



**GEORGE MASON UNIVERSITY
COLLEGE OF EDUCATION AND HUMAN DEVELOPMENT
DIVISION of EDUCATIONAL PSYCHOLOGY, RESEARCH METHODS
AND EDUCATION POLICY**

EDEP 593

Data-Driven Decision-Making: Analysis and Interpretation of Assessment Data

In partial fulfillment of requirements leading to the Certificate in Data-Driven Decision-Making

Credits: 3

Semester & Year: Fall 2012

Dates: August 30, 2012- December 13, 2012

Meeting Time/Days: Thursdays, 4:30 p.m. to 7:10 p.m.

Location: Thompson Hall, Room L018

PROFESSOR(S): Lori C. Bland, Ph.D.

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CATALOG DESCRIPTION: Focusing on the development of knowledge and skills related to analyzing and interpreting educational assessment data.

COURSE DESCRIPTION:

This course focuses on the development of knowledge and skills related to analyzing and interpreting educational assessment data and other educational data to draw valid inferences about student performance. The course emphasizes how to mine existing data, use various data analytic strategies, interpret multiple kinds of assessment and other data, and how to make instructional decisions based on the data analysis.

NATURE OF COURSE DELIVERY:

A variety of learning approaches will be used to engage students in learning, including lecture, whole and small group discussion, and in-class and homework assignments. Instruction utilizes problem-based learning. Class participants will identify specific areas of learner need within their job position or interest area. Problem-selection will focus on the inferences the class participants would like to make about learning from the available data. Class participants will

identify and analyze available data. Lectures will generally open each instructional period to set the focus for the class session. Readings support the focus of the lectures and should be referenced in all assignments. The final segment of most classes will be devoted to individual small group discussions or hands-on data analytic activities.

LEARNER OUTCOMES:

This course forms a foundation for the following three courses in the sequence. As such, it will inform educators of the importance and role of data-driven decision-making (DDDM) in the context of current school reform initiatives (and policies) at the federal, state and local levels. Students should have deep knowledge of potential data sources and existing data in their districts or through their jobs.

As a result of this course, the educators will be able to:

- Understand the components of data-driven decision-making
- Understand and explain the differences between the conceptual frameworks underlying classroom and system level assessment data and what constitutes a valid inference from different levels and kinds of data
- Understand the connections between the data and how to interpret, explain, and use classroom, school, or system level data to make changes to teaching and or educational programs
- Relate the concepts of reliability and validity of assessment data to inferences drawn from the data and the use of appropriate analyses
- Identify and report on formative and summative assessments in published research (such as articles, monographs, reports, etc.)
- Use various data analysis techniques that are appropriate for the desired inferences and the available data
- Analyze assessment data using appropriate computer programs (e.g., EXCEL, MiniTab, Statistical Package for Social Sciences (SPSS), GraphPad or other computer programs)
- Make data-driven decisions related to multiple education topics, such as instructional strategies, grading practices, or student affective constructs.
- Disaggregate data to draw conclusions about sub-populations to determine how best to serve various student needs
- Understand different perspectives on modern perspectives on assessment analysis scaling and practices (e.g., classical theory, IRT, cognitive diagnostic modeling)
- Explain critical issues related to the role of the analysis and interpretation of assessment data as related to social justice, collaboration, ethical leadership, innovation, and research-based practice.

PROFESSIONAL STANDARDS

The goal of the course is to facilitate each educator's reaching a level high of competence and professional-level understanding of how to analyze and interpret educational assessment data.

Learner outcomes are consistent with the Educational Psychology Program standards. The standards, as expressed as learner outcomes for assessment for data-driven decision making, are:

- Candidates will demonstrate an understanding of the basic concepts, principles, techniques, approaches, and ethical issues involved in analysis and interpretation of educational assessment data.
- Candidates will use their knowledge of quantitative and qualitative research methodology to analyze educational assessments for continuous improvement of student learning.
- Candidates will use their knowledge of data-driven decision-making to critically read and evaluate educational assessments, assessment data, and readings about assessment data use and interpretation.
- Candidates will use their knowledge of educational assessment for a data analysis and interpretive project.
- Candidates will demonstrate critical thinking, oral presentation, technological, and writing skills as they are used in the profession. Communication and dissemination skills may include the following:
 - Knowledge and use of APA style
 - Oral presentations
 - Poster presentations
 - Article abstracts
 - Literature reviews
 - Technological skills (including library/reference skills, interactive display skills, data analysis skills)

Student Outcomes and Relationship to Professional Standards

The student outcomes are informed by the Standards for Teacher Competence in Educational Assessment of Students (AFT, NCME, NEA, 1990), the Standards for Competence in Student Assessment (AASA, NAESP, NASSP, NCME, 1990), the Standards for Educational and Psychological Testing (AERA, NCME, & APA, 1999), and the InTASC Model Core Teaching Standards (CCSSO, 2011) guide the course content and emphasis for reaching the learning objectives.

Those standards deemed most relevant to addressing the learning targets for the course are those that state that *educators will have the knowledge, skills and dispositions to:*

1. Apply basic principles of sound assessment practices for addressing specific educational needs
2. Select assessment methods appropriate for instructional decisions
3. Recognize the implications of educational assessments for social justice in schools
4. Discern critical issues related to the role of the design of assessments for school accountability and high stakes testing

5. Gather evidence from multiple sources of data to draw valid inferences about student learning
6. The teacher understands and uses multiple methods of assessment to engage learners in their own growth, to monitor learner progress, and to guide the teacher's and learner's decision making

REQUIRED TEXTS:

Mertler, C. A. (2007). *Interpreting standardized test scores*. Los Angeles, CA: Sage.

Nitko, A. J., & Brookhart, S. M. (2011). *Educational assessment of students*. 6th Ed. Boston: Pearson.

RECOMMENDED TEXTS:

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

Mandinach, E. B., & Jackson, S. S. (2012). *Transforming teaching and learning through Data-Driven Decision-Making*. Thousand Oaks, CA: Corwin.

WEBSITE RESOURCES:

Students may find the following websites helpful:

Buros Center for Testing, including the Mental Measurements Yearbook,
<http://www.unl.edu/buros/>

National Center for Education Statistics, <http://nces.ed.gov>

National Research Center on Evaluation, Standards, and Student Testing (CRESST),
<http://www.cse.ucla.edu/>

Virginia Department of Education, <http://www.doe.virginia.gov/testing/index.shtml>

Wisconsin Center for Education Research, <http://www.wcer.wisc.edu/>

COURSE REQUIREMENTS, PERFORMANCE-BASED ASSESSMENT, AND EVALUATION CRITERIA:

A. Requirements

Students are expected to:

- Use your GMU e-mail account for all correspondence with the instructor.
- Attend all class sessions. Because class participation is a factor in grading, absences, tardiness, or early departure will be used as de facto evidence of nonparticipation. [If an emergency prevents you from attending class, please call or e-mail the instructor in advance preferably, but as soon as possible.]
- Be on time for class.
- Remain in class until class is dismissed by the instructor.
- Attend to and participate meaningfully in class lectures, discussions, individual assignments, and group activities. Responding to phone calls, texting, checking e-mails, Twitter, Facebook, or other electronic communication modes should not occur during class time.
- Submit a paper copy of all assignments to the instructor at the beginning of class on the due date. You must also e-mail the instructor a copy of the assignment using your GMU e-mail account before class begins on the due date.
- Submit all individual and group assignments and assessments on time. **I will deduct 5% of the total grade for every day the assignment is late without a documented emergency situation. If you have a medical issue that prevents you from attending class or completing assignments on-time, please work with the Office of Disability Services.**
- Use the APA Manual as a guide for written assignments, cite readings and program evaluation or other content literature within the body of the text, and complete a reference list at the end of the assignment according to the *Publication Manual of the American Psychological Association, 6th Edition* (APA, 2009) for all assignments.

B. Performance-based assessments

All of the student products specified under course requirements will require performance-based assessments guided by grading rubrics. The scoring rubrics associated with the assessment of the data analysis and interpretation project are provided in Appendix 1.

1. **Class attendance and participation (30 points).** Because of the importance of lecture and class discussions to students' learning experience, I expect each student to come to class on time and participate in class discussions. Additionally, assigned readings are to be completed before class. Attendance, punctuality, preparation, and active contribution to small and large group activities are essential. All in class assignments are to be completed by the end of class, or by the start of the next class

period. These elements of behavior reflect the professional attitude implied in the course goals.

2. **In class/Homework Assignments (20 points):** Educators will be asked to work *individually* on homework assignments throughout the semester. The assignments will include explorations and other sense-making activities that will assist the educator in completing the data analysis and interpretation project such as available local, state, and national data bases, data analysis packages, and standardized assessments and local assessments, helpful research websites, databases, etc.
3. **Midterm Examination (50 points):** Educators will take a midterm examination (closed books and notes) to demonstrate understanding and knowledge of course content covered to date of the examination.
4. **Data Analysis and Interpretation Project (75 points, Selected PBA):** This course requires educators to analyze and interpret data collected using selected assessments and other educational assessment data relevant to the educator's context. This project is intended to reflect the course content. Papers must be handed in on time and must adhere to the APA Publication Manual Guidelines. The scoring rubric is in Appendix 1. This project is divided into 4 parts:
 - a. Literature Review
The literature review should include the following:
 - (i) An introduction that identifies a topic for analysis and interpretation of assessment data in an educational context
 - (ii) A description of the educational context
 - (iii) A review of the theoretical, research, and practical literature addressing the topic
 - (iv) A discussion of the significance of the project and justification of the need for the study
 - (v) The purpose for the project and the research questions
 - b. Methods
The methods section should include the following:
 - (i) A description of the sample
 - (ii) A description of the assessments, their underlying constructs, and data about the technical adequacy of the instruments (such as, information about validation studies, reliability studies, scaling, and sampling)
 - (iii) A description of the procedures used to collect the data
 - (iv) A description and justification for the methods used to analyze the data and address the research questions
 - c. Results
The results section should include:
 - (i) A description of the results of the analysis

(ii) Tables, charts, or other graphic information summarizing the analysis
(Ensure that you follow APA style for the formatting and placement of the tables in the text.)

(iii) Figures (Ensure that you follow APA style for the formatting and placement of the tables in the text.)

d. Discussion and Conclusion

The discussion and conclusion section should include:

(i) Interpretation of the data and inferences made from the data analysis

(ii) Implications for theory, research, or practice

(iii) Limitations of the study

5. Presentation of the Paper and Reflection (25 points):

The presentation of the final paper will take place on the last day of class in the format of a research conference (APA style, see also guidelines posted on the AERA website, www.aera.net.org). At the end of the presentation, complete a reflection about the research experience. Some questions to consider for your reflection include: What did you learn from it? Which of the course materials helped you the most to carry out the study? What would you do differently? How can you use the information from the study in your job? Also, include other thoughts that you may have had about the process or the paper.

C. Criteria for evaluation

There are 200 total points for the course, distributed among class attendance and in class/homework assignments (25%), midterm examination (25%), and data analysis project and presentation (50%).

D. Grading scale

Grade Earned	Points Earned
A+	195-200 points
A	190-194 points
A -	184-189 points
B+	178-183 points
B	172-177 points
B-	166-171 points
C	140-165 points
F	139 or fewer points

COLLEGE OF EDUCATION AND HUMAN DEVELOPMENT

Student Expectations

- Students must adhere to the guidelines of the George Mason University Honor Code [See <http://academicintegrity.gmu.edu/honorcode/>].
- 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/>].
- For additional information on the College of Education and Human Development, Graduate School of Education, please visit our website [See <http://gse.gmu.edu/>].

CLASS SCHEDULE

Session	Date	Topic/Learning Experiences	Readings
		Data-Decision-Making	
1	8/30/12	Data-Driven Decision –Making: Transforming Teaching and Learning	Case Studies, In Class
2	9/6/12	A Structure Approach to Leading School Improvement	Mandinach, Intro, Ch. 1, Ch. 2 and In Class
3	9/13/12	The Importance of Measuring Achievement	Mertler, Modules 1, 2, & 3 Homework 1 Due
		Assessments	
4	9/20/12	Validity and Reliability	Nitko, Ch. 3 & 4
5	9/27/12	Types of Classroom Assessments	Nitko, Ch. 7, 8, 9, 10, 11, 12 Homework 2 Due
6	10/4/12	Types of Standardized Achievement Tests	Mertler, Modules 5 & 6 Nitko, Ch. 15, 16, &17 Homework 3 Due
7	10/11/12	Other Measures	Nitko, Ch. 18
		Measurement Issues	
8	10/18/12	Midterm Examination	In Class
9	10/25/12	Item analysis and test score analysis: Using student responses to improve assessments	In Class
10	11/1/12	Measurement Trends	In Class Homework 4 Due
		Data Analysis and Reporting	
11	11/8/12	Basic Statistical Concepts and Data Analysis	In Class
12	11/15/12	Interpretation	Mertler, Modules 7, 8, 9 Homework 5 Due
	11/22/12	Thanksgiving – No Class	
13	11/29/12	Reporting	Mertler, Module 4 Nitko, Chapter 1, 2, 6, 13
14	12/6/12	Grading and Reporting	Data Analysis Project Due Nitko, Chapter 14
15	12/13/12	Ethics and Social Justice	Presentations Due Nitko, Ch. 5

Sample Rubrics: Attendance & Participation

Student participation is imperative to student learning and a successful class. The following rubric outlines how student participation scores will be determined in this course. All students are expected to demonstrate specific characteristics and actions throughout the semester. The quality and quantity of these actions will determine the points assigned for participation.

Students are expected to:

- a) Be punctual, present (in mind and body), and well prepared for class.
- b) Participate fully in class activities and assignments – take an active part in small and large group discussions (without dominating the conversations) and pay attention to class lectures.
- c) Make insightful comments, which are informed by required readings and demonstrate reflection on those readings. Specifically, students should come to class with questions, comments, and thoughts on the current readings.
- d) Treat class activities, group discussions, and class discussions as important components of the course, showing respect for fellow classmates and the course material.
- e) Complete individual and group class activities within the time allotted, ensuring full participation of all group members. Submit class activities to the instructor at the end of class.

Each of the 5 criteria will be assessed on a 4-point scale.

- 4 = Student *consistently* demonstrated the criterion throughout the semester.
- 3 = Student *frequently* demonstrated the criterion throughout the semester.
- 2 = Student *intermittently* demonstrated the criterion throughout the semester.
- 1 = Student *rarely* demonstrated the criterion throughout the semester.
- 0 = Student *did not* demonstrate the criterion throughout the semester.

The participation grade will be calculated as the sum of points for each criterion.

Appendix A

Data Analysis Project Rubric

Criteria	Outstanding (4)	Competent (3)	Minimal (2)	Unsatisfactory (1)
Literature Review	The study problem is relevant to the area of educational research and is described in a parsimonious, yet complete, manner. The literature review completely, clearly, and cohesively addresses the purpose of the study, includes only relevant theory and research and leads to the research questions.	The study problem is relevant to the area of educational research. The problem and literature review are overall well described, but there may be minor issues with clarity, extraneous text, or lacking information.	The study problem is relevant to the area of educational research, but does not clearly or completely address purpose of the study. The literature review includes information about the topic, but is missing significant information, is unclear, or includes extraneous text.	The study problem is not quite relevant to the area of educational research, insufficiently described, The literature review does not support the purpose of the study, lacks cohesion, or is unclear. Or, it is too brief to completely communicate information about the study.
Methods	Data capture and analysis is easily executable, clear, complete, and appropriate. The description of all steps to be taken is clear and complete and includes relevant resources. The methods and sample are appropriate to the research questions.	Data capture and analysis has minor issues related to execution, clarity, missing details, or appropriateness. The description of most of the steps to be taken is clear. There may be minor issues details or a step missing within the description. Relevant resources may be incomplete. The methods or sample may contain minor errors.	Data capture and analysis appears to be executable, however more than one step is missing, steps are unclear, and details are missing. One or more components may not be implemented appropriately, or the data analysis may not be appropriate. The description has a major issue related to clarity or missing steps. One or two resources may not be relevant or	Data analysis and capture does not appear to be executable. Multiple steps are missing, unclear, or lacking details. More than one step in the data capture or analysis plan is incorrect or inappropriate. The description has multiple issues with clarity and/or many steps are missing. Most of the resources are not relevant, or resources are missing. Methods

Criteria	Outstanding (4)	Competent (3)	Minimal (2)	Unsatisfactory (1)
			may be incomplete. The methods and sample contain errors.	or samples may be missing or contain multiple errors.
Results	Clear, accurate, and complete presentation of relevant results by project research questions. The tables and/or figures include all necessary information.	Accurate presentation of relevant results by project research questions, with some minor errors in clarity or completeness. There are minor errors in the tables and/or figures, such as tables are missing minor pieces of necessary information, an extraneous table is included, or a table/figure is missing.	Results are presented by research questions, but some results are irrelevant and/or there are significant problems with clarity, accuracy, or completeness. The tables and/or figures do not include all necessary information, or there may be more than one missing or extra table/figure.	The presentation of the results is not organized by research questions, some results are irrelevant, and there are serious problems with clarity, accuracy, and completeness. The tables and/or figures are missing much information or are unclear. There are multiple tables/figures missing, or too many tables/figures are included.
Discussion and Conclusion	The discussion and conclusion is complete, clear, cohesive, and significantly addresses the impact and implications of the study. Additional research aptly supports the argument.	The discussion and conclusion has minor issues in completeness, clarity, or cohesiveness. This section may not address all of the most salient points, or include minor distractions. One of the additional citations may not support the conclusions, or may distract from the argument.	The discussion and conclusion has multiple issues in completeness, clarity, or cohesiveness. This section makes some of the important points, misses others, or includes irrelevant points. More than one citation does not support the conclusions, or may be missing.	The discussion and conclusion is not organized and does not appear to be related to the study. This section is incomplete, missing, or irrelevant. Multiple citations are missing, or those that are included do not support the conclusions.
APA Style <i>Use APA writing style, formatting,</i>	Writing is concise, coherent, well-organized, and with correct APA style. Citations and references are correct and	Writing lacks some clarity or has minor organizational problems affecting the overall coherence, and/or there are	Writing has multiple problems with clarity, coherence, and organization. There are many errors in APA style,	Writing lacks clarity, coherence, many errors, and/or no use of APA style. Tables/Figures, citations and/or references are

Criteria	Outstanding (4)	Competent (3)	Minimal (2)	Unsatisfactory (1)
<i>including citations within text and references.</i>	complete.	some errors in APA style, table/figures, citations, or references. There may also be a small number of missing citations or references.	tables/figures, citations, and/or references. Multiple references are missing or incomplete.	minimal or absent.