

Agricultural Education Research Methods and Design
AGEE 642
Agricultural and Extension Education
Fall Semester 2009



Course Time and Location

Lecture – Tuesday – 5:00 p.m. – 7:50 p.m.

G29 - Agricultural Sciences

Assignments: <http://www.caf.wvu.edu/resm/aec/courses/agee642/>

Instructor

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Office Hours: By appointment – Drop-ins welcome

Agricultural Education Research Methods and Design

AGEE 642

Course Description

Explores definition of the problem, identification of related literature, selection of an appropriate research design, interpretation of results from data analysis procedures, and the reporting of research findings with emphasis on agricultural education.

Course Objectives

The objective of the instructor is to present an overview of quantitative and qualitative research methods used in the agricultural education profession. The methods include descriptive, quasi-experimental, experimental, ex post facto, correlational, ethnography, case studies, naturalistic observations, focused interviews, and historical research. Detailed instruction will be presented on developing a problem statement, conducting a literature review, determining sample size, developing data collection instruments, and establishing sound research methods.

Expected Learner Outcomes

Upon completion of this course, the student will be able to:

- Define and discuss the characteristics of research;
- List, define and discuss the types of research;
- Identify sources of knowledge and information;
- Select and define a research problem;
- Identify variables and formulate hypotheses and objectives;
- Identify and describe populations and sampling techniques;
- Describe the purpose of descriptive research;
- Explain validity and reliability;
- Formulate data collection procedures and instrumentation;
- Describe the importance of internal and external validity;
- Describe the purpose of relational research;
- Describe the control of extraneous variables; and
- Describe the purpose of quasi and experimental research.

Text Book

American Psychological Association. (2010). *Publication manual of the American Psychological Association* (6th ed.). Washington, DC: Author.

and

Ary, D., Jacobs, L. C., & Razavieh, A., Sorensen, C. (2006). *Introduction to research in education* (7th ed.). California: Thomson Wadsworth.

or

Ary, D., Jacobs, L. C., & Razavieh, A., Sorensen, C. (2010). *Introduction to research in education* (8th ed.). California: Thomson Wadsworth.

Grading Scale

A+	=	97%	-	100%	B	=	84%	-	86%	C-	=	70%	-	73%
A	=	94%	-	96%	B-	=	80%	-	83%	F	=	<=	69.5%	
A-	=	90%	-	93%	C+	=	77%	-	79%					
B+	=	87%	-	89%	C	=	74%	-	76%					

Grading

Grades will be based upon midterm and final examinations, class participation, and research reports prepared using data analysis results provided by the instructor: English usage, grammar, and spelling will be considered in assigning grades. The final grade will be determined as follows:

Item	Date Due	#	Points	Total	% Grade
Midterm examination		1	200	200	20.0%
Final examination		1	200	200	20.0%
Individual Assignments				400	40.0%
Statement of the Problem	9/15/2009		25		
Review of Literature	9/22/2009		25		
Theoretical Framework	10/6/2009		25		
Research Question and/or Hypotheses	10/20/2009		25		
Validity/Reliability	10/27/2009		25		
Cover Letter	11/3/2009		25		
Instrument	11/10/2009		25		
Research Design	11/17/2009		25		
Complete Research Proposal	12/8/2009		200		
Analysis of Research Assignments (Critical Readings)		2	50	100	10.0%
IRB Assignment		1	100	100	10.0%
Total Points				1,000	

The instructor reserves the right to change elements in this document at any time during the semester.

Attendance Policy

Attendance at all class sessions is expected. Supplemental materials and activities, not included in the assigned readings, are included as a part of every lecture. Formal attendance will not be taken.

MIX Account:

All students are required to activate and maintain their MIX account. MIX will be used on a regular basis to communicate with students in this course. Failure to maintain and check your MIX account will not be accepted as an excuse. If your MIX account is inactive for 120 days, it will be disabled. You will need assistance with MIX, please call the OIT [HelpDesk](#) at 293-4444 ext 1.

Late Work Policy

All assignment deadlines will be strictly enforced. NO ASSIGNMENT WILL BE ACCEPTED AFTER THE DUE DATE UNLESS PRIOR APPROVAL HAS BEEN GRANTED BY THE INSTRUCTOR. Deadline exemptions will be limited to medical/family emergencies, etc.

Social Justice Statement

“West Virginia University is committed to social justice. I concur with that commitment and expect to maintain a positive learning environment based upon open communication, mutual respect, and nondiscrimination. Our University does not discriminate on the basis of race, sex, age, disability, veteran status, religion, sexual orientation, color or national origin. Any suggestions as to how to further such a positive and open environment in this class will be appreciated and given serious consideration.

If you are a person with a disability and anticipate needing any type of accommodation in order to participate in this class. Please advise me and make appropriate arrangement with Disability Services (293-6700).”

Academic Honesty Statement

All acts of plagiarism, cheating, forgery, misrepresentation, or other dishonest practices will be handled in accordance with official West Virginia University policies.

Tentative Class Schedule:

Date	Topic	Readings 7 th Edition	Assignments
August 25	Course Overview Sources of Knowledge <ul style="list-style-type: none"> ➤ Deductive reasoning ➤ Inductive reasoning ➤ Scientific approach Scientific Approach in Education <ul style="list-style-type: none"> ➤ Quantitative research ➤ Qualitative research ➤ Basic and applied research 	Ary, Jacobs, Razavieh, & Sorenson: 1-44	
September 1	Research Problem <ul style="list-style-type: none"> ➤ Sources of problems ➤ Stating the problem ➤ Identifying populations and variables ➤ The problem in qualitative research Research Proposal – Chapter 1	Ary, Jacobs, Razavieh, & Sorenson: 45-66	
September 8	Review of Literature <ul style="list-style-type: none"> ➤ Reference sources ➤ Organizing the related literature APA Style Manual WVU Graduate School Thesis Recommendations Research Proposal – Chapter 2	Ary, Jacobs, Razavieh, & Sorenson: 67-94	
September 15	Word Techniques for the Research Proposal <ul style="list-style-type: none"> ➤ Styles (APA headings) ➤ Table of Contents ➤ List of Tables ➤ References (hanging indents) ➤ Tabs and dot leaders 	All students should bring a USB storage device	Assignment: Statement of the Problem
September 22	Hypotheses and Research Questions <ul style="list-style-type: none"> ➤ Purpose of hypotheses ➤ Characteristics of hypotheses ➤ Types of hypotheses ➤ Testing hypotheses 	Ary, Jacobs, Razavieh, & Sorenson: 95-115	Assignment: Review of Literature

September 29	Ethics in Research <ul style="list-style-type: none"> ➤ Institutional Review Board Guidelines ➤ Ethics Training 		
October 6	Tools of Research <ul style="list-style-type: none"> ➤ Tests ➤ Measures of personality ➤ Attitude scales ➤ Direct observation ➤ Data collection in qualitative research Validity <ul style="list-style-type: none"> ➤ Content ➤ Construct ➤ Face Reliability <ul style="list-style-type: none"> ➤ Theory ➤ Coefficients 	Ary, Jacobs, Razavieh, & Sorenson: 261-283	Assignment: Theoretical Framework
October 13	Mid-term		
October 20	Descriptive Research <ul style="list-style-type: none"> ➤ Types of surveys ➤ Survey technique ➤ Selecting samples ➤ Conducting interviews ➤ Using a mailed questionnaire ➤ Validity ➤ Reliability ➤ Errors to control 	Ary, Jacobs, Razavieh, & Sorenson: 399-447	Assignment: Research Questions/hypotheses
October 27	Questionnaire Development <ul style="list-style-type: none"> ➤ Format of questions ➤ Structure of questions Writing survey questions		Critical Reading: Assignment 1 Assignment: Validity/Reliability
November 3	Experimental and Quasi-Experimental Research Designs <ul style="list-style-type: none"> ➤ Characteristics ➤ Experimental designs ➤ Threats to internal validity ➤ External validity of research designs 	Ary, Jacobs, Razavieh, & Sorenson: 325-354	Assignment: Cover Letter IRB Assignment

November 10	<p>Ex Post Facto Research Designs</p> <ul style="list-style-type: none"> ➤ Conducting Ex Post Facto research ➤ Partial control in Ex Post Facto research ➤ Role of Ex Post Facto research <p>Correlational Research Designs</p> <ul style="list-style-type: none"> ➤ Uses of correlations ➤ Design of correlational studies ➤ Interpreting correlational research ➤ Research Proposal – Chapter 3 	Ary, Jacobs, Razavieh, & Sorenson: 355-398	Assignment: Instrument
November 17	<p>Qualitative Research Designs</p> <ul style="list-style-type: none"> ➤ Major characteristics ➤ Designing ➤ Data Collection ➤ Ethnical considerations ➤ Types ➤ Validity and reliability ➤ Analyzing data ➤ Reporting 	Ary, Jacobs, Razavieh, & Sorenson: 448-488	Assignment: Research Design
November 24	Thanksgiving Break		
December 1	<p>Statistical Analysis Overview</p> <ul style="list-style-type: none"> ➤ Scales of measurement ➤ Organizing research data ➤ Sampling and inferential statistics <p>Communicating Research</p> <ul style="list-style-type: none"> ➤ Research proposals ➤ Ethical and legal considerations ➤ Analyzing, interpreting, and reporting results ➤ Putting it all together ➤ Thesis resources and timelines 	<p>Ary, Jacobs, Razavieh, & Sorenson: 116-133 & 166-176</p> <p>Ary, Jacobs, Razavieh, & Sorenson: 569-616</p>	Critical Reading: Assignment 2
December 8	Final exam		Assignment: Complete Research Proposal

Class Assignments

Statement of the Problem

Due: September 15, 2009

Using 4-6 premises, you will develop your problem statement. The premises should be based on research findings and/or accepted textbook theories. You may use a deductive, inductive, or a scientific approach to define your problem.

Deductive reasoning example (a series of proven premises leading to the problem you wish to explore:

- All men are mortal
- George Washington was a man
- Therefore, George Washington was mortal

Inductive reasoning example (a series of observations (stated as premises) leading to the problem you wish to explore:

- Every robin I have observed has feathers
- All animals in the aves class have feathers
- A robin is in the aves class

Scientific Approach (integrate deductive and inductive systems)

- Teachers observed to use the problem solving approach have higher student achievement scores
- Higher student achievement scores are associated with higher order thinking skills
- Research Hypothesis: Higher student achievement score results in higher order thinking skills
- Because the problem solving approach results in higher student achievement scores, the problem solving approach results in advanced development of higher order thinking skills

The class discussion on August 25 and September 1 will provide additional suggestions and direction for this assignment.

Review of Literature

Due: September 22, 2009

You need to locate a minimum of ten resources (you must have two of the following: professional journal article, professional presentation, and a published book) that highlight research similar or relating to the topic you have selected. The findings must be summarized in a manner that would lead to the information being blended together in a coherent statement of previous research in Chapter II. The assignment must include a **reference list** with all publications cited in the text listed (APA style) in the reference section.

The class discussion on September 8 will provide additional suggestions and direction for this assignment.

Theoretical Framework

Due: October 6, 2009

In no more than 2 pages you will use research findings from your literature review to substantiate the accuracy of the premises you developed that lead up to your problem. If there are differences of opinions among the professionals, please point that out as well. Build an argument that the topic is worthy of study.

Problem Statement

In 1-3 paragraphs you will state the research problem that was developed from the premises.

Reference Page

All publications cited in the text must be listed (APA style) in the reference section and included with Chapter I. This page will continue to grow as you develop Chapters II & III.

The class discussion on August 25, September 1, and 8 will provide additional suggestions and direction for this assignment.

Research Questions and/or Hypotheses

Due: October 20, 2009

Purpose of the Study

In 1 paragraph you will state the purpose of the study.

Objectives of the Study

In 1-2 paragraphs you will state the objectives of the study. Assume that your problem is descriptive research. Write the objectives in the form of 5-10 research questions.

and/or

Write at least two null and two research hypotheses for the study.

The class discussion on September 22 will provide additional suggestions and direction for this assignment.

Validity/ Reliability

Due: October 27, 2009

Describe in detail the steps you plan to take to insure your research is valid and reliable.

The class discussion on October 16 will provide additional suggestions and direction for this assignment.

Cover letter

Due: November 3, 2009

Assume that you are using human subject and a descriptive research design. Prepare a cover letter using the guidelines discussed in class.

The class discussion on October 20 and 27 will provide additional suggestions and direction for this assignment.

Instrument

Due: November 10, 2009

You will develop a prototype of a data collection instrument to be used in your research study. If you plan to use a descriptive research design, you will need to include a combination of open-ended, Likert, and multiple response items. Write at least five questions in each of the following: open-ended, Likert, demographics, and multiple response items. You must include instructions for each section. Consider the format of the page as well.

The class discussion on October 20 and 27 will provide additional suggestions and direction for this assignment.

Research Design

Due: November 17, 2009

Research Design

Describe in 2-4 paragraphs the specifics of your research design. Defend the use of your design with quotes from Ary and others.

Population

Target.

Accessible.

Describe in detail your population. Use terms such as target population, accessible population, sample population, etc. Describe the steps you took to avoid **sample, frame, selection, measurement, and non-response error.**

Instrumentation How was the instrument developed?

Reliability.

Validity.

(Repeat from last week).

Data Collection Procedures

Describe in detail the steps you will take to collect your data. If you are using descriptive research, I highly recommend you cite Dillman.

The class discussions on October 20, 27, November 3, 10 and 17 will provide additional suggestions and direction for this assignment.

Complete Research Proposal

Due: December 8, 2009

You will make the required corrections and assemble the previously submitted components into a full research proposal. The proposal will take the form of Chapters I, II, and III of a thesis/dissertation. The proposal will include/utilize the following components:

- Title Page
- Abstract Page
- Acknowledgements
- Table of Contents (automatically generated by Word)
- Chapter I
- Chapter II
- Chapter III
- References
- Appendices
 - Cover letter
 - Instrument

The project will be expected to meet all graduate school and/or AGEE requirements including:

- 1 ½ inch left margin, 1 inch on top, bottom, and right
- Word generated APA style
- Page numbers – bottom center
- Double spaced
- Times New Roman or Arial 12 point font
- 0 additional spacing before and after paragraphs.

Critical Reading: Assignment 1

Due October 27, 2009

Using an article provided by the instructor, critique the theoretical framework, literature review, and purpose and objectives for the study. Be sure to identify the areas the author(s) did well, as well as suggestions for improvements to this section of the article. The critique should not exceed two pages, double spaced, Times Roman font. Suggested topics to evaluate:

1. What was the research base for the manuscript?
2. Did the theory lead to the problem, purpose and/or objectives, and the proposed solution?
3. Was appropriate literature cited?
4. Was a theoretical framework built?
5. Were the purposes and/or objectives supported by the theoretical framework?
6. Were the purposes and/or objectives clearly stated?

Critical Reading: Assignment 2

Due December 1, 2009

Using an article provided by the instructor, **briefly** (one paragraph) critique the theoretical framework, literature review, and purpose and objectives for the study. On this assignment you need to concentrate on the research methodology. Be sure to identify the areas the author(s) did well as well as suggestions for improvements to this section of the article. Suggested topics to evaluate:

1. What research methodology was utilized?
2. Were the essentials of methods/procedures reported?
 - a. Population selection
 - b. Instrument development
 - c. Reliability and validity
 - d. Non- response error (if appropriate)
 - e. Data collection procedures
 - f. Data analysis procedures
3. Were the methods/procedures correct?
4. Were weaknesses in the methods/procedures accounted for and/or explained?

Your decisions/critique should be based on the methods/procedures we discussed in class from Ary et al. You are to limit your comments to 1 page (Times Roman, 12 point font, single spaced, 1 inch margins) per article. Hint: each article is an example of a different research methodology.

IRB Guidelines and Ethics Training

Due: November 3, 2009

Topic: IRB Guidelines and Ethics Training

Training and Certification

The Institutional Review Boards (IRBs) at West Virginia University have approved the use of the CITI training program for all investigators involved in human subject research. There are two separate modules, one for biomedical research and one for social & behavioral research investigators. IRB members must take both.

Learning Activities:

1. Go to www.citiprogram.org.
2. Click on the link "Register for CITI course."
3. Under Institution selection, scroll to West Virginia University.
4. Once there, create a username and password (Use of Groupwise user name will facilitate our keeping track of you).
5. Select the CITI recommended learner group, biomedical research, **social & behavioral research**, or IRB members.
6. Note you do not have to complete the training in one session!

Criterion Evaluation: Successful completion of all exercises and quizzes.