

University of Central Florida

College of Education and Human Performance

IDS 7501

Single-Subject Research Methodology Spring 2014

Professor	Eleazar Vasquez III, PhD, BCBA-D
Office Hours	Monday 10-12PM & 1-2PM
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Required Text	Gast, D. L. (2010). <i>Single subject research methodology in behavioral Sciences</i> : New Yourk and London: Routledge Taylor & Francis Group.
Supplemental Text (I will provide copies for reference)	Kazdin, A. E. (1982). <i>Single-case research designs: Methods for clinical and applied settings</i> . New York: Oxford University Press. Iwata, B. A., Neef, N. A., Mace, F. C., & Vollmer, T. R. (2000) Methodological and conceptual issues in applied behavior analysis. <i>Journal of Applied Behavior Analysis</i> , 71(20)

BACKGROUND

Single subject research methods have emerged over the last 60 years as a major approach for investigating environment-behavior relationships (e.g., treatments). Applied behavior analysts drove this emergence, but the designs have utility to special educators because individuals with disabilities are a heterogeneous group, even within diagnostic categories. Thus, special education scientists should be competent in reading, critiquing, and conducting such studies.

COURSE DESCRIPTION

This is an initial course in the use of single subject research methodology within Special Education. It includes an overview of behavioral measurement, single subject research designs, and methods of data analysis. Critical analysis of research articles occurs. Development of a single subject research proposal and execution is required. The intent of the course is to conduct single subject research related to student's field of study and to have the opportunity to examine the field based issue in a seminar format guided by faculty

COURSE OBJECTIVES

During and upon completion of the course, the learner will (through discussions, activities, examinations, written products, and presentations) demonstrate the following knowledge and performance competencies:

- Describe and apply the logic, foundations, and rationale of single subject methods.
- Formulate research questions for single subject studies from the literature and experience.
- Define behaviors for measurement and describe methods for measuring those behaviors.
- Use appropriate methods for calculating inter-observer agreement, including kappa, point-by-point, chance formula, and the gross method.
- Describe the requirements, advantages, uses, and limitations of single subject demonstration designs, including the withdrawal design, reversal design, multiple baseline designs, multiple probe design, changing criterion design, and combinations of these designs.
- Describe the requirements, advantages, uses, and limitations of comparative single subject designs, including the alternating treatments designs (multi-element designs), multi-treatment designs, adapted alternating treatments designs, and parallel treatments designs.
- Describe the threats to internal validity and describe methods for minimizing and controlling for the effects of extraneous variables.
- Describe the characteristics of data, display data graphically, and describe data by its characteristics.
- Conduct formative and summative evaluations of data using visual inspection procedures, descriptive statistics, and inferential statistics.
- Describe the rationale, uses, measurement, and calculation of procedural fidelity data.
- Describe the case for external validity of single subject studies.
- Define and describe the measurement of the social validity of goals, procedures, and effects of single subject experimental studies.
- Write the introduction, methods, and data analysis procedures for single subject studies.
- Discuss ethical issues involved in experimental studies.

COURSE FORMAT

Class sessions will be conducted in a combined format of lectures and discussions. Students are expected to come to class thoroughly prepared to discuss the topics of the readings. This preparation will be assessed through quizzes taken before class (if needed) as well as participation in class discussions. Emphasis will be placed on students acquiring the competencies needed to conceptualize, plan, implement, evaluate, describe, and critique single subject experimental research. Students will be responsible for making applications of the content to their current interests and areas of expertise.

GENERAL REQUIREMENTS AND GRADING

1. Complete successfully weekly reviews of single case design research articles
2. Complete research study using single case study design.
3. Participation in class discussions.
4. Update Livetext portfolio (Exceptional Education PhD only)

Student Evaluation:

****Weekly Quizzes (if needed):** Due in class period, beginning with the second class session. The quiz will be composed of fill-in-the-blank and short answer questions. The majority of the questions on the quiz will be from material covered in the previous class session. One or two questions, however, will be from the readings assigned for that particular class session. These questions will be general in nature and will be easy to answer having read the material to be discussed. Quizzes will be worth 25 points each. There will be a total of 12 quizzes given during the course. Only 11 quizzes will count towards the final grade, so each student's lowest quiz score will be dropped. Note: Quizzes cannot be made up if they are missed and will only be given at the scheduled times listed on the syllabus. **275 points as needed**

Weekly Article Critique/Review: In addition to discussion of required readings and study development, we will critique an article every week. Students will be given an article analysis form to fill out for each manuscript. On the first day of class students will choose an individualized topic of importance. You will then select one single case design paper from the empirical literature and disseminate to the group. We will then critique the manuscript in class. All students must come to class with a completed critique and participate in discussion to receive points for the week. This assignment is worth **50 points**.

SAFMEDS: Students will be given a list of terms and definitions that they must become fluent in knowing orally both term and definition. At midterm the professor will ask for students to Say All Facts Minus Every Day Shuffled as a check of student knowledge. The expectation is 100% correct in one minute. This is a pass/fail skill worth **25 points**. Please find the SAFMED Terms here: <http://quizlet.com/join/eNzp3qrWh>

Excel Graph Project: You will be given four sets of raw data, each collected for a different single-case design. Using instructions that will be provided to you in class, you will be required to produce four graphs (i.e., reversal, multiple-baseline, alternating treatments, changing-criterion) using MS Excel. This assignment is due on March 3rd at the beginning of class. This assignment is worth **25 points**.

Complete research study using single case study design: This document will contain the introduction (including a literature review), method sections of a proposed study, results, and discussion. As a test of the generality of your learning in the course, you will be required to write an APA-style paper for a single-case experimental study of your choice. The page limit will be 30 pages, including your title page, abstract, references, and figures. At minimum of four research articles must be reviewed in your introduction. You

may not write about a project you have already completed or used for another class however you are welcome to use this study as a pilot for your dissertation. **Your research topic must be submitted and approved by the IRB by (January 23, 2014).** A detailed outline of your introduction and method sections, along with a comprehensive reference list is due to me on **Jan 14th**. The final paper is due on **April 15**. This assignment is worth **100 points**.

Single Subject Design Research Study

Part 1&2: IRB submission & Detailed Outline Due by January 14th for feedback
Part 3 RUN STUDY and submit final paper April 15, 2014

EXPERIMENTAL PROSPECTUS COMPONENTS

- 1) Introduction
 - a) Background and literature
 - b) Set the stage; discuss what has been found and lead to what needs to be determined.
 - c) Formulate the research question
 - d) What do you want to know?
- 2) Methods
 - a) Describe the Setting
 - i) Where, when, how...
 - b) Describe the Subject
 - i) One or more; where you contacted them; how they were selected;
 - ii) general description (demographics); ...
 - iii) How are they the same or different?
 - c) Explain the Dependent Variable – operational definition
 - d) Observation techniques
 - e) Measures –will you use frequency, duration, latency, intensity, etc.
 - f) Reliability – interobserver method and frequency of checks
 - g) Experimental Procedure's (i.e. a task analysis of the experiment)
 - h) Define the Independent Variable – Precisely what is it that you are going to do to cause the expected results?
 - i) Explain the Experimental Design –Is this an ABA design, or something more complex?
- 3) Results
 - a) Restate purpose statement and research questions
 - b) Provide visual graph of data
 - c) Discuss visual analysis and data outcomes
 - d) Additional analysis such as effect size
- 4) Discussion
 - a) What do the data mean?
 - b) How do the data advance the topic?
 - c) What are the limitations of this study?
 - d) Generalization and Maintenance of the outcomes?
 - e) Future directions and considerations
 - f) Future research questions

g) Final summary and conclusion

***** Make sure you add Dr. Eleazar Vasquez as advisor on the IRB for signoff.**

Meeting Dates for IRB 2014

1. January 22, 2014
2. February 26, 2014

Final Exam: The final exam will be worth **100 points** and will be given during the final class online via webcourses.

Grading Criteria:

	Points Possible
Weekly Quizzes (11 @ 25 pts each)	275
Excel Graphing Project	25
Article Reviews (10 @ 5 pts each)	50
SAFMEDS	25
SSD Study	100
Class Participation	25
Final Exam	100

Total	625

Tentative Schedule (subject to change)

Date	Topic	Readings/Assignments
1/7/14	Introduction to course, overview of SSD, SSD vs Between group designs, Research Questions, and Course assignment process	<ul style="list-style-type: none"> • Read Gast Chapter 4
1/14/14	History of single subject designs, designing your research study	<ul style="list-style-type: none"> • Read Gast Chapter 1 • Submit IRB/Prospectus to Dr. V by 1/17 • Quiz 1
1/21/14	Evaluating Single Subject Designs	<ul style="list-style-type: none"> • Read Supplemental Horner et al. • IRB meets 1/22. Last Chance to get sign off for January meeting • Quiz 2
1/28/14	Dependent Measurement:	<ul style="list-style-type: none"> • Read Gast Chapters 5 & 7 • Quiz 3
2/4/14	Experimental Variables	<ul style="list-style-type: none"> • Read Kazden Chapter 2 • 3 article reviews – 75pts • Quiz 4
2/11/14	IOA and Fidelity of Treatment	<ul style="list-style-type: none"> • Read Kazden Chapter 5 • Quiz 5
2/18/14	Graphing & Visual Analysis	<ul style="list-style-type: none"> • Read Gast chapter 8 & 9

		<ul style="list-style-type: none"> • Excel Graphing Due – 25pts • Quiz 6
2/25/14	Reversals and Withdrawal Designs	<ul style="list-style-type: none"> • Read Gast Chapter 10 • Quiz 6
3/4/14	Spring Break (no class)	<ul style="list-style-type: none"> • Work on final research project
3/11/14	Multiple Baseline Designs	<ul style="list-style-type: none"> • Read Gast Chapter 11 • Quiz 7
3/18/14	Multiple Treatment Designs	<ul style="list-style-type: none"> • Read Kazden Chapter 9 • Quiz 8
3/25/14	Replication	<ul style="list-style-type: none"> • Read Gast Chapter 6 • Quiz 9
4/1/14	Effect Size/statistics	<ul style="list-style-type: none"> • Chapter 14 • Supplemental Manuscripts • Website: singlecaseresearch.org • Quiz 10
4/8/14	CEC conference week (no class)	<ul style="list-style-type: none"> • Work on final research project
4/15/14	Ethics	<ul style="list-style-type: none"> • Read Chapter 3 • Final Draft of Research Project Due – 100 pts • Quiz 11
4/22/14	Present Project to Class and Faculty	<ul style="list-style-type: none"> • Presentation - 25 pts
4/29/14	Final Exam	<ul style="list-style-type: none"> • Final Exam -100pts
5/6/14	Final Grades due to UCF	