

# RESEARCH METHODOLOGY (SQG2613 )

## Introduction to Scientific Research

**Dr Nik Ahmad Nizam Bin Nik Malek,**

BSc (Ind. Chem.)(UTM), MSc (Chem)(UTM), PhD (Chem)(UTM), A.M.I.C

Senior Lecturer,

Department of Biotechnology and Medical Engineering

Faculty of Biosciences and Medical Engineering



# “Research”

Definition of “Research” based on Concise Oxford English Dictionary (Soanes, C. and Stevenson, A. Oxford University Press, Great Britain, 2005)

- (noun). The systematic investigation into and study of materials and sources in order to establish facts and reach new conclusion.
- (verb). Carry out research into or use research to discover or verify information presented in (a book, programme, etc)

# “Research”

Definition of “Research” based on Cambridge Advanced Learner’s Dictionary (Cambridge University Press, 3<sup>rd</sup> edition, 2008)

- (noun). A detailed study of a subject, especially in order to discover (new) information or reach a (new) understanding.
- (verb). To study a subject thoroughly, especially in order to discover (new) information or reach a (new) understanding.

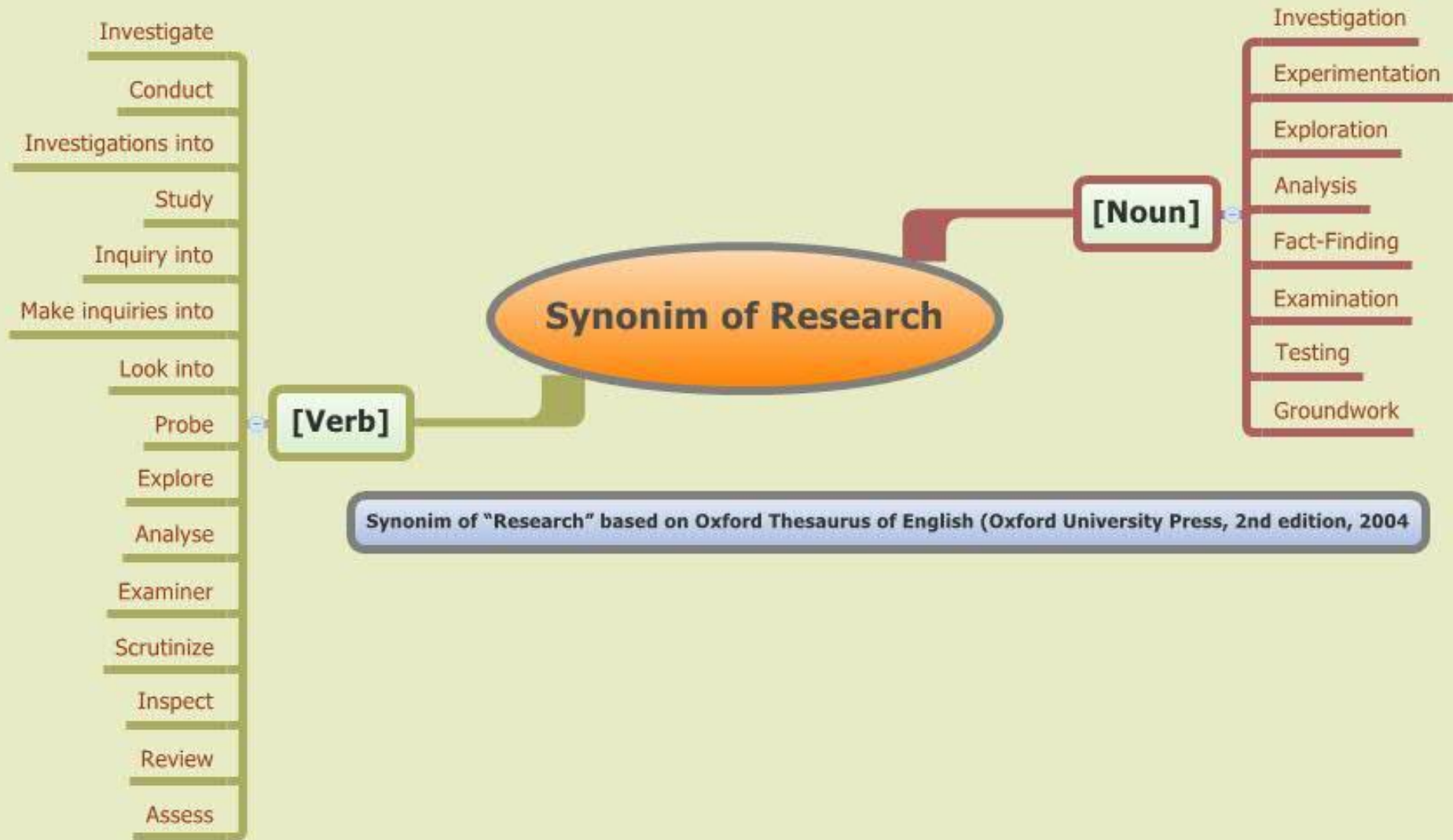
# Definition of “Research”

Definition of “Research” based on Webster’s New World; Dictionary of Science (Lindley, D. and Moore, T.H., Helicon Publishing Limited, USA, 1998).

- “The primary activity in science, a combination of theory and experimentation directed towards finding scientific explanations of phenomena. It is commonly classified into two types: pure research, involving theories with little apparent relevance to human concerns; and applied research, concerned with finding solutions to problems of social importance-for instance in medicine and engineering. The two types are linked in that theories developed from pure research may eventually be found to be great value to society”



# Synonym of “Research”





# Definition of “Scientific”

Definition of “Scientific” based on Concise Oxford English Dictionary (Soanes, C. and Stevenson, A. Oxford University Press, Great Britain, 2005)

- (Adjective). Relating to or based on science.
- Systematic; methodological.

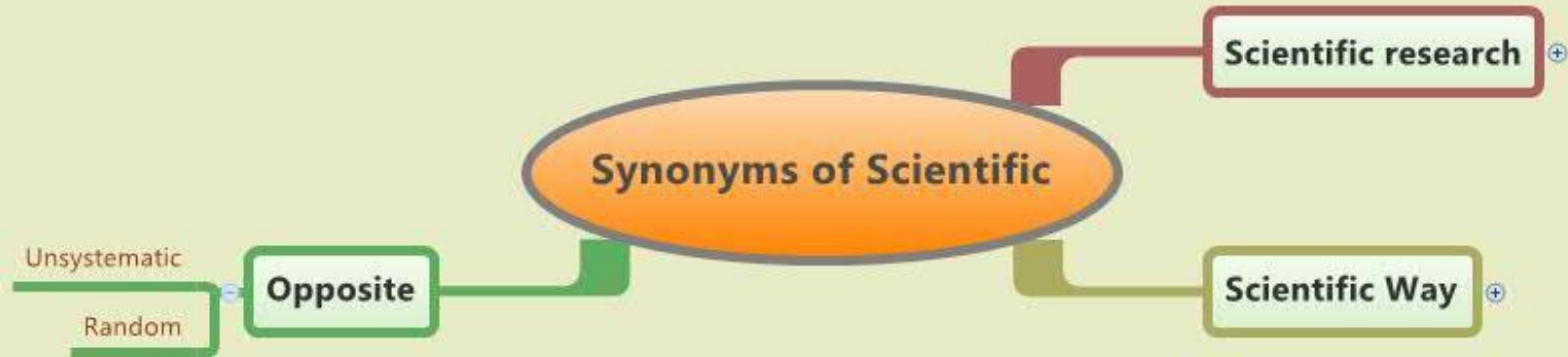


# Definition of “Scientific”

Definition of “Scientific” based on Cambridge Advanced Learner’s Dictionary (Cambridge University Press, 3<sup>rd</sup> edition, 2008)

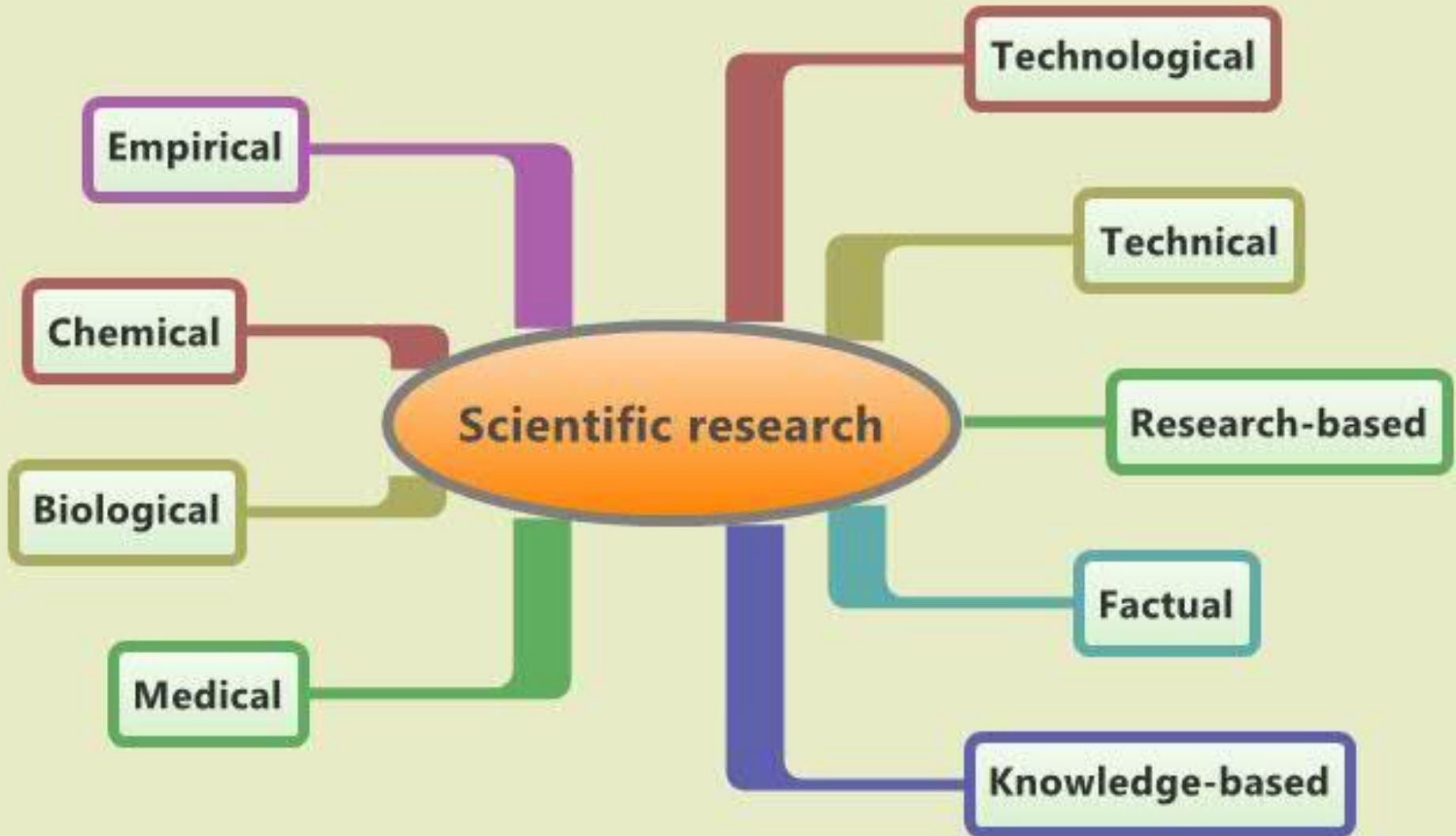
- Relating to science or using the organized methods of science.
- Careful and using a system or method.

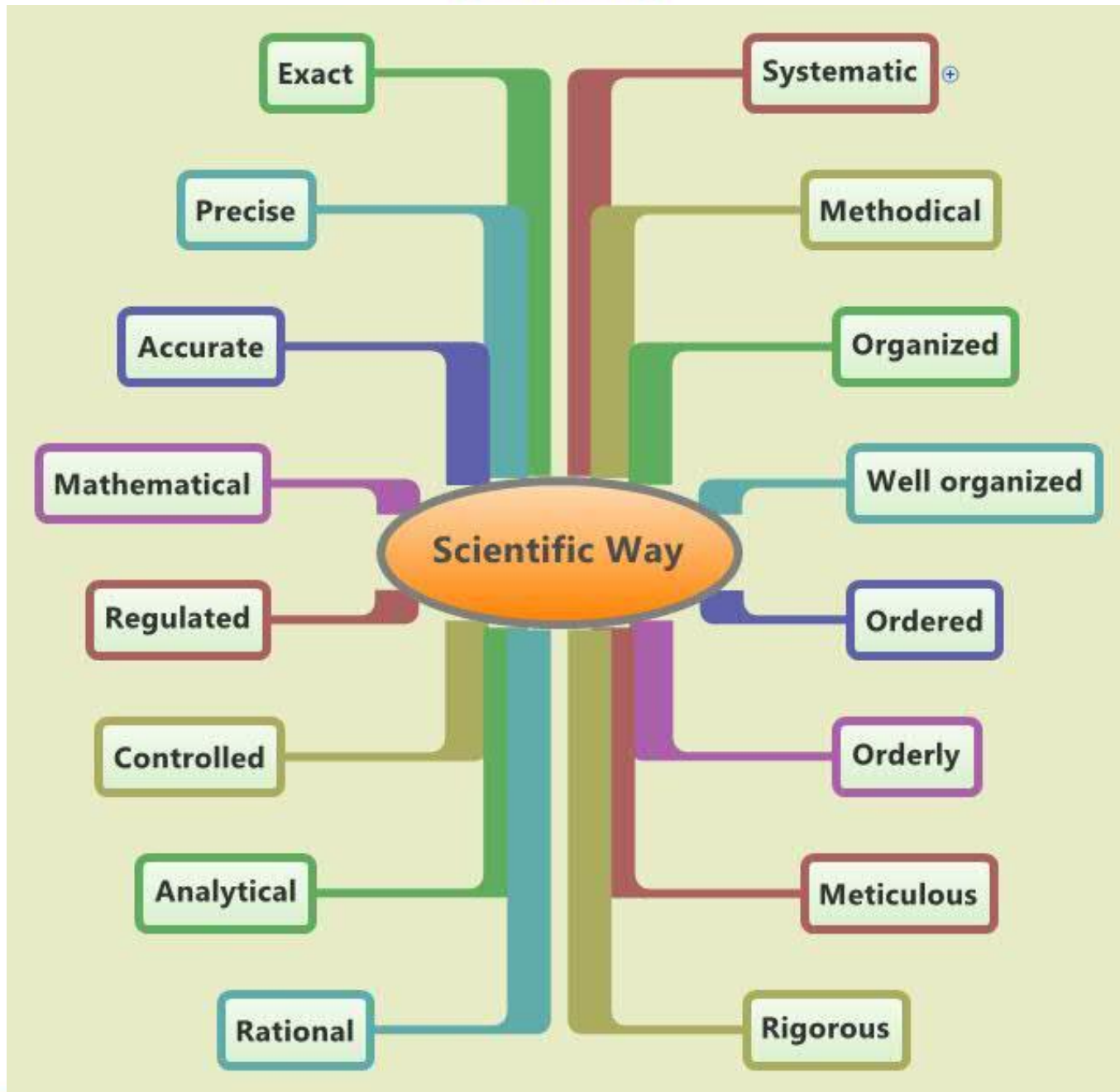
# Synonyms of Scientific



Synonyms of "Scientific" based on Oxford Thesaurus of English (Oxford University Press, 2nd edition, 2004).

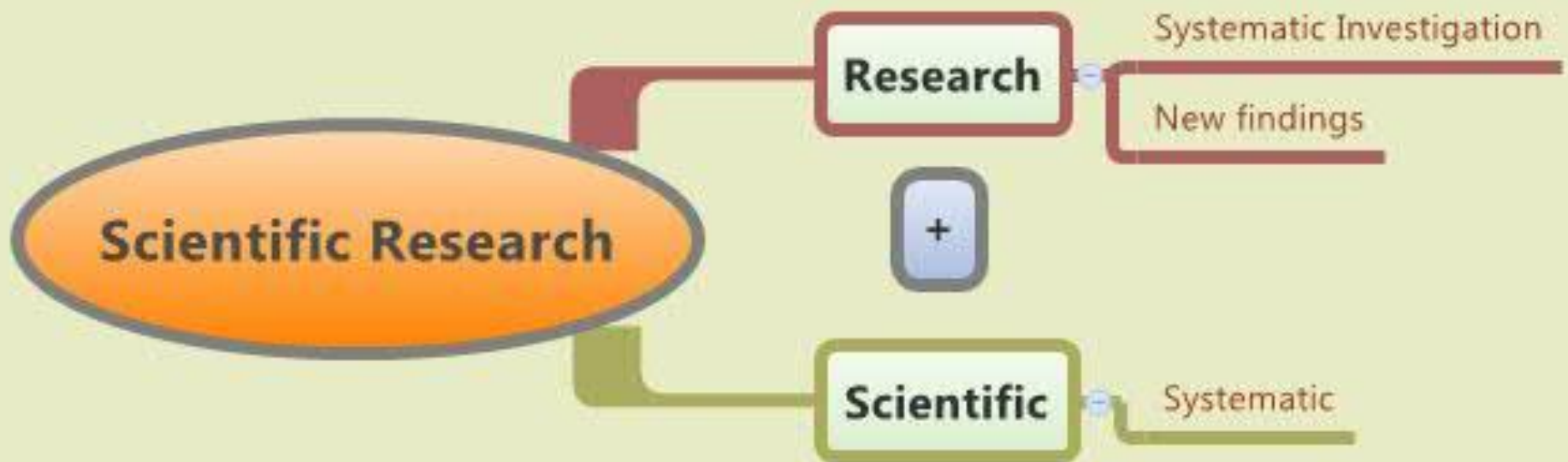
# Synonym of Scientific Research

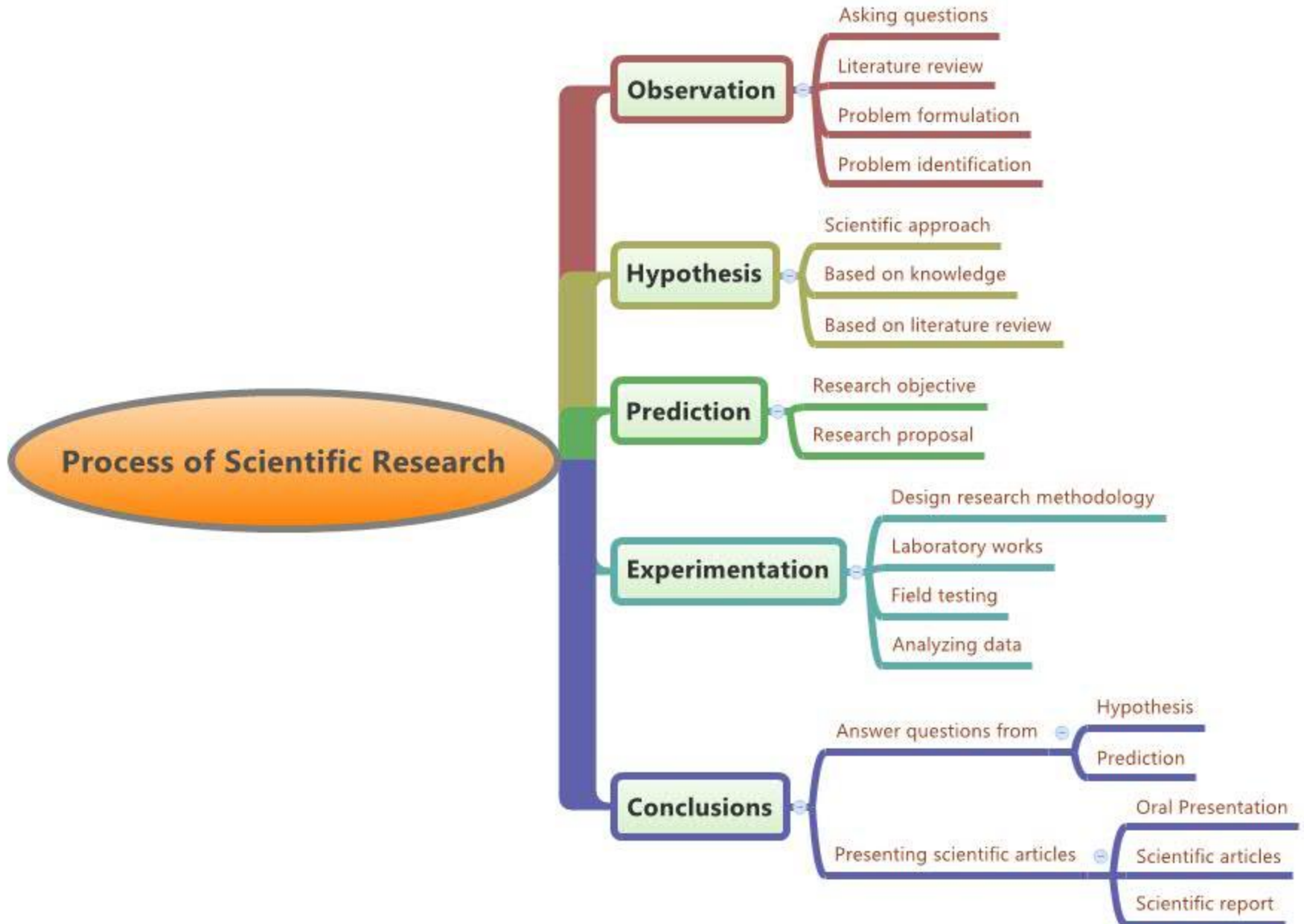




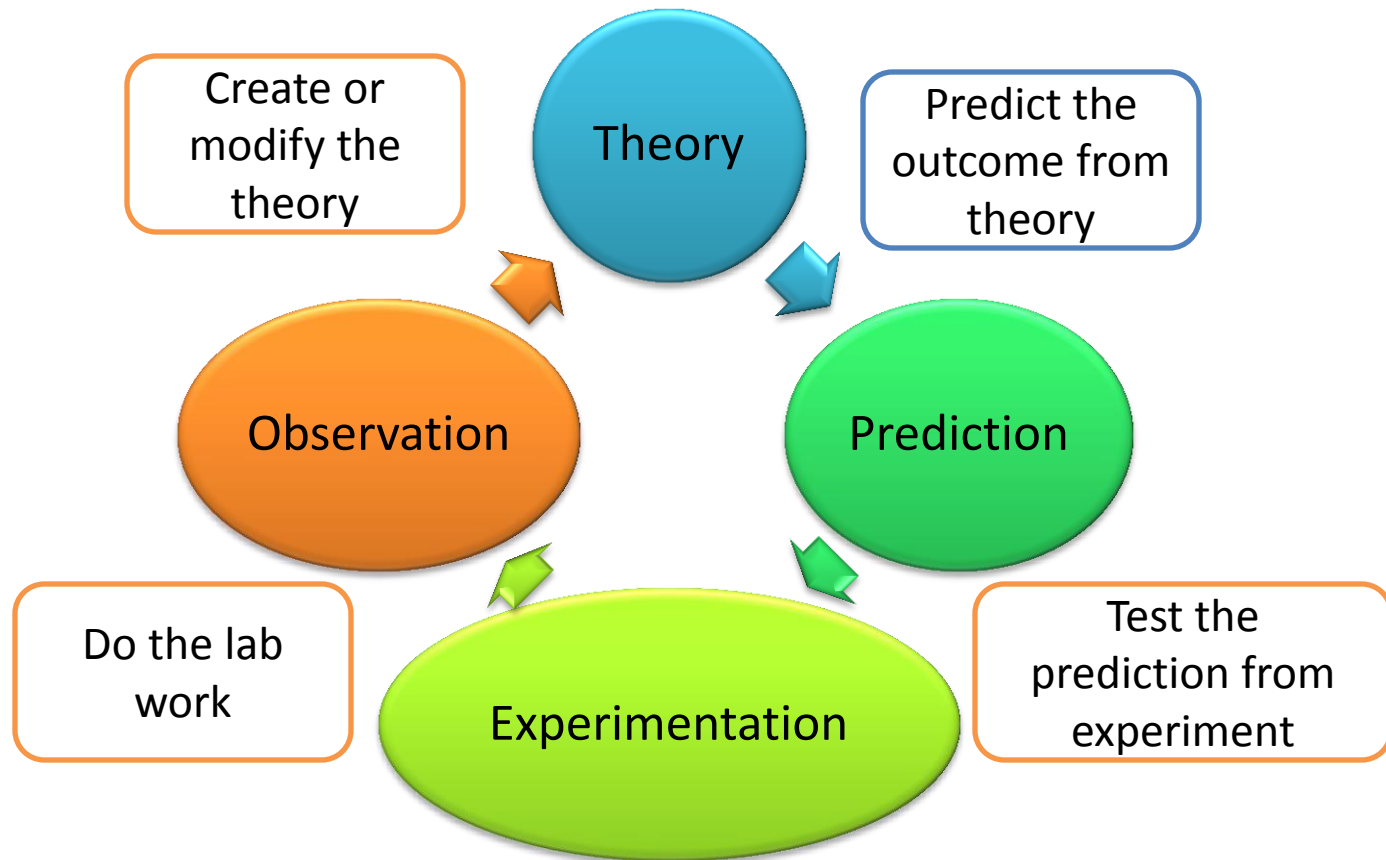
# What is Scientific Research?

- Doing **scientific investigation** or study in very **systematic** way to get **new findings**





# Scientific Research process



Validation

- It fits the fact

Generalization

- Makes prediction about the future

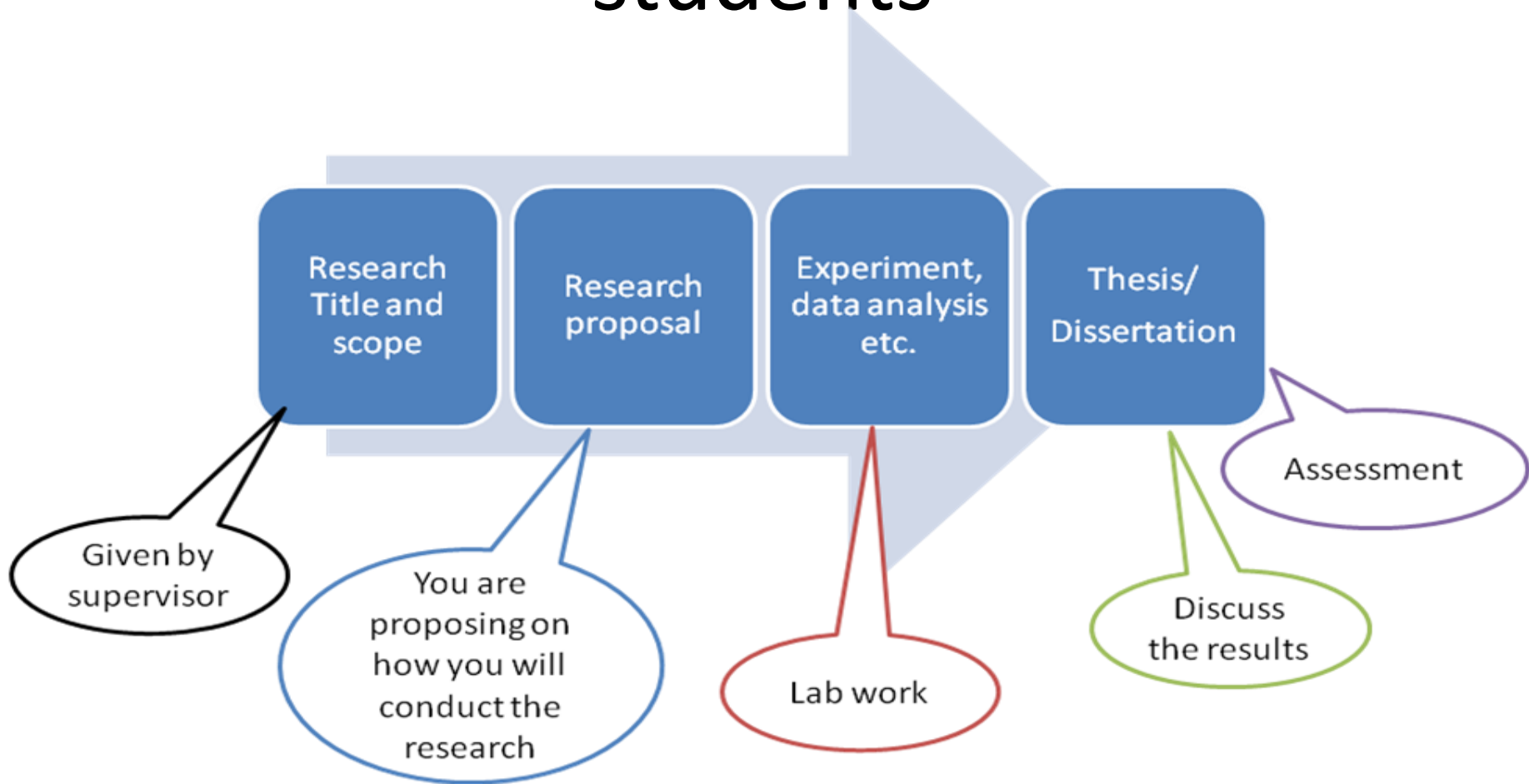
Replication

- Can be repeated with similar results

Good  
Theory



# Typical Research Process for students



# What is Research?

Research is actually all about solving problem depending on environment or solving unanswered question

It is about finding out about something. For example in biotechnology, we have genetic engineering and many more

When you do a research actually you want to answer a question



# What is research?

- Research can be described as interest to pursue to find out something which is useful and can contribute whether in biological, physics or any field of interest.



# What is Research?

Research is when you want to seek  
knowledge.

Solution to problems.

Way of advancing knowledge.



# What is Research?

Research is about try  
and error things until  
you get the conclusion



# What is Research?

- Research is a method to solve problem
- In a simple word research means “searching”



# List of References

- Soanes, C. and Stevenson, A. Oxford University Press, Great Britain, 2005
- Cambridge University Press, 3<sup>rd</sup> edition, 2008
- Lindley, D. and Moore, T.H., Helicon Publishing Limited, USA, 1998
- Oxford University Press, 2nd edition, 2004

# MY PROFILE



**Dr Nik Ahmad Nizam Bin Nik Malek,  
BSc (Ind. Chem.)(UTM), MSc (Chem)(UTM), PhD (Chem)(UTM), A.M.I.C**

**Senior Lecturer,  
Department of Biotechnology and Medical Engineering  
Faculty of Biosciences and Medical Engineering**

Email: [niknizam@fbb.utm.my](mailto:niknizam@fbb.utm.my), [niknizam@utm.my](mailto:niknizam@utm.my),

Website: <http://www.staff.blog.utm.my/niknizam/>