

# Clarifying your Research Topic

Week 2

# This Week

Expectation at this Level

Project Title

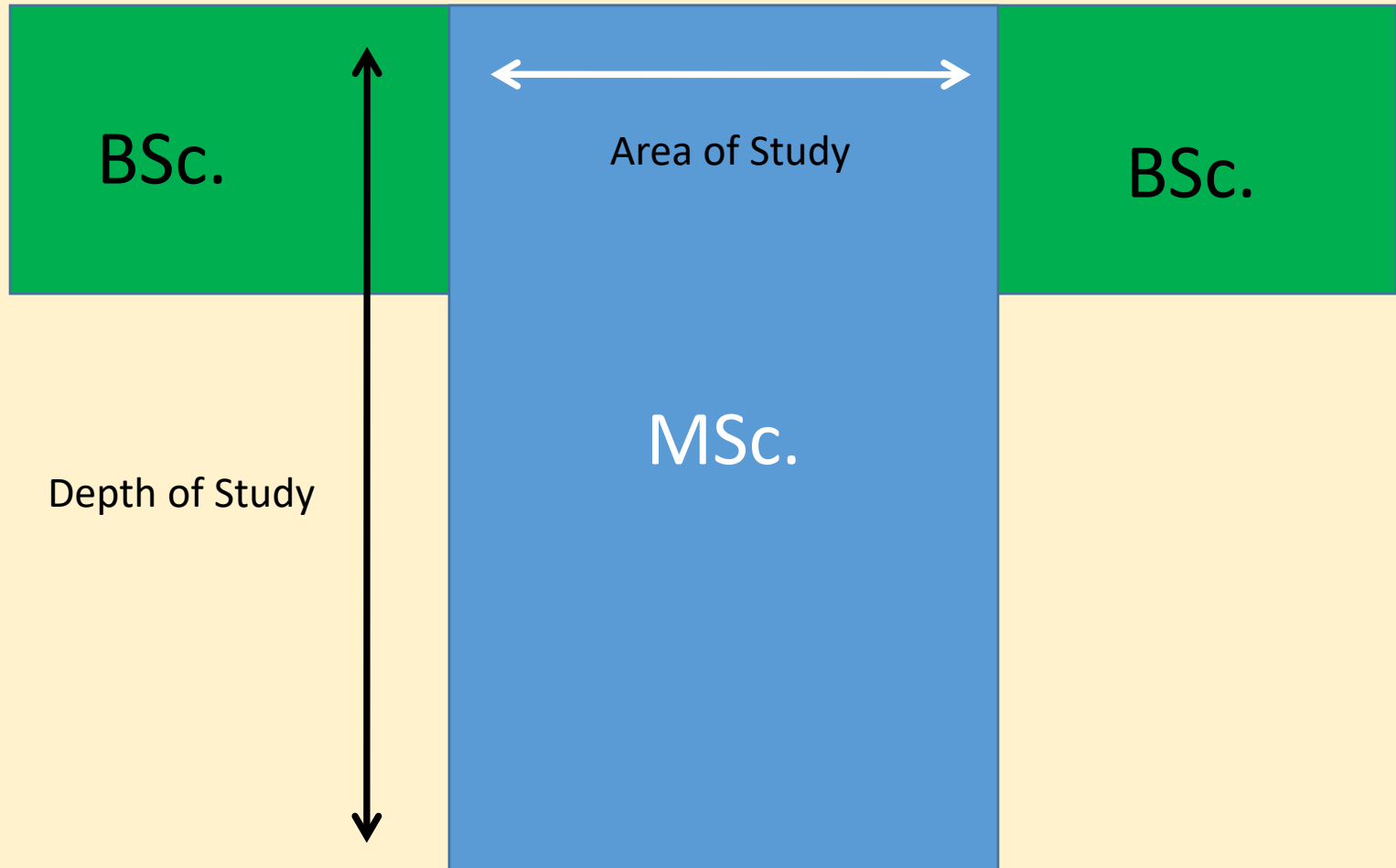
Research Question

Research Aim

Research Objectives

Expectation at this Level

# BSc. vs MSc.



- The idea is that you should focus your research on **ONE** area/problem theme/research question or significant thing. Narrow
- But your analysis should be **IN DEPTH**, thorough, high degree of complexity and sophistication. Deep
  - Problem definition
  - Literature
  - Methodology
  - Data Analysis
  - Findings and Recommendations

Project Title

# Your Project Title

- The title is the **name of your project** – rather like the name of a novel, something that catches a potential reader's attention but just gives a hint as to what the work is all about
- Think of it as a kind of nick name or slogan for your project
- It is not a good idea to use the same set of words for the title, Research Question and Aim

- Be careful with titles, there is a tendency to use the title to say what you will do. The purpose of the title is to **give a name to what you do**
- Your title should not be over long
- Titles have two key elements:
  1. **Aspect** – this is the particular focused area of your study
  2. **Why** – this says why it might be a useful aspect



# Some examples of titles

- Social Networking - A New Trend in E-marketing
- A critical exploration of Training and Development in the IT Service Industry
- E Marketing: a case study of Trinidad and Tobago retailers using the Internet
- Power Management in Android Devices
- Improving Network Security using cross domain authentication

# More Example Titles

- A critical analysis of Internet Shopping safety and Security
- An Agile Development comparison to Waterfall Model
- E Commerce Website Usability: a case study of e retailers
  
- Take 5 mins to write out your Research Title

Research Question

# What is a Research Question?

- Research questions designate what researchers want to understand about the research problem that led to their study.
- Research questions further specify the stated purpose of the study, which in turn addresses the stated research problem.

# General Tips

- Make sure it is a clear question
- Ideally one wants an **open question**: that is one that does not just end with a yes or no answer
- **A question is an expression normally used to request information in the form of an answer**
- Questions can sometimes be like commands used to elicit a response such as "Would you pass the salt?" looks like a question but in fact is a request or action, not for an answer
- **We want questions that elicit an answer i.e information**

# Using theory to Refine your RQ

- Having developed the initial research question, the researcher's task is then to find out **what the literature indicates** on the first formulation of the question.
- The most efficient way to do this is to find **five or six major papers (sources) on the topic** that are recent.

# Basic Research Questions Form

- When attempting to construct a question, think about what sort of answer is expected
- Also think about the purpose or type of research
- There are four kinds of answers that can be elicited:
  - Bi-Polar answers
  - Explanatory answers
  - Descriptive answers
  - Exploratory answers

# Bi-Polar Answers

- Essentially questions that imply a limited range of possible answers.
- Typically, a bi-polar question starts with **interrogative words** such as WHAT, IS, CAN or DOES
  - Is it possible to sharpen this pencil? (Y/N)
  - Does it make sense to allow children to sharpen pencils (Y/N)
- Bi-polar questions can of course be useful but more often than not they have no great utility and the answer is obviously yes or no
- **Don't use this type of question, as it will be obvious that you did not think about the info you want to elicit from your research**



# Explanatory Answers

- In this type the expected answer is an explanation and it is often in the form of a procedure or process
- Typically, explanatory questions that start with 'HOW' or 'WHY'
  - How can a pencil be sharpened safely by young children? (a procedure)

# Descriptive Answers

- Here the expected form of answer is a description most often in the form of an evaluation
- Typically, these questions start with WHAT or WHY
  - What is the purpose of HB0 pencils? (simple explanation)
  - Why are HB0 pencils difficult to sharpen? (an evaluation)

# Exploratory Answers

- Where the expected form of answer implies an answer as an exploration of something
- Typically, exploratory questions start with HOW or WHY
  - How should we use HB1 pencils to get the best drawing? (often an exploration is needed here leading to an explanation)

Essentially.....

- In your project you are looking for **one significant Research question** and one significant answer
- **In practice one should express the answer to their research question in the Research Aim**

# An Example

- Question: Are you enjoying the course?
  - Form of the answer will be just Yes/No
- Whereas: What is it about the course that you like most?
  - Then the form of the answer would be a
    - topic or
    - workshop session or
    - the project research itself
- Alternatively: How can workshop sessions be used to enhance the learning experience of students?
  - The form of answer would possibly be a workshop session protocol or a guide/framework for conducting workshops

# Make Sure.....

- That whatever form the answer will take you can actually construct it and
- When it is constructed as part of your research it is in fact **useful in some way**
- That is, it is **actionable**
- This will determine the success of your research

# Testing your Research Question

- **Paraphrase** – if it's a good question you will be able to ask it in several different ways.
- **Bi-polar** – this means that the question has a fixed and limited range of answers such as “Y/N”, “bad, good, excellent” and so on. Avoid this feature
- **Discussion** – look at your question and honestly ask ‘will this question produce discussion?’
- **Reverse** – it is often illuminating to reverse the question – try this and see what ideas occur to you. But as a rule you should not use negative questions.
- **Interrogative** – try writing your question with a different interrogative. That is, if you question starts with ‘how’ try re-writing it with ‘what’ and so on.

# Some more examples

- **RQ** = What are the strategic constraints that affect investment into e-applications for SME's in Trinidad?
- Form of Answer:
  - A list of constraints or
  - A strategy to deal with the constraints or
  - A feasibility report on e-application implementation
- **RQ**= How can the use of Instant Messaging lead to better personal communication protocols and business success?
- Form of Answer:
  - A feasibility study on its use in offices or
  - A series of factors that must be in place before IM adoption or
  - A cost/benefits report





Research Aim

## Formulating your Aim

- This derives from the problem definition and is best thought of as expressing the overall activity and intention of the research to generate an outcome
- The aim expresses **the target** (or purpose) for the whole research outcome
- Avoid having an outcome that amounts to something like yes or no
- Remember that **the aim expresses the answer to your research question**. Consistency is important

- So when you write the aim keep in mind your research question
- **For each project we want one overall aim**

# Characteristics of an Aim

- **Action** – what are you going to do? *A strong high level verb is required that suggest critique, evaluation, synthesis.* Use a single activity that sums up the whole project process for generating the intended outcome
- **Intention** – what useful thing to you hope to achieve?
- **Target** – what is the real world intention? That is the research outcome should be useful in the sense that it addresses the real world problem theme on which the research is based
- **Form** – here you link the aim to the Research Question in effect the aim should says what the answer to the question will be.

# An Example

- **Title:** The Internet- Revolutionizing the foreign used car industry in Trinidad and Tobago
- **RQ:** How can the e Channel be used as a strategic tool to gain competitive advantage in the foreign used car industry in Trinidad and Tobago?
- **Aim:** To synthesize a comprehensive E Channel Strategy to enable industry to evolve from a state of e commerce awareness to e commerce readiness. thus enabling SME's to gain differential competitive advantage in the foreign used car industry in Trinidad and Tobago.

# Breakdown using characteristics

- **Action:** to synthesize
- **Intention:** for SME's to gain competitive advantage through differentiation
- **Target:** to enable the industry to evolve from e Commerce awareness to e Commerce readiness
- **Form:** sell side e Channel strategy

# Research Objectives



# Formulating your Objectives

- The aim expresses the overall outcome for the project but to get there we normally have to pass through a number of minor outcomes on the way and these are expressed as being generated by objectives
- Their purpose is to show more or less sequentially how the aim will be achieved
- Ideally an objective should represent a major sequential research milestone that could stand on its own

- Care must be taken that objectives are **not** confused with ordinary research tasks
- For example, an objective that set out to build a User Security Policy best suited for public sector could easily be a milestone and can easily stand on its own
- However, the design of a questionnaire is most likely to be a project task since it is something that needs to be done but only has meaning within the project
- **For your research we are looking for 3 to 4 objectives**

# Characteristics of an Objective

- **Progressive** – the objectives must build sequentially so that collectively they amount to reaching the aim
- **Action** – Ideally we look for a single activity that will generate a minor project outcome. Again a high level verb is need.
- **Outcome** – this should reveal an answer or the accomplishment of a milestone. It should be documented.
- **Evidence** – there must be some tangible evidence of the stated outcome. Often the outcome and the evidence will be the same object.

# Example 1

## *Evaluating ICT Continuity for Business Continuity within a Public Sector Marine Research Institution*

### 1.3 Research Aim

To determine the level of ICT readiness for business continuity within a Public Sector Marine Research Facility in accordance with standard industry best practices. Provide recommendations towards establishing a formal ICT Continuity Framework.

### 1.4 Research Objectives

- I. Identify the current state of ICT readiness and continuity within the Marine Research Institution;
- II. Compare and identify gaps between the Institute's existing state of ICT readiness and the established standards; and
- III. Make recommendations to bridge gaps identified towards establishing a framework for ICT continuity towards supporting the overarching goals of business continuity.

# Example 2

## 1.2 RESEARCH QUESTION

To what extent does the type of project management methodology used affect the success of an IT project?

## 1.3 RESEARCH AIM

To determine the extent that the type of project management methodology used affects the success of an IT project.

## 1.4 RESEARCH OBJECTIVES

The research objectives are listed as follows:

1. To identify the critical factors of Project Success.
2. To determine the project management methodology used in two (2) IT projects.
3. To determine the if the critical factors for Project Success in two (2) IT Projects.
4. To evaluate the extent that project management methodology affects the success in two (2) IT projects.

# Example 3

## *1.2 Research Question*

The current research seeks to explore determinants of students' perceived learning, satisfaction and grade point average among tertiary level students who engage in online learning in Trinidad. Therefore, the study seeks to address the following research question:

**What factors have affected the online learning performance of tertiary level students?**

## *1.3 Research Aim*

To determine the factors that impact the performance of tertiary level students in an online learning environment.

## *1.4 Research Objectives*

- To evaluate whether student-related factors affect tertiary level students' online learning performance.
- To determine if course-related factors impact students at a tertiary level in an online learning environment.
- To investigate the effects of instructor-related factors on tertiary level students' online performance.

# Example 4

## 1.2 Research Question

What is the readiness, strategic values, and risk of integrating Software-Defined Networking?

The research question outline will guide the research project. This will also assist in the construction of a logical argument. Additionally, the research pertaining to the strategic values and the security vulnerabilities of software-defined networking will also be examined.

## 1.3 Research Aim

The focus of this study is identifying the security vulnerabilities of collaborating and integrating heterogenous network structures with Software-Defined Networking in one ISP in Trinidad and Tobago.

## 1.4 Research Objectives

The outline objectives for the research project is listed below.

- To identify the control functions required to conceptually integrate SDN in a production network.
- To comparatively analyze security threats of SDN and heterogenous networks from a conceptual and architectural layer.
- To identify the defense mechanism pertaining to the outline threats.

# Example 5

## 1.2 Research Question

In light of the above mentioned, coupled with secondary evidence at an international level and locally, the following question is hereby proposed:

*To what extent are local businesses compliant with information security standards?*

## 1.3 Research Aim

Within this paper, the aim is hereby proposed:

*To identify the extent local businesses are compliant with information security standards.*

## 1.4 Research Objectives

This case study has formulated some objectives that should be looked at in achieving the question. In this light, the formulation of the following objectives has been proposed:

- To evaluate the level of compliance local businesses are at.
- To identify the best practices and benchmarks for information security compliance
- To compare best practices and benchmarks according to confidentiality, integrity and availability to local businesses.



# Example 6

## 1.2. Research Question

As the world tries to cope with the new normal and ensuring business continuity raises the following question:

*How can an organization maintain the CIA triad in a remote-working environment?*

## 1.3. Research Aim

The research will be conducted with the following aim in mind:

*To ascertain whether Confidentiality, Integrity and Availability of an organization's systems is given any consideration when working remotely.*

## 1.4. Research Objectives

To answer the bigger question, the researcher has set three objectives which when combined, will satisfy the aim and by extension the research question.

- 1. To investigate the security controls that exist for ensuring the Confidentiality, Integrity and Availability of data.*
- 2. To identify the impact of compromising the CIA triad of an organization's systems in a remote working environment.*
- 3. To determine the hardware and software requirements needed to meet the CIA criteria while working remotely.*