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Overview

- UTS HELP
<https://www.uts.edu.au/current-students/support/helps>
- Research process & Academic vs. Industry
- Preparing a project proposal – Title, Objectives, Methodology and Assignment tasks 2 and 3
- Workshops
- Q&A



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An (initial) overview of a research process



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Academic vs. Industry

Differences between Academic and Industrial Research

Typical aspects	University	Industry
Focus of the R&D	Basic research; curiosity-oriented	Applied research; exp. develop.
Basic rationale	Advance knowledge	Increase efficiency
Aim	New ideas	Profits
Characteristics	Idea-centered	Practical, product-centered
Framework	Open	Close, confidential
Evaluation	By peers	By the boss
Schedule	Open-ended	Tight, predetermined
Recognition	Scientific honors	Salary increases

Source: Vedovello(1998)

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What is research? Primary research and sources

- Primary research-study of a subject through first-hand observation and investigation:
 - Your strengths and interests
 - Analysing a workplace, conducting a survey or an interview
 - Carrying out a laboratory experiment, building apparatus
 - Analysing a literary or historical text, a film or a performance
- Primary sources of information include statistical data, historical data, works or art...

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Preparing a project proposal - What and How

- Identify a topic
- Find the reason for your research
- LR:
 - Identify research gaps
 - collect evidence to support the research
 - Define and justify a research problem
- Set aims and research questions
- Significance: What is a new product or idea?
- Target stakeholders
- How to improve productivity or people's lives based on LR
- Set a research method
- **But research is based on prior research (LR) + other resources (e.g. budget, partners, timeframe, etc.).**

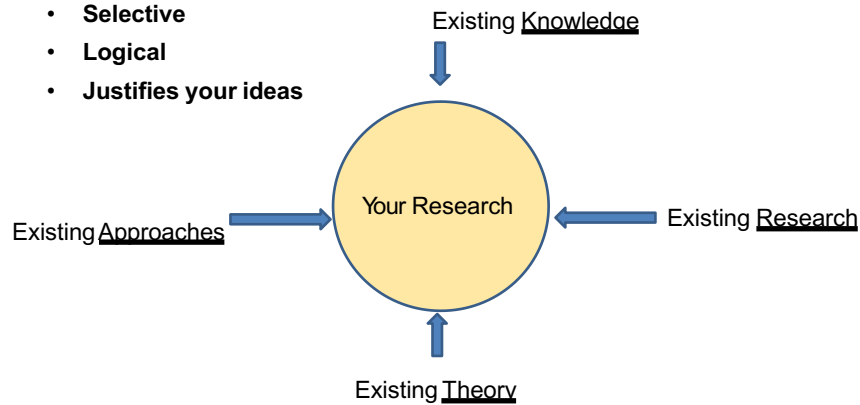


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Integrating literature review as evidence from all members (if applicable)

Groups ideas according to themes

- **Selective**
- **Logical**
- **Justifies your ideas**



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Example: Synthesis matrix tool

Your Point of View : *Some training can prevent cognitive impairment in older adults* (not your title)

Topic: Video gaming enhances cognitive skills that decline with age

	Research Questions	Themes				Research methods
		training	games	motor skill	ageing	
Article 1	(1)(2)	✓		✓		(A)(B)
Article 2	(2)	✓	✓	✓	✓	(A)
... Article n	(2)		✓			(C)
Your topic	?				✓	?

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How to write a literature review paper

- How do I get started and outline a good idea?
- Connecting an idea based on previous studies (example or evidence of a paragraph if applicable)
- Referencing (APA)

<https://www.uts.edu.au/current-students/support/helps/self-help-resources/types-assignments/literature-reviews>



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A Good Method must be

- Aligned with your objectives
- Feasible & Ethical
- Focused on both data collection and data analysis
- Systematic, not random
- Controlled
- Logical
- Empirical, measurable
- Replicable, transparent

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Tips: From Objectives to Methods



Look at your research objectives



Think of some possible ways to fulfil them



Do you need to observe, build, design, test, measure, systematically review, talk to...?



All need to directly match the objective



Read about others' experience (from your literature review)
Which method is more reliable, rigorous, feasible, ethical?

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Types of Research Methodologies:

- Quantitative:

The collected data is in statistical or numerical form. e.g **Survey, big data, observations**

- Qualitative:

A systematic method of inquiry, that aims to determine an in-depth understanding of human behaviour and the reasons that govern such behaviour. Descriptive Research Method

e.g. **Interview, observation, case studies, interpretation**

- Experimental:

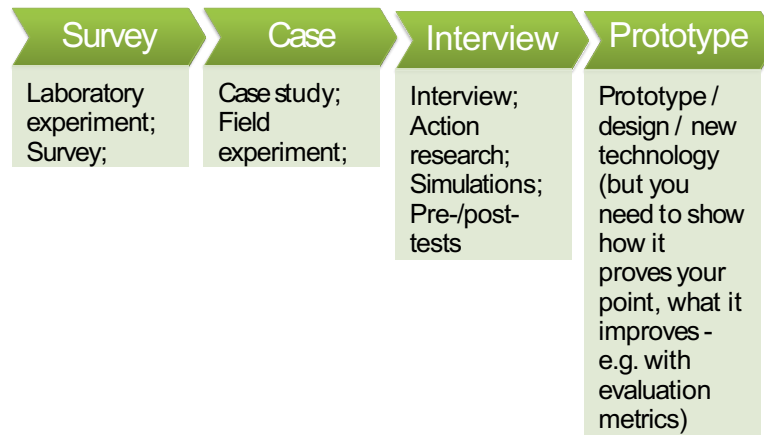
implementation, testing, etc

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Research can be conducted through ...



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Other analysis methods - Market or Social media, etc.

Market analysis:

- Competitive Force Model

(McGonagle, John J, (1999), Competitive Strategy: Techniques for Analyzing Industries and Competitors. Competitive Intelligence Review, 1999-06-22, Vol.10 (2), p.86)

- SWAT analysis – strengths, weakness, opportunities and Threats (<https://www.business.qld.gov.au/starting-business/planning/market-customer-research/swot-analysis>)
 - build on strengths (**S**)
 - minimise weakness (**W**)
 - seize opportunities (**O**)
 - counteract threats (**T**).
- Broad factor Analysis (PEST analysis)- political, economic, socio demographic and technology (<https://www.business.qld.gov.au/running-business/>)



Social Media Analysis:

- Natural language processing—(NLP), New analytics, opinion mining, text analytics, etc



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Ass2 Marking criteria

- **INTRODUCTION**

Presents the problem, sets up the field, and states the student's point of view; Clearly stated and well-written aims, objectives and significance of the knowledge contribution of the review; Orients the reader to

- **CRITICAL EVALUATION**

The critical evaluation process that sets out an appropriate logic and consistent method; the Ability to search sources appropriate to the topic to locate relevant, high-quality articles; the Ability to evaluate whether the articles are appropriate to the research, applying evaluation criteria—the report by providing an overview.

- **LITERATURE REVIEW**

Coherent syntheses of literature; Ability to critically analyse the literature; Logical progression of ideas from one section to another and within each section, including good paragraphing; Ability to paraphrase and avoid overdependence on the direct quotation.

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Ass2 Example 1 - Excellent

Table of Contents

List of Figures	2
List of Tables	3
Introduction	4
Critical Evaluation	5
Article 1: Achieving cybersecurity in blockchain-based systems: A survey	5
Article 2: Smart Contract Development Model and the Future of Blockchain Technology	7
Literature Review	10
Blockchain	10
Cybersecurity	10
Financial Technology	13
Blockchain Cybersecurity in Fintech	13
Conclusion / Discussion	14
Reference List	15
Appendix	16

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• **List of Figures**

Figure 1 - Blockchain Vulnerabilities to Cyber Security	11
Figure 2 - Possible Countermeasures for Blockchain Vulnerabilities ..	12
Figure 3 - Smart Contract System	14
Figure 4 - First Page of Article 1	16
Figure 5 - First Page of Article 2	17
Figure 6 - First Page of Industry Source	18
Figure 7 - Title Page of a Book	19
List of Tables	
Table 1 - Evaluating Source (Article 1)	5
Table 2 - Preparing to Read (Article 1)	6

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Ass2 Example 2 - Good

Abstract	2
1. INTRODUCTION.....	4
2. CRITICAL EVALUATION OF TWO SOURCES	5
2.1 LAI, X & PATRICK RAU,(2021).....	5
2.2 BRAGIAS, A ET AL (2021)	5
3. LITERATURE REVIEW.....	6
3.1 TECHNICAL.....	6
3.2 VIOLATE THE RIGHTS OF OTHERS	7
3.3 SOCIAL.....	8
3.4 HEALTH	9
4. CONCLUSION/ DISCUSSION	10
Reference List.....	11
Appendix.....	13

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Ass2 Example 3 - satisfactory

Table of Contents

Literature Review on Security Issues of Internet of Things (IoT)	1
Introduction	3
Critical Evaluation of Two Sources	4
Literature Review.....	6
1. Importance of IoT security issues	6
2. Vulnerability of IoT devices	6
3. Challenges of tackling IoT security issues and the potential or current solutions.....	7
Conclusion	9
Reference List	10
Appendix	12

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Ass 3: A typical Project Proposal

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Front Matter – cover page, title, Table Of Contents

Executive Summary

Introduction

Research Aims

Background

Research Significance and Innovation

Research Concept and Method

Expected outcomes and Conclusion

Reference List

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Ass3 Example 1 – Excellent

Table of Contents	
Executive Summary:	3
Introduction:.....	4
Research Aims and Objectives:	5
Background:	6
Types of Phishing Attacks	6
Current Established Counter Measures of Phishing attacks	7
Limitations of current Phishing attacks.....	8
Summarization of Background	9
Research Significance and Innovation:.....	10
Significance within the Cyber Security field:	10
Significance within Industry:	10
Significance within Society:	10
Innovation:	10
Research Concept and Method:.....	11
Flexibility of Design	11
Data Collection.....	11
Timeline Framework for Research.....	12
Measure of Success	12
Expected outcomes and Conclusion:	13
Reference List:	14

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Ass3 Example 2 – Good

Table Of Contents	
1 Executive Summary	
2 Introduction	
3 Research Aims and Objectives	
3.1 The adoption of deep learning	
3.1.1Improvements offered by deep learning	
3.1.2 Types of neural networks used	6
3.2 Ongoing problems with Histopathological image analysis	
3.2.1 Image Labelling	
3.2.2 Image size	
3.2.3Variation in imaging conditions	
4 Background	
5 Research Significance and Innovation	
6 Research Methods	
7 Expected outcomes and Conclusion	
8 References	

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Ass3 Example 3 – satisfactory

Contents

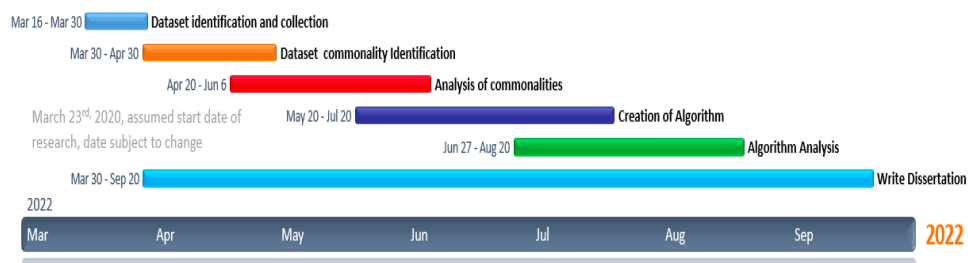
1. Introduction	3
2. Research Aim and Objective	4
3. Background.....	5
4. Research Significance and innovation	10
5. Research Methods	13
6. Conclusion.....	15
7. References	16

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Time frame (example)

Gantt Chart



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Which is the better **Title** ?
 : contains Keyword(s) and Key issue(s)

example:

1. Deplicating Data to Reduce
 Network Traffic

2. Deplicating Data Leads to
 Reduction in Network Traffic

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Designing your research proposal

- information about
 - What
 - Why
 - Who
 - How
 - When
 - Where & Resource



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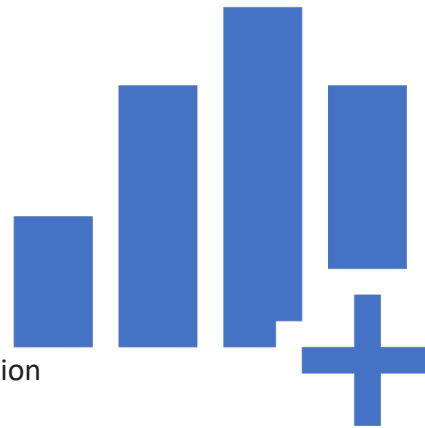
Practical Structures for a research report

5 parts

- Introduction
- Literature review
- Methods
- Results
- Discussion/conclusion

7 parts

- Title page
- Abstract
- Introduction
- Background
- Review
- Methods
- Results
- Discussion/conclusion



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Typical structure of Industry vs. academic research proposals

- a. Executive Summary
- b. Introduction
- c. Background and Context
- d. Methodology
- e. Results
- f. Discussion
- g. Recommendations and Implications
- h. Conclusion
- i. Appendices and References

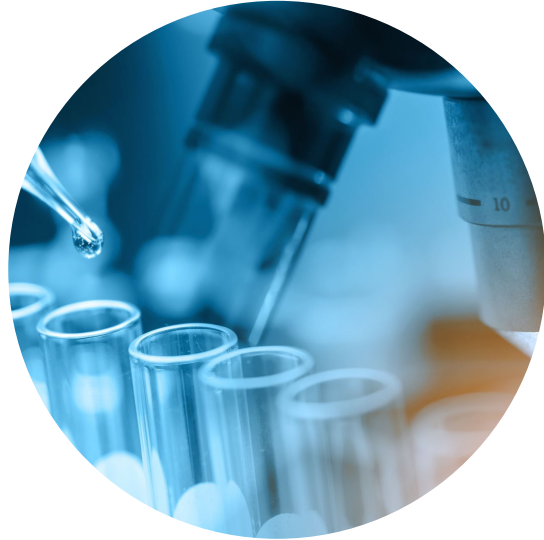
- a. Abstract
- b. Introduction
- c. Literature Review
- d. Methodology
- e. Results
- f. Discussion
- g. Conclusion
- h. References
- i. Appendices

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Designing a research method:

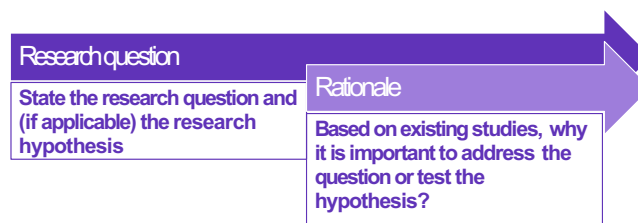
- Step 1:
 - Decision – what decision have you made?
 - Action – what actions do you plan
- Step 2:
 - Rationale – why do you want to take those decisions and actions?
 - Implications- what are the potential implications of your decision and actions?
- Step 3:
 - Implementation Process – how do you plan to implement the decision



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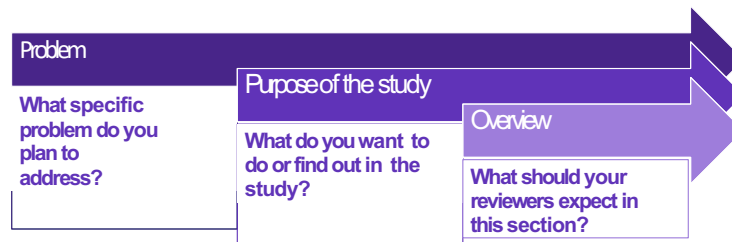
Research Questions and their rationales



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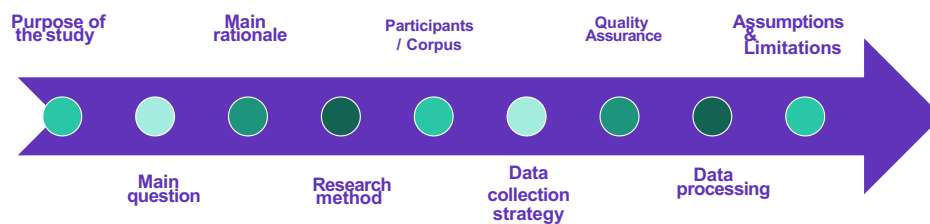
Method overview



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Research method snapshot




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- **DOMAIN / TOPIC**
 - Problem statement
 - Purpose/motivation statement
 - Research question(s)
 - Literature reviewed
- **INDIVIDUAL COMPETENCIES**
You (the researcher) and your Experience & expertise
 - Knowledge of the research domain & Approach
 - Writing skills
 - Interest & Motivation
- **RESEARCH SETTING**
- **Time available**
 - Existing data & documents
 - Ethics & research review boards
 - Reviewer(s) & assessor(s)
 - Sponsoring organisation
 - Gatekeepers




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- **APPROACHES & PROCEDURES**
 - Philosophical assumptions & paradigm
 - Applicable/ available theories
 - Theoretical framework
- **Research design**
 - Descriptive,
 - Explanatory,
 - Exploratory, or
 - Evaluative
- **Research method(s)**
 - Qualitative, quantitative or Mixed Methods




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- **Instrument(s) / measure(s)**
- **Population/ Participants & sampling techniques**
- **Data collection strategy**
 - Experiments (lab or in-field)
 - Secondary data (existing documents and records)
 - Interviews, questionnaires surveys, observations, focus groups, oral histories.
- **Data analysis tool(s)**
 - Quantitative tools, e.g., SPSS
 - Qualitative tools, e.g., NVIVO
 - Data visualisation tools, e.g, Tableau
 - Sage research methods tools

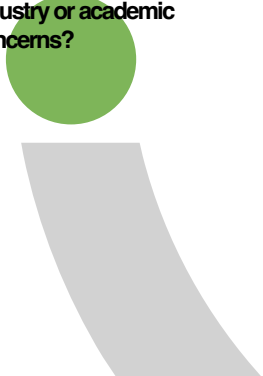


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Ass 3: A typical Project Proposal (example)

Q. What do the client in industry or academic concerns?



Front Matter – cover page,title, Table Of Contents
Executive Summary or Abstract
Introduction
Research Aims
Background (or Literature Review)
Research Significance and Innovation
Research Methods
Expected outcomes and Conclusion
Reference List

Indicate a proposal for the industry or academic

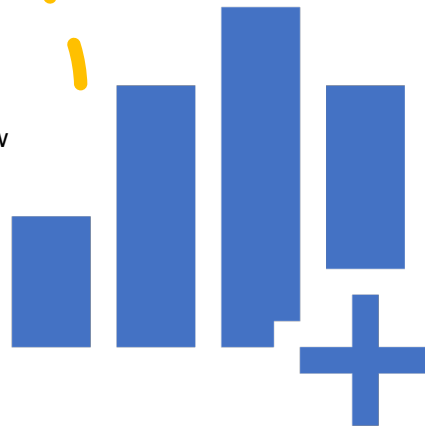


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Structuring a research proposal (example)

- Title
- Executive summary or Abstract
- Introduction
 - The problem, Purpose, Rationale, & Section Overview
- Research Method
 - Qualitative, Quantitative, or Mixed
 - Participants / Corpus
 - Data Collection Strategy & Procedure
 - Processing
 - quality assurance
 - Instrumentation
 - Data Analysis
 - Assumptions & Limitations
- Research Design
 - Management Issues
 - Timeline (Gantt Chart)
- Result and Summary
- Discussion/Conclusion



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Clients in industry and academia have different concerns.

- | | |
|----------------------------------|---------------------------------------|
| • Practicality and applicability | • Theoretical rigour and contribution |
| • Return on investment (ROI) | • Originality and novelty |
| • Timeliness | • Methodological rigour |
| • Confidentiality | • Publication potential |
| • Clear communication | • Ethical considerations |

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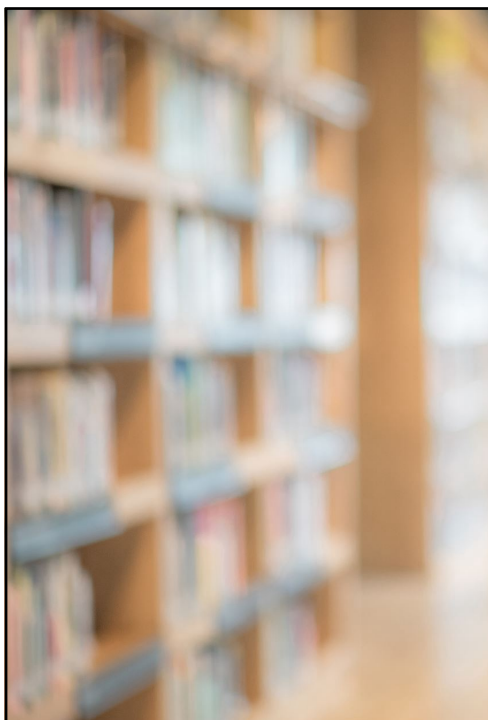
Assessment 3 - Project Proposal: Marking Criteria

Assessment Task 3 weighs 40%. There are seven main components to the Task 3 marking criteria:

- 1) Structure, including Cover Page, Table of Contents, Executive Summary & Reference list in APA format (15 pts)
- 2) Introduction (10 pts)
- 3) Research Aims and Objectives (10 pts)
- 4) Background (15 pts)
- 5) Research Significance and Innovation (15 pts)
- 6) Research Methods (20 pts)
- 7) Conclusion (15 pts)

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Assessment Task 3 - research significance and innovation

- Significance
 - The significance of the study should determine who benefits from
 - The study and how that specific audience will benefit from its findings.
 - The following two questions can reflect the significance of the study:
 - Why should my study be funded and implemented?
 - What significant contribution is my study making to my field of research?

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Assessment Task 3 -Statement of Significance

- It should be founded on a critical review of the literature and provide a straightforward premise
- Use citations and preference original, timely papers over reviews
 - Point out gaps and flaws
 - Do not be afraid to say you disagree with something (but explain why and how you will correct this travesty)
 - Be diplomatic
- Provide graphics (frameworks, models, pathways, etc.)
- Limit discussion to things you will study
- Show (tempered) enthusiasm
- Know your audience

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Assessment Task 3

- Statement of Significance and Innovation – How to Evaluate Your Statement
 - Is it related to the aims and objectives that define your research study
 - If the aims are achieved, will scientific knowledge, technical capability, and practice be improved?
 - Does the project address a significant problem or critical barrier to progress in the field?
 - Will completing the aims change the concepts, methods, technologies, or interventions that drive this field?
 - Supported by a solid scientific premise

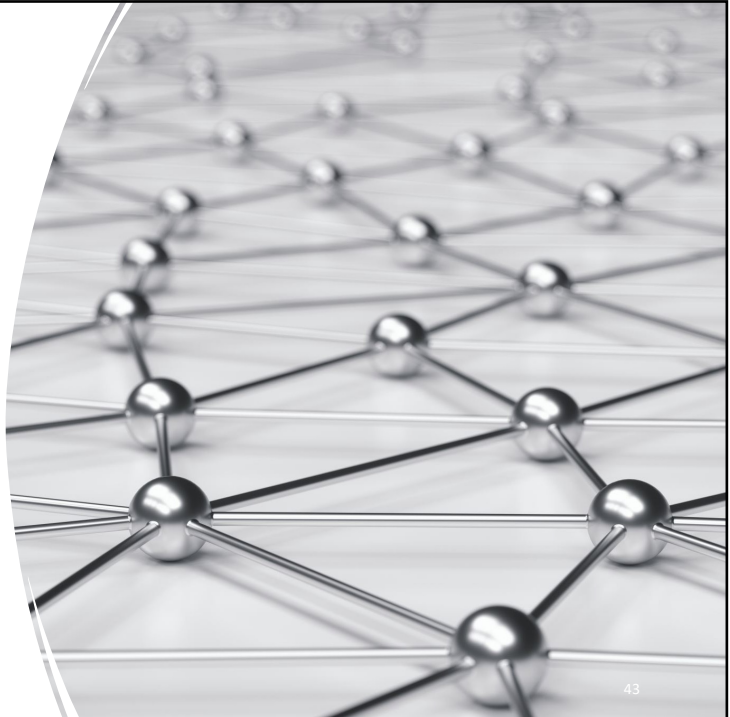
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Resources

–What resources do you have or need to conduct the study?

- Domain/ Topic
- Individual Competencies
- Research Setting
- Approaches & Procedures



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Presentation lists

- If you didn't submit a form, then do it now
- <https://forms.office.com/r/e2iqJy2tCk?origin=IprLink>

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Workshops in Weeks 8-11

Lecture: 5-mins presentations

- Prepare 1 slide speech about your project (if you worked individually) or sub-project (if you worked in a group). You will use the slide to talk about your proposal. Remember to include the key issues that you think should be mentioned

Tutorial week 12: In-Class ACTIVITY

- Students will review and assess other's project proposals.
- In break out room and fill up a Project Peer Review Table (see a tut week 12 sheet).

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Week 8-11 Presentation Tips

- Introduce yourself and your topic.
- Be selective about the content you include.
- Time management – Keep your conversation to 5 Minutes and terminate it appropriately.
- Students should think through their speech or even practice before the presentation.
- Remember who your audience is.
- Remember the different levels of expertise of your audience.

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Talk about

- What is your research?
- What is an aim and questions?
- How to improve?
- Research method
- A research significance
- Stakeholders & Target industry/user (e.g. e-commerce provider, social media users, etc)
- Expected outcomes

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About workshops

- Discover other groups/individuals' projects and conduct a peer-review activity
- **No marks for the presentation but associated with class activities (in Week 12 Tutorials):**
- Students will conduct a peer review and assess one of the project proposals in the tutorial.
- Each group or individual prepare one slide and give about a 5-minute speech about the project.
- You will use a ppt slide to talk about your proposal
- **A session chair** manages the time and gives a brief report to others after returning to the main room

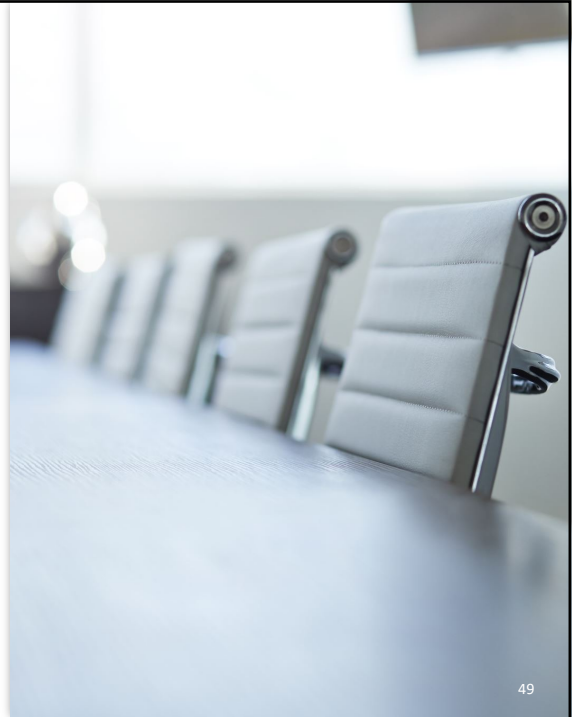


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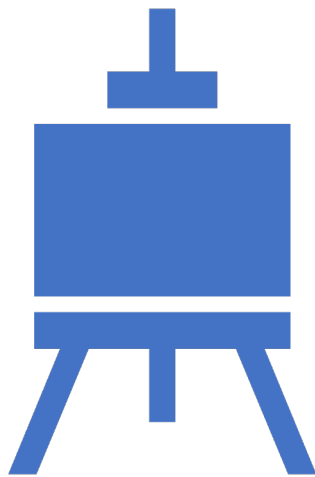
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Session chairs

- Setting up the presentation order (1-2 mins)
- Timekeeping the exact presentation and Qs time
 - for each presentation: 5 mins presentation +1 min feedback (about 30 mins)
 - Ask all other groups to give feedback/comments to the presenter (1 min for each group)
- Take a note and give a brief report to other students after returning to the main room
 - 5 mins (e.g. topics, exciting research, what's new knowledge, any raised issues or difficulties, etc.)



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Studvac week -30 Sep
– between week 8 - 9

Workshop presentation lists
will be on the Canvas

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To do

- Presentation time (total max 50 mins):
 - Presenters - Go to the allocated breakout rooms (5mins + 1 min Qs for each project group/individual)
 - Audiences – select any break-out rooms, return to the main room, and change to another room at any time.
- Return to the main room
 - Briefing time by each session chair (1-3mins)

Turn on your camera

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Future readings

- Walliman, N. S. R. (2001) *Your Research Project : A Step-by-Step Guide for the First-Time Researcher*
by London: Sage Publications Ltd
- Miles, M. B. and A. M. Huberman (1994) *Qualitative Data Analysis* 2nd Edition
Thousand Oaks, CA: Sage Publishers
- Creswell, J. W. (2003) *Research design : qualitative, quantitative, and mixed methods approaches* Thousand Oaks, CA: Sage Publications
- Tashakkori, A. (1998) *Mixed methodology : combining qualitative and quantitative approaches* Thousand Oaks, CA: Sage Publications
- Tashakkori, A. and T. Charles (2003) *Handbook of mixed methods in social & behavioral*

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