

Research Methodology (URSP 0013)

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Course Plan

Week	Lecturer	Topics
1 (11/9/18)		Awal Muharram
2 (18/9/18)	Assoc. Prof. Ts. Ir. Dr. Syuhaida Ismail	<p>Topic Brainstorming</p> <p>Research Process (including UTM Thesis Manual 2018 compliance)</p> <p>Research Gaps, Problems, Research Questions, Aim and Objectives</p> <p>Research Design, Research Proposal Outline</p> <p>Scope, Significance of Research and Research Agenda</p>
3 (25/9/18)	Dr. Wan Nurul Mardiah Wan Mohd Rani	<p>Literature Review</p> <p>Building a Theoretical Framework</p>
4 (2/10/18)	Dr. Khairul Hisyam Kamarudin (QUALITATIVE)	<p>Research Paradigm and Tools, Qualitative and Mixed Methods, Sampling Design, Data Collection, Validity and Reliability</p> <p>Table of Content Presentation for Literature Review i.e. Chapter 2</p>
5 (9/10/18)	Dr. Wan Nurul Mardiah Wan Mohd Rani (QUANTITATIVE)	<p>Research Paradigm and Tools, Quantitative and Mixed Methods, Sampling Design, Data Collection, Validity and Reliability</p> <p>Table of Content Presentation for Literature Review i.e. Chapter 2</p>
6 (16/10/18)	Dr. Khairul Hisyam Kamarudin	<p>Data Analysis and Synthesis, Interpretation and Reporting</p> <p>Summary of Findings</p> <p>Conclusions and Recommendation of Future Works</p>
7(23/10/18)	Assoc. Prof. Ts. Ir. Dr. Syuhaida Ismail	<p>Presentation/Publication of Research Finding</p> <p>Abstract Writing</p> <p>Seminar and Conference Presentation</p>

Course Plan

Week	Lecturer	Topic
8 (30/10/18)	All lecturers	Office Visit for Consultation
9 (6-9/11/18)	MID SEMESTER BREAK	
10 (13/1/18)	All lecturers	Office Visit for Consultation
11 (20/11/18)	All lecturers	Office Visit for Consultation
12 (27/1/18)	All lecturers	Office Visit for Consultation
13 (4/12/18)	All lecturers	Office Visit for Consultation
14 (11/12/18)	All lecturers	Office Visit for Consultation
15 (18/12/18)	All lecturers	Office Visit for Consultation
16 (25/12/18)		Revision Week

Assessment

Item	Document to Submit	Document to Present	Submission/Presentation Date	Marks
Topic Brainstorming	-	1 page of Master's Project brief proposal (.doc)	18/9/2018 (W2)	5%
Proposal Presentation	-	Chapter 1: Proposal Brief Table (.doc)	4/10/2018 (W4)	5%
Literature Review Presentation	-	Chapter 2: Literature Review (.doc)	23/10/2018 (W7)	10%
Research Methodology Presentation	-	Chapter 3: Research Methodology (.doc)	20/11/2018 (W11)	10%
Research Proposal Presentation	Chapter 1, 2 and 3 (.doc)	Chapter 1, 2 and 3 (.doc)	To follow MP1 presentation date	10% +40%
			TOTAL	100%

Research Definition

- Hunting for facts or truth about a subject
- Organized scientific investigation to solve problems, test hypotheses, develop or invent new products
- **Systematic activity** which follows certain steps that are **logical** in order:
 - Understanding the **nature of problem** to be studied and identifying the related area of knowledge
 - Reviewing **literature** to understand **how others have approached** or dealt with the problem
 - **Collecting data** in an organized and controlled manner so as to arrive at valid decisions
 - **Analyzing data** appropriate to the problem
 - Drawing **conclusions** and making generalizations

High Quality Research

- Based on the work of others
- Can be **replicated** (duplicated)
- Generalizable to other settings
- Based on some logical rationale and tied to **theory**
- Doable!
- Generates **new questions** or is cyclical in nature
- Should be undertaken for the betterment of society

Bad Research

- Looking for something when it simply is **not to be found**
- **Plagiarizing** other people's work
- **Falsifying data** to prove a point
- **Misrepresenting information** and misleading participants

Research Agenda

- A plan and a focus on issues and ideas in a subset of your field. You cannot study everything in your field during your time in graduate school, so decide what to **focus** on now, and what to **defer** until another day

Thesis Title

- **A short and snappy** description of the main topic of the thesis
- **Less than 15 words**
- **Redundancies** e.g. “An investigation of”, “A preliminary study of”, “Analysis of”, “Theory of”, “Investigation of” must be avoided
- **Should not contain formulas**, symbols or subscripts, abbreviation, Greek letters, or other non-alphabetical symbols

Research Process

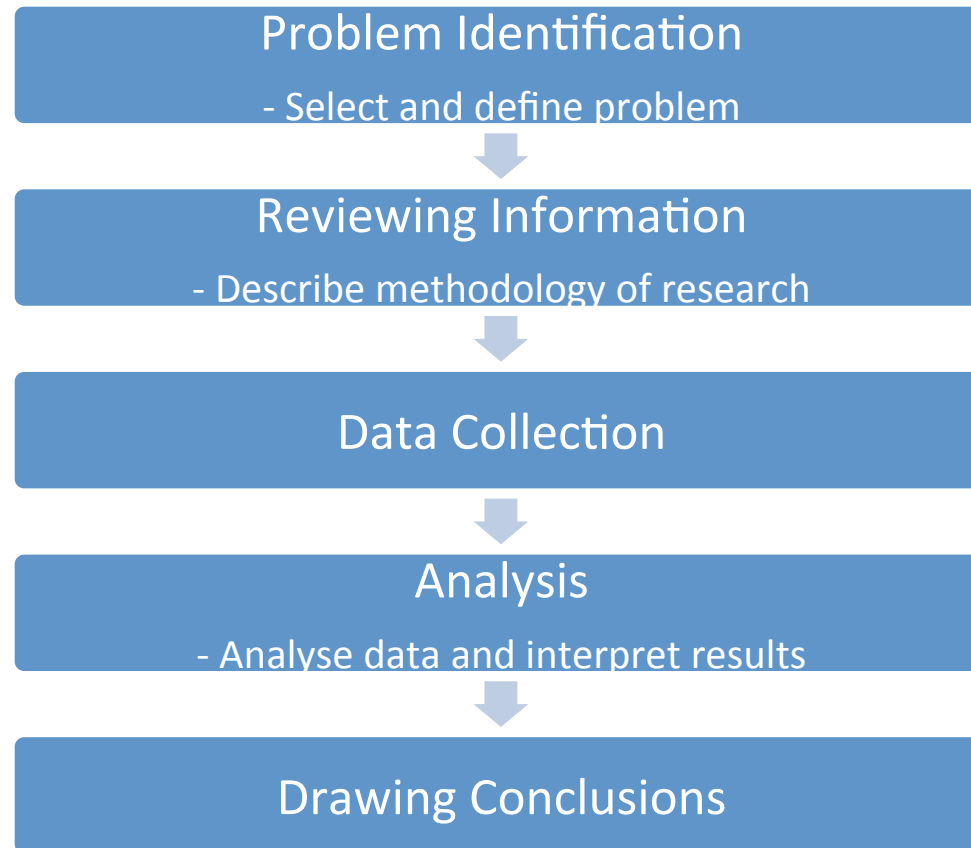


Figure 1. Research processes

Knowledge Acquisition for Problem Solving

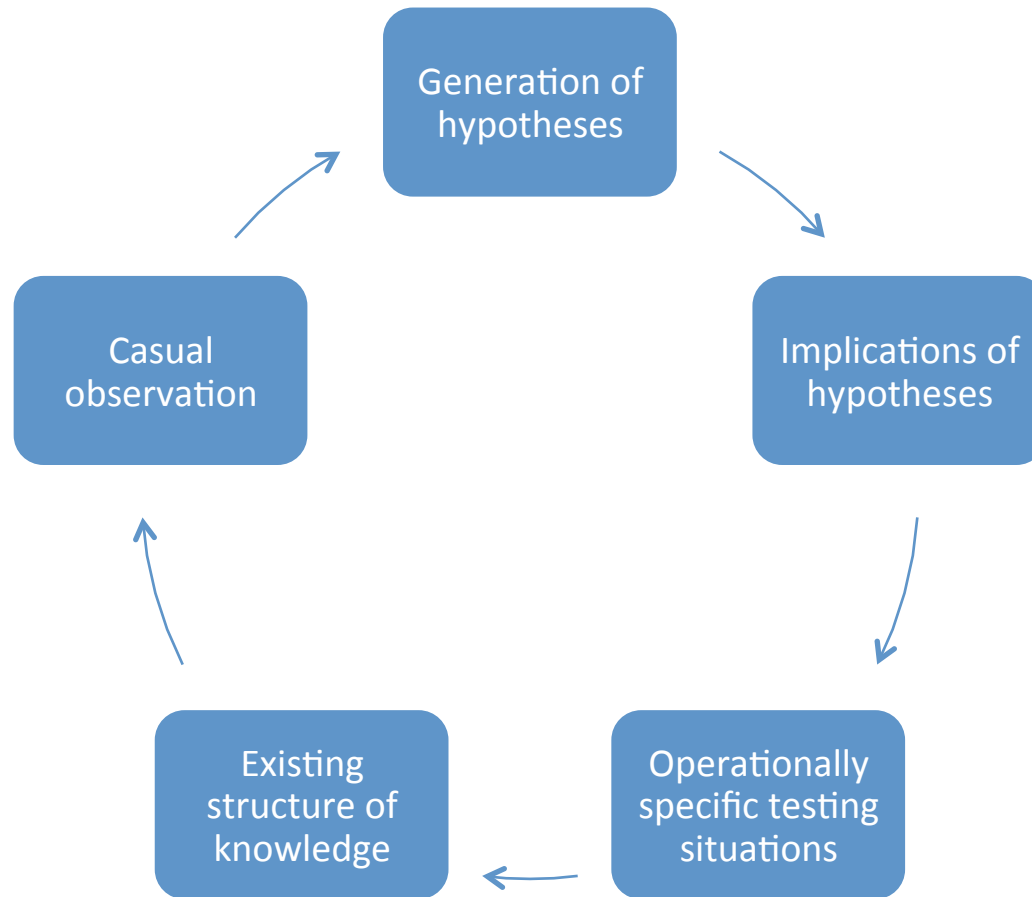


Figure 2. Scientific method of acquiring knowledge of problem solving
Source: Yadav and Menon (1981)

How to begin?

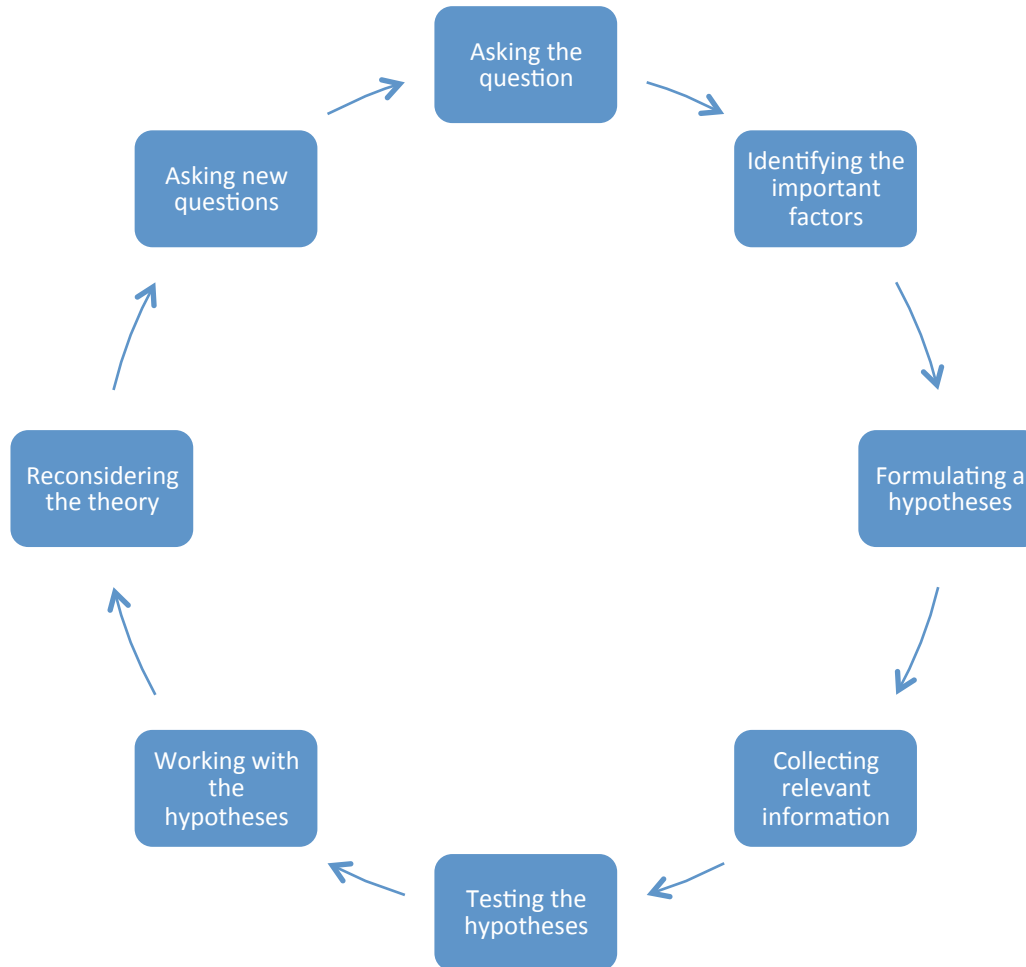
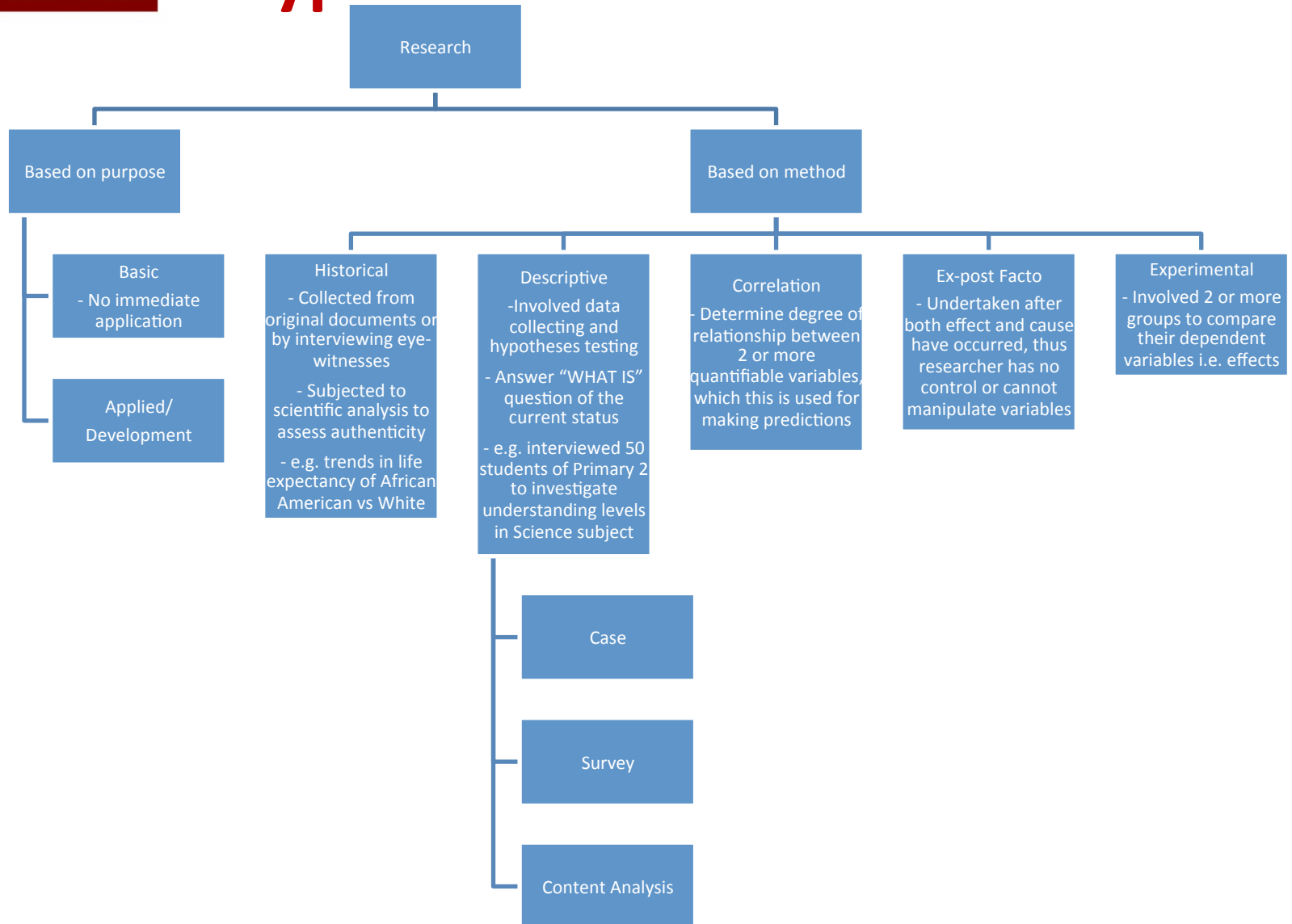


Figure 3. Beginning process of undertaking research

Why do we need research?

- To get PhDs, Masters and Bachelors
- To provide solutions to complex problems
- To investigate laws of nature
- To make new discoveries
- To develop new products
- To save costs
- To improve our life
- Human desires
- To satisfy intellectual curiosity
- To better understand things
- To be at the forefront of an exciting, technical field
- To always be learning new things
- Because that's what professors do!

Types of Research



Select and Define Problem

- The **beginning of research**
- The most difficult and important step
- A.k.a problem statement
- Steps:
 - Carry out **literature review**
 - Identify and state problem specifically
 - Identify variables in the problem situation and define them adequately
 - Generate **hypotheses** about the relation of the variables or solution of the problem, or write explicitly research questions
 - Evaluate problem for its research ability

Is your problem researchable?

- The **problem exists** in the locality or country but **no known solution** to the problem
- The solution can be answered by using statistical methods and techniques
- There are **probable solutions** but they are **not yet tested**
- The occurrence of phenomena requires scientific investigation to arrive at precise solution
- **Serious needs/problems** of the people where it demands research

How to select a problem?

- From experience
- Sensing that something is wrong or out of ordinary
- Feeling unsure about a particular situation
- Curious or concerned about a troubling situation
- Decision has to be made but with incomplete basis
- Knowledge gaps in literature exists
- Conflicting point of view and hence need more information to support one or the other
- Deficiencies in explanation

Criteria to select a problem

- **Interest** in the topic
- **Scope/size**
- **Economy/cost**
- Researcher's capabilities and limitation
- Uniqueness
- Academic background of the researcher
- **Researcher's experiences**, aptitudes, **capability**, **ability**, values, behaviour
- Researcher's training and orientation
- Researcher's purpose and objectives
- Direction of the organization where the researcher works
- Availability of data and information – primary and secondary sources
- Access to the study area
- **Time factor**
- Supervisor's time, qualification, experiences, interest, etc
- Nature of the problems – need oriented, problem solving, etc
- Controversial topic
- Too narrow, vague
- Sufficiently original
- Cooperation of the stakeholders
- Avoidance of the troubles

Good Research Problem

- Interesting - Attracts the attention to conduct the research project even without incentive or research grant
- Innovative – Although replicability in conducting research is allowed, research problem shall ideally be something novel, original and unique to attract attention and contribute to economic development
- Cost-effective - Economical and effective in solving the needs and problems of the society
- Relevant to the needs and problems of the people - Not for the personal aggrandizement but to solve the needs and problems of the people
- Relevant to government' s thrusts – e.g. NKRA, NKEA etc
- Measurable and time-bound

Questions to ask in research problem

- **How** – need elaboration
- **Why** – need elaboration
- What, when, where, whom, whose, to what extend etc
- **Diversify** the questioning techniques
- E.g. **how** the performance measurement of the contractor can be undertaken?
Why there is a need to measure the performance of the contractor?

Checklist for Research Problems

- Is the problem of current interest? Will the research results have social, educational or scientific value?
- Will it be possible to apply the results in practice?
- Does the research contribute to the science of education?
- Will the research opt new problems and lead to further research?
- Is the research problem important? Will you be proud of the result?
- Is there enough scope left within the area of research (field of research)?
- Can you find an answer to the problem through research? Will you be able to handle the research problem?
- Will it be practically possible to undertake the research?
- Will it be possible for another researcher to repeat the research?
- Is the research free of any ethical problems and limitations?
- Will it have any value?
- Do you have the necessary knowledge and skills to do the research? Are you qualified to undertake the research?
- Is the problem important to you and are you motivated to undertake the research?
- Is the research viable in your situation? Do you have enough time and energy to complete the project?
- Do you have the necessary funds for the research?
- Will you be able to complete the project within the time available?
- Do you have access to the administrative, statistic and computer facilities the research necessitates?

Consultation with others

- Conferences, meetings, workshops and in-service courses
- **Informal discussions with colleagues** and other interested members of the public
- Consult others (who are either experienced researchers, interested colleagues or experts in the field) for their honest opinions
- Might focus on points that you have overlooked
- Might make some valuable suggestions
- Might suggest alternative approaches
- Might present a different viewpoint
- Simply help you clarify your thinking

Research Aim

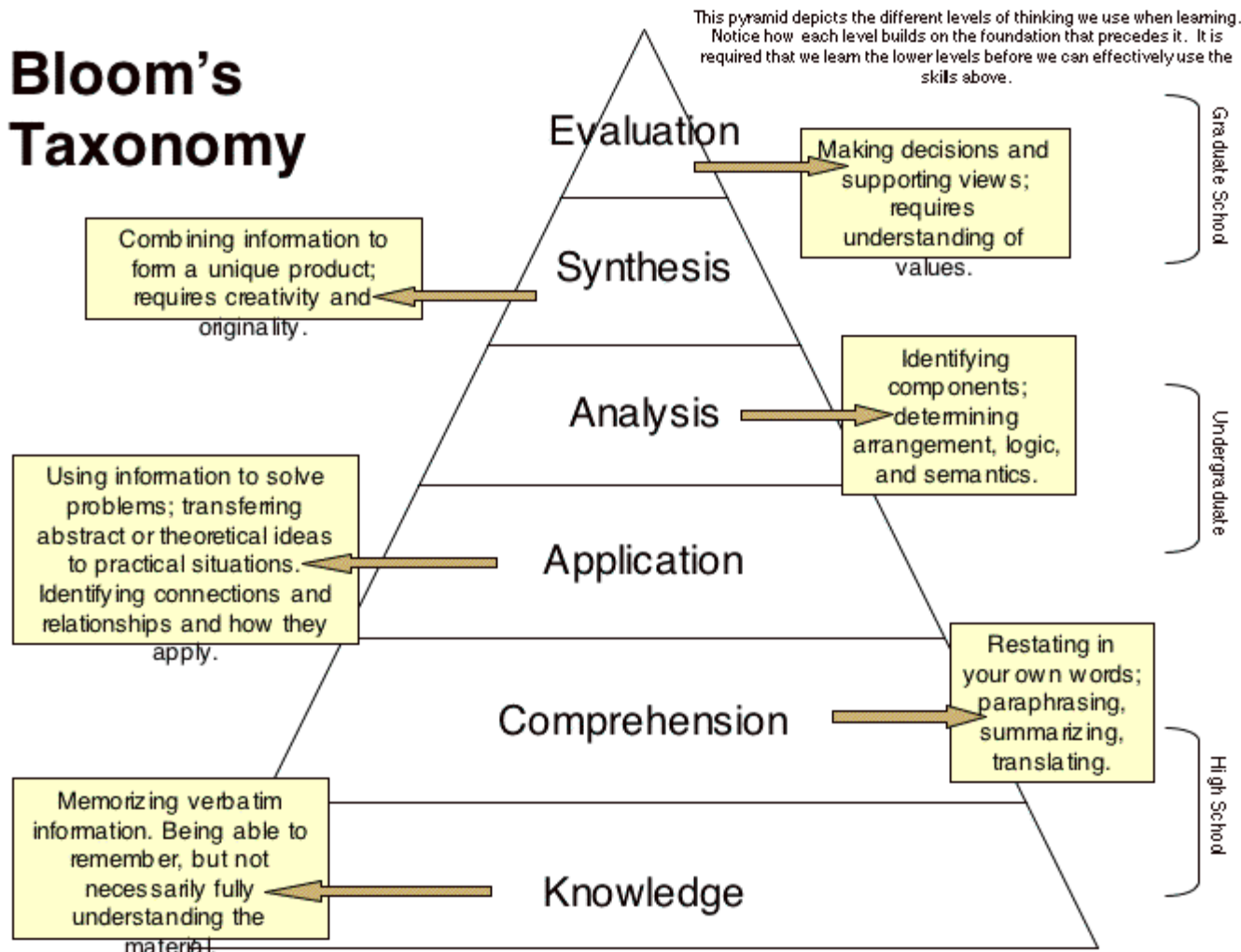
- A description of exactly what issues the research intends to address
- A broad statement that often uses words such as examine, describe, explore etc
- Directly **answer the title of thesis** hence ideally have **ONE** aim
- E.g. title is “Framework of Key Performance Indicators of Contractors in Malaysia”, hence aim is **developing** the framework of key performance indicators of contractors in Malaysia

Research Objectives

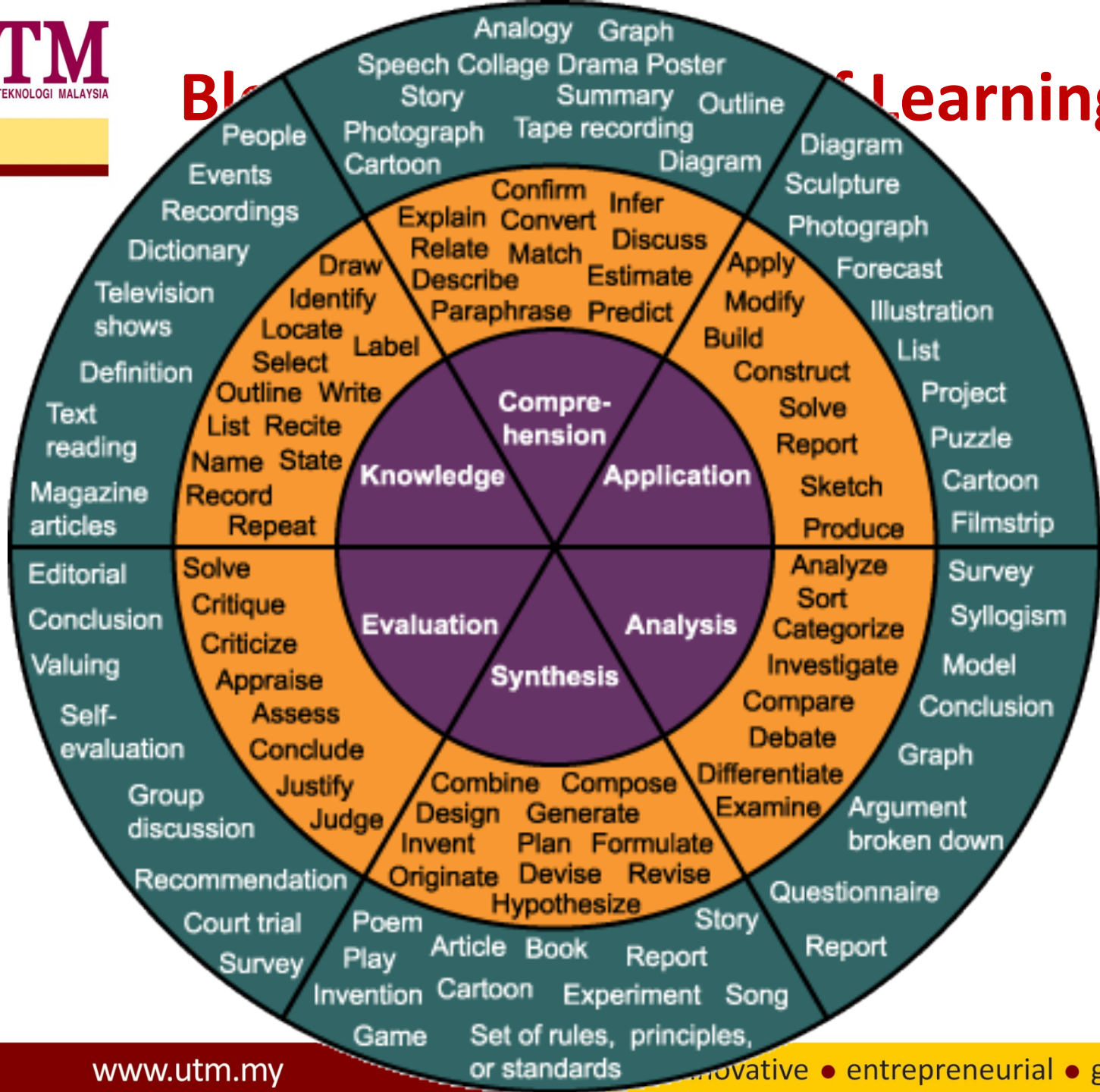
- Break down and detail a research aim into manageable sections i.e. **how to achieve the aim**
- Have same characteristics with research problems but differ in form
- Research problem is stated in interrogative or question form, whilst research objectives in declarative form
- Explain how the research question will be answered i.e. **tally with research question** e.g. RQ is “**how** the liveable cities concept can be adopted in Kuala Lumpur?”, RO will be “to **determine** the ways liveable cities concept can be adopted in Kuala Lumpur”
- Most studies have **a number of objectives**
- Must be **quantifiable** e.g. to describe, to assess, to analyse versus to find, to search
- E.g. to **identify** means in undertaking the performance measurement of the contractor
- Verbs chosen are ideally selected from **Bloom’s taxonomy**
- Arranged based on Bloom’s taxonomy **level of difficulty**

Bloom's Taxonomy of Learning Domains

Bloom's Taxonomy



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Research Proposal Outline

I. Introduction

- Problem statement
- Rationale for the research
 - Statement of the research objectives
- Hypothesis
- Definitions of terms
- Summary including a restatement of the problem

Research Proposal Outline

2. A brief review of relevant literature

- The importance of the question being asked
- The current status of the topic
- The relationship between literature and problem statement
- Summary including a restatement of the relationships between the important variables under consideration and how these relationships are important to the hypothesis proposed in the introduction

Research Proposal Outline

3. Method

- Participants (including a description and selection procedures)
- Research design
- Data collection plans
 - Operational definition of all variables
 - Reliability and validity of instruments
 - Results of pilot studies
- Proposed analysis of the data
- Results of the data

Research Proposal Outline

4. Implications and Limitations

5. Appendices

- Copies of instruments that will be used
- Results of pilot studies (actual data)
- Human experimentation approval
- Participant permission form
- Time line

6. References

Research Proposal Outline

- To summarise, proposal consists of:
 1. Introduction
 - Background
 - Problem statements
 - Aim and Objectives
 - Scopes of Research
 2. Literature Review
 3. Method
 4. Implications and Limitations
 5. Appendices (if any)
 6. References

Scope and Limitations of Research

- Includes the coverage of:
 - Study area
 - Subjects
 - Research apparatus, equipment or instrument
 - Research issues and concerns
 - Duration of the study
 - Constraints that have direct bearing on the result of the study

Significance of Research

- Establish why the proposed research matters
- Make an important contribution of new knowledge
- Sandwich:
 - Overall significance, problem, question
 - Background research
 - Specific significance

Overall Significance of Research

- The overview: So what? Who cares?
- Significance and innovation
- Why does research in this area matter?
- How will this benefit your area of research?
- Is there a practical problem addressed by this research?

Specific Significance of Research

- How will your research be an advance?
- How is this a logical next step?
- What new knowledge will result?
- Does it fill in a gap in research to date?
- How will this knowledge be applicable?
- Where is this line of research going?
Where might it lead?
- How is your research relevant to the needs?

Reference

- **Hard reference** e.g. text book, research paper, journal etc is **preferable**
- Try to **avoid soft reference** e.g. Wikipedia
- Comply to **Harvard system**

Writing Techniques

- Must be a smooth, **continuous flow across sections and paragraphs** (e.g. the use of however, hence, therefore, based on the fact, despite, in reference with, on the contrary etc)
- **No point forms except for objectives**
- Prior to writing, set your documents in accordance with UTM Thesis Manual 2017 e.g. **margins, pagination, numbering**

Research Facilities in UTM

- Library - psz.utm.my
- Indexed publications download – via acid account if outside UTM campus
- Otherwise, all downloaded papers are payable



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Select Language

- English Bahasa Malaysia

ACID Flowchart

- Student Staff

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SELAMAT DATANG KE ACID

Perkomputeran Akademik?

Perkomputeran akademik menggabungkan inovatif, keberkesanan teknologi maklumat dan kepentingan perancangan, pelaksanaan serta perkhidmatan sokongan untuk meningkatkan teknologi sistem pendidikan untuk masyarakat kampus UTM.

Apa itu Academic Computing ID (ACID)?

ACID ialah sebahagian daripada servis komputer, yang mana menyediakan ID unik pengguna melalui pengesahan dari server untuk penggunaan log masuk sistem perkomputeran akademik. Semua pelajar mempunyai ID pengguna tersendiri setelah mendaftar program melalui fakulti masing-masing. Manakala, staf perlu mempunyai akaun mel UTM rasmi terlebih dahulu sebelum memohon akaun ACID.

Sistem yang menggunakan ACID ialah:

- 1. Virtual Private Network (VPN)
2. UTMotion
3. UTMShare
4. UTM Classifieds
5. Jobs@UTM
6. Staff Portal
7. Cyberubp UTM
8. Elearning UTM *
9. AIMS2000 **
10. SPS ***



Research Facilities in UTM

- Turnitin
 - An online anti plagiarism detection programme
 - Turnitin will detect plagiarism
 - Results are printed and sent to supervisor
 - Class ID: 17064792
 - Enrollment key: asdfg1
- Grammarly
 - A grammar checking programme
 - Username: dr.robiah.ahmad@gmail.com
 - Password: UTMRS0001