EDSP 670 The Use of Single Subject Research Designs in Education

Spring, 2005

Professor: Andrew L. Egel, Ph.D.

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Phone: 405-6487

Email: aegel@umd.edu

Time: Tuesday, 7:00-9:45


COURSE DESCRIPTION

The course is designed to provide the student with an extensive background in the design and analysis of single subject research. The course will begin by addressing issues relevant to the design of empirical research in general and then proceed to issues related to single subject designs.

COURSE OBJECTIVES

The course is designed to provide the student with an extensive background in the design and analysis of single subject research. The emphasis on applications of such research designs and methodology help to prepare discipline-based practitioners to teach effectively in a pluralistic society. We will begin by addressing issues relevant to the design of empirical research in general and then proceed to issues related to single subject designs.

ACADEMIC INTEGRITY

Along with certain rights, teacher candidates also have the responsibility to behave honorably in an academic environment. Academic dishonesty, including cheating, fabrication, facilitating academic dishonesty, and plagiarism will not be tolerated. Any abridgement of academic integrity standards will be referred directly to the Department Chair and forwarded to the University’s Office of Judicial Affairs. Confirmation of such incidents can result in expulsion from the University. Teacher candidates who are uncertain as to what constitutes academic dishonesty should consult the University publication entitled Academic Dishonesty.
HONOR PLEDGE: The University has a nationally recognized Honor Code, administered by the Student Honor Council. The Student Honor Council proposed and the University Senate approved an Honor Pledge. The University of Maryland Honor Pledge reads:

I pledge on my honor that I have not given or received any unauthorized assistance on this assignment or examination.

Unless you are specifically advised to the contrary, the Pledge Statement should be handwritten and signed on the front cover of all papers, projects, exams, or other academic assignments submitted for evaluation in this course. Students who fail to write and sign the Pledge will be asked to confer with Dr. Egel.

COURSE OBJECTIVES

1. Discuss in writing the advantages and disadvantages of single subject experimental designs as contrasted with group experimental designs.

2. Define in detail the terms internal and external validity and state how single-subject designs control for threats to validity.

3. Describe, recognize, and give examples of each of the four basic methods commonly used to observe behavior.

4. Be able to explain what is meant by the term reliability and state why it is important.

5. Compute reliability, given recordings of two observers.

6. Given a research study, identify the design employed and evaluate its adequacy with respect to internal and external validity.

7. Describe in writing the procedures for implementing the following single subject designs and critically evaluate them with respect to internal and external validity:
   (a) Reversal
   (b) Multiple baseline
   (c) Multiple probe
   (d) Changing criterion
   (e) Alternating Treatments/multi-element design
   (f) Simultaneous treatment design

8. Display data graphically, accurately, and consistent with accepted norms (as presented in class).

9. Evaluate the appropriateness of programmatic decisions on the basis of given set of data.

STUDENT RESPONSIBILITIES

1. Students will attend all class sections.

2. Students will hand in all assignments typed on the dates due. Late papers will not be accepted unless prior permission has been given. All projects must be turned in to obtain a grade of A or B.

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3. Students will have read all assignments prior to discussion sessions and will actively engage in the class discussion.

EVALUATION

Evaluation will be based on several variables measured throughout the semester.

1. Group discussion: A student will each week be assigned an article. Each student will provide a written summary of the article's main points (with enough copies for the other students).

2. Review writing: Each student will be expected to write three reviews of research articles using the format supplied by the Journal of Applied Behavior Analysis. Students will be evaluated on the tone of their review (suggestive and not harsh); and on their evaluation of the methodology, analysis, results, and discussion sections of the articles. The first review will be considered a practice/feedback session and will not be counted.

3. Exams: Exams will contain both essay and multiple choice questions on all of the material covered to that point.

4. Final project: Each of you is expected to design, implement, and write a single subject research study. The project must include replication across at least 2 subjects, settings, behaviors, and/or teachers. The final write-up will adhere to APA style. Please consult the APA style manual, Vol. IV, for appropriate headings and subheadings. The project will also be discussed in class.

5. You should start thinking of topics early in the semester. As each area is covered (e.g., methodology), you should decide what is applicable to your project. Everyone must meet with me prior to March 15 to review his or her proposal. Please bring to that meeting a typed proposal that includes general area, observational procedure(s), research design, subjects and setting. Projects will be due on May 12.

6. Evaluation of the project will be based on the completeness of each section (e.g., abstract, introduction, methods, results, discussion, and references). Special attention will be given to the methods and result sections.

7. Presentation of final project: Each student will be required to present the results of their project in a short (5-6 minute) in-class presentation. The presentation should follow the general outline of the final paper. For example:

1) Statement of problem area and why it was of interest
2) Description of subjects/setting
3) Detailed presentation of procedures
4) Design used
* 5) Results (present graphs, tables, etc.)
6) Discussion

*Helpful to have overheads and handouts

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### Assignment

<table>
<thead>
<tr>
<th>Assignment</th>
<th>Approximate Points</th>
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<tbody>
<tr>
<td>1. Exams</td>
<td>100</td>
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<tr>
<td>2. Review writing (3 at 40 points each) (First review ungraded)</td>
<td>80</td>
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<tr>
<td>3. Final project presentation</td>
<td>50</td>
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<td>4. Final project write-up</td>
<td>70</td>
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### ASSIGNMENT

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<tr>
<th>assignment</th>
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<tbody>
<tr>
<td>Final project approved</td>
<td>PRIOR to March 15</td>
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<tr>
<td>First journal review</td>
<td>April 15</td>
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<tr>
<td>Second journal review</td>
<td>April 29</td>
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<td>Third journal review</td>
<td>May 6</td>
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<td>Student presentations</td>
<td>May 3, 10</td>
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<td>Final project</td>
<td>May 12</td>
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### COURSE OUTLINE

<table>
<thead>
<tr>
<th>Dates</th>
<th>Topic</th>
<th>Chapters</th>
<th>Readings</th>
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<tbody>
<tr>
<td>2/1</td>
<td>Introduction to class Factors affecting experimental designs</td>
<td>1, 5</td>
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<tr>
<td>2/8-2/15</td>
<td>Introduction to single subject design</td>
<td>3, 4</td>
<td>1, 2</td>
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<tr>
<td>2/22</td>
<td>Introduction to single subject design (cont’d)</td>
<td>6</td>
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<tr>
<td>2/22-3/1</td>
<td>Observational methodology</td>
<td>7, 8</td>
<td>3, 4</td>
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<td>3/8-3/15</td>
<td>Reversal designs</td>
<td>9</td>
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<tr>
<td>3/29</td>
<td>Midterm exam</td>
<td>10</td>
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4/5-4/12  Multiple probe designs 11
          Changing criterion designs 11
          Journal review procedure
          Format of articles

4/19  Alternating treatment designs 12
      Simultaneous treatment designs 12
      In class critique (article 1)

4/26  Statistical analyses of single
      subject designs 13
      Withdrawal design 5

5/3   In class article critique (article 2)
      Student presentations

5/10  Student presentations

**ADDITIONAL READINGS**

   individual behavior. *Analysis and Intervention in Developmental
   Disabilities, 1*, 117-132.

   limitations. *Analysis and Intervention in Developmental Disabilities, 1*, 133-143.


   comparison of frequency, interval, and time sampling methods of data

   the assessment of response maintenance. *Journal of Applied Behavior Analysis,
   14*, 131-140.

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