including some examples in quantitative research; researcher's identity discussed in qualitative research	(4)		
• appropriate validity/reliability issues described and analyzed in detail	(4)		
• step-by-step data collection procedures described in great detail	(4)		
• proposed data analysis identified and described	(4)		
List of references in APA format	**4**		
Overall clear, good writing in APA style, free of mechanical errors	**4**		
Total	**60**		

Exemplary paper (50-60 points): Appropriate topic, thorough and thoughtful purpose and research questions with appropriate previous research summarized and analyzed, appropriate and clearly described research design, participants, data sources, materials and instruments, implementation procedures, and careful brief description of the proposed data analyses. Good writing style, free of mechanical or stylistic errors, appropriate use of APA format.

Adequate paper (40-49 points): Good overall paper, lacking in one or two of the criteria for an exemplary paper. Not entirely reflective and thoughtful, or minor writing style errors may be present.

Marginal paper (30-39 points): Overall, acceptable but with one or more significant problems. Contains some useful information but may have substantial problems with evaluation, writing style, unclear or inappropriate description of implementation of project.

Inadequate paper (1-29 points): Paper with substantial problems in important areas such as writing, proposed implementation of intervention, procedures for evaluation of results, or overall thoughtfulness. Contains little or no information of value to field of instructional design/technology.

Unacceptable/no paper (0 points): Paper with no value whatsoever relative to the assignment, or no paper turned in at all.

Rubric for Participation in Online Collaboration and Group Research Analysis

Category	Exemplary (5 points)	Acceptable (3 points)	Unacceptable (0 points)
Quantity of Participation			
Takes responsibility for appropriate percentage of the group's work			
Assists in brainstorming, revising, and editing the group's research critique			
Quality of Participation			
Contributes work that is of graduate quality in content and format; cites sources/uses quotes when appropriate			
Provides constructive feedback and valuable input through edits/changes to the critique in a respectful manner			
Timeliness			
Meets activity deadlines			
Reads & responds promptly			
Comments:			

Research Consumer Report Rubric

	Described & Analyzed (points)	Described Only (points)	Missing (points)
Quality of Critique Elements			
1. Title, abstract	(2)	(1)	(0)
2. Introduction of the topic/problem significance	(2)	(1)	(0)
3. Literature review	(2)	(1)	(0)
4. Research purpose/questions	(2)	(1)	(0)
5. Method			
a. Research design	(2)	(1)	(0)
b. Participants/Selection/Setting	(2)	(1)	(0)
c. Variables/Measures/Data Sources	(2)	(1)	(0)
d. Instruments/Materials	(2)	(1)	(0)
e. Data Collection Procedures	(2)	(1)	(0)
f. Validity and Reliability	(2)	(1)	(0)
6. Data analysis	(2)	(1)	(0)
7. Results	(2)	(1)	(0)
8. Discussion	(2)	(1)	(0)
9. Overall review of the article & suggestions for improvement	(2)	(1)	(0)
Quality of Report Presentation/Writing:	Clear, concise edited, in APA 6.0 format (2)	Not in APA 6.0 format (1)	Not edited, not in APA (0)
Total	**30**	**15**	**0**

Grading Scale

Requirements	Points	Percent
Participation in class activities	90	45%
Group Research Analyses	20	10%
Research Proposal	60	30%
Research Consumer Report	30	15%
Total	**200**	**100%**

Grade	Range
A	94-100%
A-	90-93%
B+	86-89%
B	80-85%
C	70-79%
F	69%-below

NOTE: This syllabus **may change** according to class needs.

Tentative Class Topics and Due Dates
(Subject to change for any unforeseen interruptions)

Date	Learning Module	Textbook Readings*, Weekly Activities & Assignments
Tuesday, January 22	1. Introduction to educational research in technology	Chapter 1 (pp.2-18) ✓ **CITI Training** ✓ **Introduction Forum**
f2f meeting Jan 28; 4:30-7:10 - Fenwick Library Room A214		
Tuesday, January 29	2. Literature searches & reviews	Chapter 3 ✓ **Literature Search Scavenger Hunt** ✓ *Research Proposal Wiki*: **Research Topic**
Tuesday, February 5	3. Empirical article anatomy: Research problem & questions	Chapter 1 (pp. 19-30) Chapter 2 (pp. 32-38; 43-55) ✓ **Overview of Research in My Field** ✓ *Research Proposal Wiki*: **Purpose Statement & Research Questions**
Tuesday, February 12	4. Research components Part I: Participants & variables	Chapter 2 (pp. 38-42) Chapter 4 ✓ **Literature Review Table Draft**
Tuesday, February 19	5. Non-experimental quantitative research designs: Survey research	Chapter 7 ✓ **Non-experimental Research Mini-Quiz** ✓ *Research Proposal Wiki*: **Introduction Section Draft & Peer Feedback** ✓ Update Literature Review Table (if needed)
Tuesday, February 26	6. Experimental research designs: Group & single-subject research	Chapter 8 ✓ **Experimental Research Mini-Quiz** ✓ *Research Proposal Wiki*: **Literature Review Section Draft** ✓ Update Literature Review Table (if needed)
Tuesday, March 5	7. Qualitative & mixed method research designs	Chapter 10 & Chapter 11 ✓ **Qualitative Research Mini-Quiz** ✓ *Research Proposal Wiki*: **Method Tweets & Peer Feedback** ✓ Update Literature Review Table (if needed)
No Class (March 12) – Spring Break		
Tuesday, March 19	8. Quantitative and qualitative research analyses	Chapter 9 ✓ **Quantitative and Qualitative Analysis Practice Activity** ✓ **Group Research Analysis** *(done together in f2f meeting)*
f2f meeting March 25; 4:30-7:10 – Krug Hall Room 102		

Tuesday, March 26	9. Research components Part II: Educational measurements & data collection	Chapter 5 & Chapter 6 ✓ **Research Proposal Draft** ✓ **Peer Feedback**
Tuesday, April 2	10. Discussion and conclusions: APA 6th edition style	Chapter 13 ✓ **Reference List in APA Format**
Tuesday, April 9	11. Action research	Chapter 12
f2f meeting April 15; 4:30-7:10 - Krug Hall Room 102 **Research Proposal Due!**		
Tuesday, April 16	12. Intelligent research consumer	Chapter 14
Tuesday, April 23	13. EDIT 590 memory lane	✓ **Identify an Article for Research Consumer Report**
Tuesday, April 30	14. Work on the Consumer Report	
Tuesday, May 7	15. Final assignment	✓ **Research Consumer Report Due**

* Additional readings will be provided by the instructor for some Learning Modules.