

ALMUSTAQBAL UNIVERSITY

College of Health and Medical Techniques Medical Laboratory Techniques Department

Stage : Fourth year students

Subject : Research Methods - Lecture 1

Lecturers:

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Scientific Research



Research

Is a careful investigation for new facts in any branch of knowledge. It is a systematic effort to gain new knowledge

Purpose of research

1. Get a research degree (M.SC, ph.D) along with its consequential benefits
2. Face the challenge in solving the unsolved problems
3. Get intellectual joy of doing some creative work
4. Give a service to the society
5. Get respectability
6. Directives of government, employment conditions etc.

Why do research

1. Validate an Idea
2. Improve methods
3. Demands of the Job
4. For publication of research article (paper) /patent

CHARACTERISTICS OF RESEARCH

1. Systematic:

All steps must be interrelated- one to another

2. Logical :

Agreeing with the principles of logic

3. Empirical:

Conclusions should be based on evidences/observations

4. Objectivity:

It must answer the research questions

5. Replicable: (reproducible)

6. Quality control : Accurate measurements

7. All well designed and conducted research has potential application

Objectives(الاهداف) choice:

1. Try to keep these simple
2. The more variables the more difficult
3. Use the opportunity
4. Get help at this stage from Senior colleagues Or Experienced researchers

Steps involved in a research

- 1. Choose a subject**
- 2. Literature survey**
- 3. Defining and formulation of specific objectives**
- 4. Prepare an abstract**
- 5. Choosing of suitable apparatus/materials**
- 6. Design of experimental set up**
- 7. Preliminary experiments**
- 8. Execution of the project**
- 9. Accurate measurements/data collection**
- 10. Data analysis and error compounding**
- 11. Hypothesis testing and verification**
- 12. Results and discussion**
- 13. Generalization, interpretation and making conclusions**
- 14. Preparation of the project report or writing thesis**

The benefits of literature survey search :

- 1. Check to see if your idea is original**
- 2. Get research articles**
- 3. Read articles and their references**
- 4. Most of these will be vital when writing up reports**
- 5. Find a scientific gap areas**
- 6. Find previous measurements and results**
- 7. Define objectives of the study**

Research Report

A Research Report generally include:

- 1. Introduction and Statement of problem**
- 2. Review of relevant literature**
- 3. Statement of hypothesis or research objectives**
- 4. Theoretical glossary**
- 5. Description of research design**
- 6. Description of Experimental design**
- 7. Description of measurement and data analysis**
- 8. Error compounding**
- 9. Presentation of Results**
- 10. Discussion**
- 11. Conclusion, limitations, and implications**
- 12. Suggestions for future work**
- 13. Acknowledgements**
- 14. References cited**
- 15. Appendices**