GEORGE MASON UNIVERSITY
COLLEGE OF EDUCATION AND HUMAN DEVELOPMENT
PHD IN EDUCATION PROGRAM

EDRS 823, Section 001:
ADVANCED RESEARCH METHODS IN SINGLE SUBJECT & SINGLE CASE DESIGN
3 credits Fall 2021
Tuesday 4:30-7:00pm; Finley 119

INSTRUCTOR INFORMATION

Name: Anna (Anya) Evmenova, Ph.D.
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PREREQUISITES: EDRS 810, 811, 812

COURSE DESCRIPTION

823 Advanced Research Methods in Single Subject/Case Design (3:3:0): Prepares students to conduct research using single subject design and single case study design. Provides understanding of the salient features as well as the advantages and disadvantages of these research methodologies. Students critique and analyze published research using these methodologies. Provides opportunities to apply these methodologies to research questions related to current student interests.

COURSE DELIVERY METHOD

This course will be delivered face-to-face (or synchronously online if needed) format. Course materials will be provided via Blackboard Learning Management system (LMS) housed in the MyMason portal. You will log in to the Blackboard (Bb) course site using your Mason email name (everything before @masonlive.gmu.edu) and email password. The course site will be available on August 24th, 2021.

Under no circumstances, may candidates/students participate in online class sessions (either by phone or Internet) while operating motor vehicles. Further, as expected in a face-to-face class meeting, such online participation requires undivided attention to course content and communication.

Technical Requirements

To participate in this course, students will need to satisfy the following technical requirements:

- High-speed Internet access with standard up-to-date browsers. To get a list of Blackboard's supported browsers see:

https://help.blackboard.com/Learn/Student/Getting_Started/Browser_Support#supported-browsers

To get a list of supported operation systems on different devices see: https://help.blackboard.com/Learn/Student/Getting_Started/Browser_Support#tested-devices-and-operating-systems

- Students must maintain consistent and reliable access to their GMU email and Blackboard, as these are the official methods of communication for this course.
- Students will need a headset microphone for use with the Blackboard Collaborate web conferencing tool (for synchronous sessions).
- Students may be asked to create logins and passwords on supplemental websites and/or to download trial software to their computer or tablet as part of course requirements.
- The following software plug-ins for PCs and Macs, respectively, are available for free download:
    - Adobe Acrobat Reader: https://get.adobe.com/reader/
    - Windows Media Player: https://support.microsoft.com/en-us/help/14209/get-windows-media-player
    - Apple Quick Time Player: www.apple.com/quicktime/download/

Expectations

- Course Week: Our course week will begin on the day that our face-to-face/synchronous meetings take place as indicated on the Schedule of Classes.
- Log-in Frequency:
  Students must actively check the course Blackboard site and their GMU email for communications from the instructor, class discussions, and/or access to course materials at least 2 times per week. In addition, students must log-in for all scheduled online synchronous meetings (when applicable).
- Participation:
  Students are expected to actively engage in all course activities throughout the semester, which includes viewing all course materials, completing course activities and assignments, and participating in course discussions and group interactions.
- Technical Competence:
  Students are expected to demonstrate competence in the use of all course technology. Students who are struggling with technical components of the course are expected to seek assistance from the instructor and/or College or University technical services.
- Technical Issues:
  Students should anticipate some technical difficulties during the semester and should, therefore, budget their time accordingly. Late work will not be accepted based on individual technical issues.
- Workload:
  Please be aware that this course is **not** self-paced. Students are expected to meet *specific deadlines* and *due dates* listed in the **Class Schedule** section of this syllabus. It is the

student's responsibility to keep track of the weekly course schedule of topics, readings, activities and assignments due.

- Instructor Support:
  Students may schedule a one-on-one meeting to discuss course requirements, content or other course-related issues. Those unable to come to a Mason campus can meet with the instructor via telephone or web conference. Students should email the instructor to schedule a one-on-one session, including their preferred meeting method and suggested dates/times.
- Netiquette:
  The course environment is a collaborative space. Experience shows that even an innocent remark typed in the online environment can be misconstrued. Students must always re-read their responses carefully before posting them, so as others do not consider them as personal offenses. *Be positive in your approach with others and diplomatic in selecting your words*. Remember that you are not competing with classmates, but sharing information and learning from others. All faculty are similarly expected to be respectful in all communications.
- Accommodations:
  Online learners who require effective accommodations to ensure accessibility must be registered with George Mason University Disability Services.

Learning activities include the following:

1. Class lecture, discussion and possible guest speaker
2. Videos and other relevant media presentations
3. Study and independent library research
4. Online resources and applications with relevant hardware and software
5. Application activities, including in-class evaluation of research and materials
6. Written research study using the American Psychological Association format

LEARNER OUTCOMES

By the end of the course students will be able to:

1. Discuss the basic concepts, strengths and limitations of single subject/case research designs
2. Discuss Interobserver Agreement/Reliability, Fidelity of Implementation, Validity, Visual Analysis, and Statistical tests involving single subject/case research designs
3. Evaluate previous research that has employed single subject/case research methodology
4. Design and implement a research study using single subject/case methodology

REQUIRED TEXT

Ledford, J. R. & Gast, D. L. (2018). *Single subject research methodology: Applications in special education and behavioral sciences* (3rd ed.). Routledge.

Additional readings will be provided by the instructor and will be posted on Blackboard each week.

RECOMMENDED TEXTS

Kratochwill, T. R., & Levin, J. R. (Eds.). (2014). *Single-case intervention research: Methodological and statistical advances*. American Psychological Association.

Kennedy, C. H. (2005). *Single case designs for educational research*. Pearson.

Alberto, P. A., & Troutman, A. C. (2012). *Applied behavior analysis for teachers* (9th ed.). Pearson.

COURSE PERFORMANCE EVALUATION

Students are expected to submit all assignments on time in the manner outlined by the instructor (e.g., Blackboard, Tk20, hard copy). Late assignments will result in a reduction in points. In-depth reading, study, and work on course requirements require outside class time. Students are expected to allot approximately three hours for class study and preparation for *each* credit hour weekly in addition to papers and assignments.

Course Assignments & Point Distribution

Class Participation: 10 Points

Due to the importance of lecture and discussion to your total learning experience, you must both attend and participate in class regularly. Attendance, punctuality, preparation, and active contribution are essential.

Minimal	Good	Outstanding
The student is late for class. Absences are not documented by following the procedures outlined in the syllabus. The student is not prepared for class and does not actively participate in discussions. May fail to exhibit professional behavior and dispositions**.** Excessive absences can result in additional penalties - **5 or less pts.**	The student is on time, prepared for class, and participates in group and class discussions. The student attends most classes and if an absence occurs, the procedure outlined in the syllabus is followed - **5-9 pts**.	The student attends all classes, is on time, and is prepared. The student actively participates and supports the members of the class – **10 pts.**

Blackboard Activities: 30 Points

Students will be required to participate in 6 class blackboard discussions (5 points each) for topics throughout the course. Students will be expected to provide their opinions as well as post feedback and comments based on opinions of other students. The tentative list of blackboard activities as follows:

> **Blackboard 1**: Discover information about one of the following figures: Paul Broca, Hermann Ebbinghaus, Ivan Pavlov, Adolphe Quetelet, Ronald Aylmer Fisher, David Barlow, Michel Hersen, Alan Kazdin, Gordon Allport, and Burrhis Frederick Skinner. Write 2-3 paragraphs about their contributions to the field of single subject/case design. All citations should be noted.

Blackboard 2: Please describe the behaviors you are planning to measure in your project. Provide operationalized definitions for those behaviors. **Find 2-3 single-subject studies that have operationalized your behaviors (or similar ones) in different ways.** Describe how the behaviors were defined in those studies. Discuss what dimensions you will use to measure the behavior(s). Design a draft of the recording system that you may want to use in your project. Please post by Tuesday morning. We will discuss your recording systems in class.

Blackboard 3: Prepare and post the Logic Model for your study. Your logic model will map out sample characteristics, intervention characteristics (including potential confounding variables), dependent variables, intervention outcomes (proximal and distal), as well as the predicted change in the behavior. Make sure to base your logic model on existing research.

Blackboard 4: Develop research questions appropriate for the single subject research study based on the topic you have chosen for your final project. Provide operationalized definitions for all the terms used in the research questions. Identify appropriate research design(s) to address those questions. Post the questions on the blackboard by Saturday. Between Sunday and Tuesday provide feedback to your classmates on their research questions. Please discuss why you think their questions are suited or not suited for single subject research study.

Blackboard 5: Following directions in the graphing manual(s), create a hypothetical graph of your study and post it on Blackboard. Conduct visual analysis of your hypothetical graph and provide description of your hypothetical results.

Blackboard 6: Conduct a mini meta-analysis study using the coding rubric provided in class. Find 3-5 single-subject research articles on your topic (possibly use the same articles in the literature review section of your final paper), code them using the rubric, use one of the methods for calculating effect sizes for single-subject experimental designs discussed in class. Please post a brief description of your meta-analysis methodology, results, as well as your impressions regarding meta-analysis as method for identifying evidence-based practices.

Short Presentations: 10 Points

From recent (less than 5 years old) peer reviewed journal articles choose one single subject design research studies to discuss the issue of:

(1) Measures
(2) Interobserver Agreement/Fidelity of Treatment/Procedural Reliability
(3) Validity: Internal, External, and Social
(4) Visual Analysis
(5) Statistical Analysis

Make sure to include the following requirements:

1. Participants (1)

2. Setting (1)
3. Methods (1)
4. Findings (1)
5. Commentary (using quality indicators) should reflect positive points/strengths (2)
6. Commentary (using quality indicators) should reflect negative points/limitations (2)
7. Commentary and importance of the issue/chosen topic (2)
   Total points=10

A schedule with presentation dates is provided within the course schedule. The rubric below will denote the scoring.

Short Presentations for Each Topic

Unsatisfactory	Minimal	Good	Outstanding
Listener cannot understand presentation because there is no sequence of information. Does not engage the audience. Student does not have grasp of information; students cannot answer questions about subject. Presentation includes five or less of the requirements - **1-5 pts.**	Listener has difficulty following presentation because presenter jumps around. Does not engage most of the audience. Student is uncomfortable with information and is able to answer only rudimentary questions. Presentation includes only six of the requirements – **6 pts.**	Student presents information in engaging and logical sequence which audience can follow. Student is at ease with content, but fails to elaborate. Presentation includes minimal work on all seven of the requirements – **7 pts.**	Student presents information in engaging, novel, and logical sequence which audience can follow. Student demonstrates full knowledge with explanations and elaboration. Presentation includes comprehensive work on all seven of the requirements – **10 pts.**

Research Study Project: 40 points

The research study project is designed to provide experience with single subject design, especially implementing and writing up a research report.

Introduction:

Purpose Statement: Discuss what is this research is about including the significance of this topic.

Research Questions: Have at least 2-3 research questions (must include participants, dependent, independent variables, and site if appropriate).

Background Literature: Provide a brief description of the background literature that indicates a need for your questions.

Method: (should be **more** detailed than is common for most published reports)

Research Design*:* Describe and justify single-subject research design chosen for this study.

Participants: Describe demographic and educational information for your individual(s). In studies with less than 10 participants, each participant should be described individually.

Setting: Describe a setting, in which your study took place in detail.

Independent Variables*:* Provide operationalized definitions or describe in detail the independent variable in the study including all its components.
Materials: Carefully describe all of the instructional materials that were used in your project. Attach copies of the precise materials used if applicable.
Dependent Variables*:* Provide operationalized definitions of all dependent variables examined in the study.
Procedures: Carefully describe in a step-by-step fashion what you did with the individual(s). Include description of the procedures during the baseline, treatment, maintenance and/or generalization phases.
Interobserver Agreement: Define the procedures, explain observer training, include formulas and coefficients.
Procedural Reliability: Define the procedures, explain observer training, include formulas and coefficients.
Social Validity: Describe social validity measures.
Data Analysis: Describe all the analyses you are going to use (visual and statistical) in great detail.

Results:

Visual Analysis: Describe the visual analysis results (e.g., including level, trend, variability, immediacy of change, overlap, consistency)
Statistical Analysis and/or Randomization Tests (if any): Describe the statistical analysis results or discuss why you chose not to use any statistical procedures.
Social Validity: Describe social validity results.

Discussion:

Provide a brief discussion of your findings.

Implications:

Provide some insights as to why you might have obtained the findings and what you learned from the project.

Reflection:

Include a brief (1-2 pages) reflection on single subject research methods in general and your project in particular.

Research Study Project Scoring Rubric

Unsatisfactory	Minimal	Good	Outstanding
Paper with substantial problems in important areas such as writing, implementation of intervention, and evaluation of results, overall thoughtfulness. Contains little or no information of to the research in single subject design –**1-15 pts.**	Overall, acceptable but with one or more significant problems. Contains some useful information, but may have substantial problems with evaluation, writing style, or implementation of project - **16-25 pts.**	Good overall paper, lacking in one or two of the criteria for an exemplary paper. Not entirely reflective or thoughtful, or minor writing style errors may be present - **26-34 pts.**	Appropriate topic, thorough and thoughtful review of previous research, appropriate and clearly described implementation procedures, careful measurement and evaluation of results, thorough and appropriate discussion of implications of findings. Good writing style, free of mechanical or stylistic errors, appropriate use of APA format throughout - **35-40 pts.**

Research Poster/Presentation: 10 points

Prepare an overview of your paper using the following guidelines:

1. Title of research
2. Purpose of research
3. Background review including statement of need
4. Method, including sample, materials, and procedures, validity and reliability
5. Data analyses
6. Results
7. Discussion and implications

Poster/Presentations Scoring Rubric

Unsatisfactory	Minimal	Good	Outstanding
Weak overall presentation that reflects very little knowledge of topic or project. May appear very poorly prepared, or may not have followed directions. Style or visual elements may be inadequate or lacking - **1-5 pts.**	Poster presentation provides relevant information, but demonstrates only a limited understanding of the topic or project. Style, organization, or visual elements may be less than adequate. Responses to audience questions may reflect lack of understanding of relevant research methods - **6-7 pts.**	Good overall poster / presentation, but may be lacking in one or two of the criteria specified in exemplary response. May seem a little less polished or prepared, may be vague in some places, or may fail to completely answer audience questions - **7-9 pts.**	Poster/presentation clearly describes major elements of the proposal; poster reflects clarity, organization, knowledge and interest in the content being presented; reflects a high level of preparation; makes effective use of visual format and presents an interesting, attractive appearance; describes very clearly the methods under consideration; poster and discussion keep the audience engaged; provide information of interest and value to audience. Presenter is able to answer basic audience questions about the proposal with poise, clarity, and thoughtfulness – **10 pts.**

Evaluation in Summary

1. Class participation: 10 points
2. Blackboard activities (6): 30 points (5 points each)
3. Short presentation: 10 points
4. Research project: 40 points
5. Poster presentation: 10 points

Points will be deducted for work submitted late.

Grading Criteria

96-100 points = A
90-95 points = A-
85-89 points = B
80-84 points = B-
70-79 points = C
<70 points = F

GMU POLICIES AND RESOURCES FOR STUDENTS

Policies

- Students must adhere to the guidelines of the Mason Honor Code (see https://catalog.gmu.edu/policies/honor-code-system/).

- Students must follow the university policy for Responsible Use of Computing (see https://universitypolicy.gmu.edu/policies/responsible-use-of-computing/).

- Students are responsible for the content of university communications sent to their Mason 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 with disabilities who seek accommodations in a course must be registered with George Mason University Disability Services. Approved accommodations will begin at the time the written letter from Disability Services is received by the instructor (see https://ds.gmu.edu/).

- Students must silence all sound emitting devices during class unless otherwise authorized by the instructor.

Campus Resources

- Support for submission of assignments to Tk20 should be directed to tk20help@gmu.edu or https://cehd.gmu.edu/aero/tk20. Questions or concerns regarding use of Blackboard should be directed to https://its.gmu.edu/knowledge-base/blackboard-instructional-technology-support-for-students/.

- For information on student support resources on campus, see https://ctfe.gmu.edu/teaching/student-support-resources-on-campus

Notice of mandatory reporting of sexual assault, interpersonal violence, and stalking:
As a faculty member, I am designated as a "Responsible Employee," and must report all disclosures of sexual assault, interpersonal violence, and stalking to Mason's Title IX Coordinator per University Policy 1202. If you wish to speak with someone confidentially, please contact one of Mason's confidential resources, such as Student Support and Advocacy Center (SSAC) at 703-380-1434 or Counseling and Psychological Services (CAPS) at 703-993-2380. You may also seek assistance from Mason's Title IX Coordinator by calling 703-993-8730, or emailing titleix@gmu.edu.

For additional information on the College of Education and Human Development, please visit our website https://cehd.gmu.edu/students/ .

Tentative Class Topics and Due Dates

(Subject to change for weather or other unforeseen interruptions)

Date	Class Topic	Reading &Assignments are Due
Tuesday, August 24	1. Introduction, History, and General Issues in Single Subject Research	- Horner et al. (2005) - Ledford & Gast (2018): Chapter 1
Tuesday, August 31	2. Behavioral Assessment, Data Collection & Recordings *In-class activity: Progress report 1*	- Ledford & Gast (2018): Chapter 5 (pp. 97-117) + Appendixes - Additional readings provided by the instructor on Blackboard - **Blackboard 1** - **Post Study Idea**
Tuesday, September 7	3. Logic Model; Operational Definitions; Research Questions & Experimental Control	- Kennedy chapter 5 (will be provided) - Additional readings provided by the instructor on Blackboard - **Blackboard 2**
Tuesday, September 14	4. Single Subject Research Designs: Basic Designs	- Ledford & Gast (2018): Chapter 9 & Chapter 10 - Additional readings provided by the instructor on Blackboard - **Blackboard 3** - **Short Presentation 1**
Tuesday, September 21	5. Single Subject Research Designs: More Designs	- Ledford & Gast (2018): Chapter 11 & Chapter 12 - Additional readings provided by the instructor on Blackboard - **IRB applications** (Ledford & Gast (2018: Chapter 2 if needed)
Tuesday, September 28	6. Interobserver Agreement and Fidelity of Implementation/ Procedural Reliability *In-class activity: Progress report 2*	- Ledford & Gast (2018): Chapter 5 (pp. 117- 131) & Chapter 6 (133-141) - Additional readings provided by the instructor on Blackboard - **Blackboard 4**

Tuesday, October 5	7. Validity: Internal, External, Social	- Ledford & Gast (2018): Chapter 4 & Chapter 6 (141-156) - Additional readings provided by the instructor on Blackboard **- Short Presentation 2** **- Method Section Update**
No Class – Tuesday October 12th (Monday classes meet on Tuesday)		
Tuesday, October 19	9. Visual Analysis *In-class activity: Progress report 3*	- Ledford & Gast (2018): Chapter 8 - Additional readings provided by the instructor on Blackboard **- Short Presentation 3**
Tuesday, October 26	10. Visual Analysis - Graphing	- Ledford & Gast (2018): Chapter 7 - Graphing directions - Additional readings provided by the instructor on Blackboard **- Short Presentation 4**
No Class – Tuesday November 2nd – Independent Work Time (instructions will be provided by instructor)		
Tuesday, November 9	12. Single-subject Meta-analysis	- Ledford & Gast (2018): Chapter 14 - Additional readings provided by the instructor on Blackboard - **Blackboard 5**
Tuesday, November 16	13. Statistical Analysis in Single-Subject Research *In-class activity: Progress report 4*	- Ledford & Gast (2018): Chapter 13 - Additional readings provided by the instructor on Blackboard **- Blackboard 6** **- Short Presentation 5**
Tuesday, November 23	**ASYNCHRONOUS CLASS** 14. Study Implementation and Update Switch Papers	- Ledford & Gast (2018): Chapter 3 - Additional readings provided by the instructor on Blackboard **- Final Paper Draft** **- Exchange Papers for Feedback**
Tuesday, November 30	15. Single Subject Research Designs: Single Case	- Haardörfer & Gagne (2010) - Additional readings provided by the instructor on Blackboard **- Posters/Presentations** **- Final Paper Due**