

## MODULE 5: FINDINGS AND CONCLUSIONS

This module is all about results. As you analyze the data you have collected, try to find the answer to your research question by putting the puzzles together. Be guided by the power of truth revealed by empirical evidence. William W. Watt cautioned, *“Do not put your faith in what statistics say until you have carefully considered what they do not say.”* And Andrew Lang wrote, *“Use statistics [not] as a drunken man uses lampposts – [rather use statistics] not for support but for illumination.”*



### Action Research Component

- Findings and Drawing Conclusions

### Wisconsin Teacher Standards

3K1, 3K4, 4K2, 7K2, 8K2, 8K3, 8S4, 8S6, 9K1, 9D1, 9D2, 9D3, 9D4, 9D5



### Reading Assignment 5:

- Craig, Chapter 7 – Organizing, Coding & Analyzing Data
- Craig, Chapter 8 – The Action Research Report
- APA Manual Chapter 5 and § 2.07



### Discussion Question 5:

- Briefly state what your research is about. What results did you find? Share your successes and challenges. Any surprises or disappointments?
- Answer the questions by clicking **Reply** and respond to someone else's post by clicking **Subthread** in the discussion area, then submit for grading.



### Action Assignment 5:

- Submit the Findings and Conclusions section with the corresponding Appendix e.g. raw data in one document. This should be the same Appendix you submitted in Module 4, only this time you fill in the survey or test questions with the responses. Your summary/synthesis in the body of the text, and your raw data in the Appendix must be in the same single document.
- Upload to the Assignment Area of Module 5.



### Definitions:

- **Findings or Results of the Study** - statement that explains what is gleaned from the data collected; includes tables and graphs when appropriate.
- **Data** - information collected by a researcher. (Data is plural; datum is singular).
  - **Quantitative Data** focuses on numbers and frequencies rather than meaning and experiences. Quantitative data is that which can be stored in reasonably well-defined categories, and in sufficient volume (i.e. number of responses) to permit tabular and cross-tabular presentations, and possibly statistical analysis. In other words it is about counting and offering findings as numbers or percentages. The strength of this approach lies in the precision and clarity with which findings can be stated, and the scope which exists (via appropriate statistical tests) for establishing general validity.
  - **Qualitative Data** includes virtually any information that can be captured that is not numerical in nature. Qualitative data will normally be a discursive or multimedia presentation focusing on depth and subtlety in a single or small number of settings rather than counting characteristics over a larger number of settings or responses. Nonquantitative data such as transcripts of interviews or videotapes of social interactions are often coded or translated into numbers to make them easier to analyze. Researchers will often use qualitative methods to complement quantitative methods and vice versa.
- **Measures of Central Tendency:**
  - **Mean** - the arithmetic average of a set of data in which the values of all observations are added together and divided by the number of observations.
  - **Median** - the outcome that divides an ordered distribution exactly into halves; the point in a distribution having 50 percent of the scores above it and 50 percent of the scores below it.
  - **Mode** – the score that occurs most frequently in a distribution of scores.
- **Inferential Statistics**
  - **Generalizability** - the extent to which you can come to conclusions about one thing (often a population) based on information about another (often a sample).

- **Bias** - occurs when the design of a study systematically favors certain outcomes. It can occur at various stages in research, such as in the selection of subjects, in the design of questions, or in the way data are analyzed and presented. When there is bias, the research findings will not be representative of, or generalizable to, a wider population.
- **Reliability** - the extent to which the same result will be achieved consistently by using the same measure. When repeated measurements of the same thing give identical or very similar results, the measure is said to be reliable.
- **Validity** - the extent to which research findings can be said to be accurate and reliable, and the extent to which the conclusions are warranted.
- **Type I error** - the rejection by the researcher of a null hypothesis that is actually true; also called an *alpha* error.
- **Type II error** - the failure of a researcher to reject a null hypothesis that is really false; also called a *beta* error.
- **Statistical Analysis** (optional for the mathematically inclined)
  - **Range** - the difference between the highest and lowest scores in a distribution; measure of variability.
  - **Frequency distribution** - a tabular method of showing all of the scores obtained by a group of individuals.
  - **Normal Distribution** - theoretical “bell-shaped” distribution having a wide application to both descriptive and inferential statistics. It is known or thought to portray many human characteristics in “typical” populations.
  - **Skewed Distribution** - nonsymmetrical distribution in which there are more extreme scores at one end of the distribution than the other.
  - **Analysis of variance** (ANOVA) - A statistical technique for determining the statistical significance of differences among means; it can be used with two or more groups.
  - **Chi-square** - A nonparametric test of statistical significance appropriate when the data are in the form of frequency counts; it compares frequencies actually observed in a study with expected frequencies to see whether they are significantly different.
  - **Standard deviation** - The most stable measure of variability; it takes into account each and every score in a distribution.
  - **t-test** - parametric test of significance used to determine whether there is a statistically significant difference between the means of two independent or dependent (paired) samples.
  - **Correlation** - The extent to which two or more things are related to one another. This is usually expressed as a correlation coefficient.
- **Limitations** - any shortcomings and weaknesses that sets boundaries for the generalizability of your study



### Drawing Conclusions:

- After you have collected and analyzed the data, you can state your interpretations and draw your conclusions.
- Start your discussion with a clear statement of what you expected to find out.
- If your research is qualitative, analyze your data by looking for themes, patterns, chronology, questions or sources.
- If you are using quantitative data methods, analyze your data using a specific statistical formula.
- This section covers the data summary of findings. The actual raw data and student work samples must go in the Appendix.
- Relate the literature you have reviewed to the conclusions you have drawn.
- State ethical research considerations you followed in interpreting data.
- Caution: Do not make sweeping, unsubstantiated statements like: “there is a direct correlation between the computer class and the students’ writing scores” if you did not apply statistical analysis.
- Indicate the limitations of your study.



### Interpreting & Illustrating Data:

- **Tables.** The Publication Manual points out that “[t]ables usually show numerical values or textual information . . . arranged in an orderly display of columns and rows” (APA, 2010, p.125). Therefore, if you have quantitative data, use tables to provide exact values and to efficiently illustrate main effects. In the text, refer to all tables by their numbers as in Table 1 below. Keep your tables and their accompanying text in close proximity, i.e. on the same page. Number all tables consecutively in Arabic numerals throughout the report. Tables can be made in Microsoft excel and transported to your paper.

Table 1

*Italicized Title of Table 1 here in Upper and Lowercase*

	Control Group A: On land	Experimental Group B: On line
Pre-test		
Post-test		

- **Figures.** Graphs, charts, photographs, maps, drawings and other illustrations are all considered figures. Use figures to illustrate interactions and general comparisons to enhance, rather than duplicate the text. As the Publication Manual indicates, “a good figure conveys only essential facts and omits visually distracting details” (APA, 2010, p.152). Present the information in

an orderly manner. For instance, horizontal (x) and vertical (y) axes should be consistent in using comparable units of measurements from small to large values. Number all figures consecutively in Arabic numerals throughout the report and refer to figures by their numbers. Like the tables, try to keep figures and their accompanying text in close proximity, i.e. same page; but unlike the tables, the title of the figure is placed below the figure as shown in Fig.1 below.

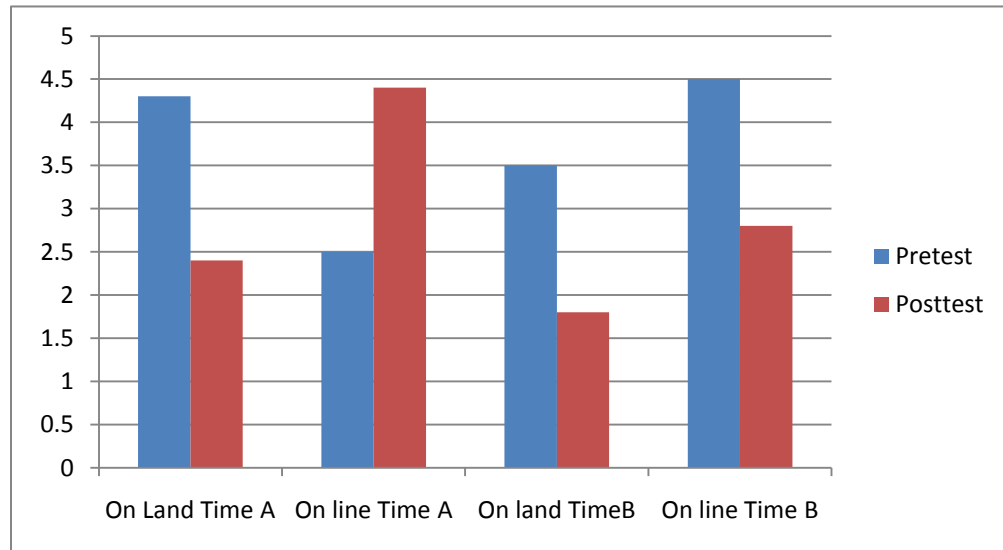


Figure 1. Insert caption here end with a period.



## Appendix

- This is located at the end of your action research paper where you put your instruments such as surveys, questionnaires, quizzes, and raw data such as test results, student work product and observation notes in action assignment 4 – Methodology.
- Each appendix must start on a new page.
- Appendices must be properly labeled in alpha order as they appear in the text.



## Web Links:

- [Comparison of Quantitative, Mixed, and Qualitative Approaches to Educational Research](#)
- [Electronic Textbook Statsoft](#) – portal for general statistics concepts
- [Help and How-to Tutorials for all the Microsoft Products](#)
- [Observation Techniques for Collecting Data](#)
- [Statistics Made Easy](#) – pdf
- [Usability Methods](#) - a user-centered design process, although aimed at developing usable websites, the techniques are applicable to data analysis in

action research.

- [User-Friendly Handbook for Mixed-Methods](#) - covers a lot of material
- **External Links** in the course shell for additional resources



### **Help Files:** (*aka Handouts*)

- Go to the **Tech Tips** folder in the Course Materials to find step by step instructions on the following:
  - Scanning documents
  - Tracking changes in WORD
  - Uploading assignment files
  - Uploading digital photos
  - Using the discussion area



### **Rubrics:** (*shown below*)

- Discussion Question 5 - Findings
- Action Assignment 5 –Findings
- Action Assignment 8 - The Final Paper

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Department of Curriculum & Instruction  
EDT 656- Action Research Using Technology  
**RUBRIC FOR ONLINE DISCUSSION**

Name:

Cohort/School District:

Title

Grade Level:

Possible Points	Criteria	Earned Points
2	<b>Participation</b> A minimum of one response and one sub-thread are posted. Active and timely participation is evident. Initial post is submitted in a timely manner to encourage discussion among classmates. Uploaded digital photo and updated profile.	
2	<b>Interaction</b> The learner provides meaningful feedback on other's ideas. Comments include how the idea could be enhanced or how the idea might be applied to a different content area/grade level. Where appropriate, comments offer explanations and personal examples and/or help clarify concepts for classmates. Left no unread items.	
2	<b>Quality of Information</b> Contributions (initial post and sub-threads) to discussion are substantive and demonstrate critical thinking. Information reveals thorough understanding of the topic as evidenced by relevant, original, and thoughtful posts, responses, and questions. Comments did not just repeat or agree with what has already been said.	
2	<b>Delivery</b> Tone of comments is courteous and respectful. Professional vocabulary and writing style	

	are used consistently throughout the discussion. Posts are free of spelling and grammatical errors.	
2	<b>Resources</b> Comments are supported by facts from texts and other identified sources when required. *	
<b>Total Points</b>		<b>/10</b>
<p><i>*Use quotation marks to indicate direct quotes. To cite any web resources, provide the web address (url) of the specific webpage (not just the website) where you found the information.</i></p> <p><b><u>Discussion Tips:</u></b></p> <ul style="list-style-type: none"> <li>• The above rubric defines the minimum requirements. Strive to exceed the minimum.</li> <li>• Length and quantity of posts does not necessarily indicate high quality work.</li> <li>• Use subheadings and spacing to help organize thoughts. Preview messages to make sure they don't display as giant paragraphs.</li> <li>• The instructor reserves the right to delete any messages deemed inappropriate to an academic discussion. Netiquette (etiquette on the Internet) disallows rudeness, inappropriate language, or a patronizing tone.</li> </ul>		

MARIAN UNIVERISTY SCHOOL OF EDUCATION  
 DEPARTMENT OF CURRICULUM & INSTRUCTION  
 EDT 657 –Action Research: Reporting the Findings  
**ACTION ASSIGNMENT 5 – FINDINGS**

Name:

Cohort/School District:

Topic:

Grade Level:

CRITERIA	DESCRIPTION	1st Score	2nd Score	Final Score
<b>Summary Results</b>	Detailed discussion of the results; organized synthesis of all data collected			/2
<b>Raw Data</b>	Included raw data in the Appendix referred to in the text.			/2
<b>Discussion</b>	Arrived at a plausible conclusion based on findings; compared/contrast findings with other studies cited in the literature review ; identified limitations of the study including generalizability and external validity of the findings			/2
<b>Tables and Figures</b>	Presented appropriate and properly labeled tables and figures; adequately explained the tables and figures in the text			/2
<b>Mechanics And Style</b>	Followed APA format and template guidelines consistently and correctly; no spelling and grammatical errors			/2

<b>OVERALL</b>				/10
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Note: You are allowed one resubmission as long as you submit this assignment before its due date; and resubmit it with the corrections before the next assignment is due.

**MARIAN UNIVERSITY SCHOOL OF EDUCATION**  
**Department of Curriculum & Instruction**  
**EDT 657 - Action Research: Reporting the Findings**  
**Action Assignment 8 – The Final Paper**

Name:

Cohort/School District:

Title

Grade Level:

<b>CRITERIA</b>	<b>0--1.25 = Minimal    1.26--2.5 = Basic    2.6--3.75 = Proficient    3.76--5 = Advanced</b>	<b>Reader 1</b>	<b>Reader 2</b>
<b>Abstract Action Assignment 7</b>	Coherent and complete description of the study in APA-block format, 150-250 words, one page; double-spaced, no spelling or grammatical errors		
<b>Introduction Action Assignment 1 and 3</b>	Engaging introduction; s.m.a.r.t. problem statement/research question/hypothesis, clearly stated purpose and rationale; correctly and consistently followed APA format and template guidelines; no spelling or grammatical errors		
<b>Literature Review Action Assignment 2</b>	Well-organized review of literature, connected own study with existing research; properly cited sources, correctly and consistently followed APA format and template guidelines; no spelling or grammatical errors		
<b>Methodology Action Assignment 4</b>	Stated the appropriate design of the study; purposefully triangulated data sources; clearly described context, general population subject selection, instruments/intervention and procedure; correctly and consistently followed APA format and template guidelines; no spelling or grammatical errors		
<b>Findings Action Assignment 5</b>	Analysis fit research question or hypothesis; applied appropriate statistical analysis for quantitative research; organized, summarized and discussed the qualitative data; plausible interpretation of results; made connections with relevant studies cited in the literature review; identified limitations of the study, correctly and consistently followed APA format and template guidelines; no spelling or grammatical errors		
<b>Reflection Action Assignment 6</b>	Discussed the action research process including obstacles, successes, and lessons learned; identified new and old problems that remain unresolved and recommended appropriate research questions for further study; realistic plan of action with ways to share the results; concluded with an overall summary of the research		
<b>Figures &amp; Tables Action Assignments 5 and 6</b>	Use appropriate tables and figures to summarize the data; text adequately explained the tables and figures; properly labeled and formatted APA style, no spelling and grammatical errors		
<b>References Action Assignment 2</b>	Cited 7 or more appropriate and relevant references; all of the cited sources are current (within the last 5 years except for the classics and out-of-print books); consistently and accurately followed APA format, no spelling and grammatical errors		
<b>Appendix Action Assignment 4 and 5</b>	Complete and accurate Appendix including instruments and raw data; properly labeled; correct APA format		
<b>Overall Action Assignment 8</b>	Submitted clean final copy in one Word document on or before due date, professional and scholarly, followed APA format and template guidelines with appropriate subheadings, no spelling and grammatical errors, easy to understand, flows logically		



<b>TOTAL</b>		<b>/50</b>	<b>/50</b>
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*Note: This action assignment is 50% of your final grade in EDT 657. The other 50% will be determined by your participation in group discussions 5 & 6 and action assignments 5-7. There are no resubmissions for the final paper, but you are expected to make all suggested changes addressing instructor's comments before uploading a clean copy to your portfolio for your final class – EDT678. The corrected final version will be archived at Marian University as evidence of your scholarly work.*