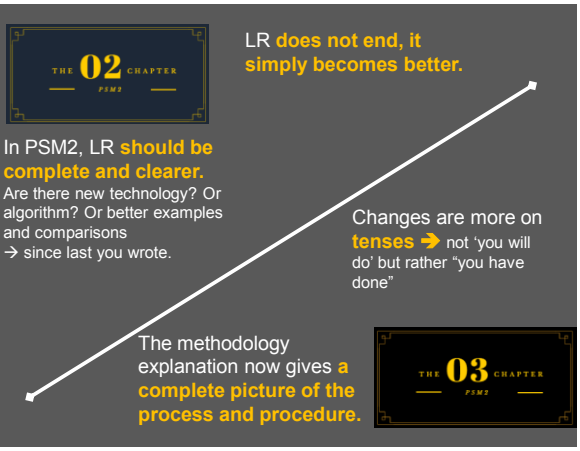
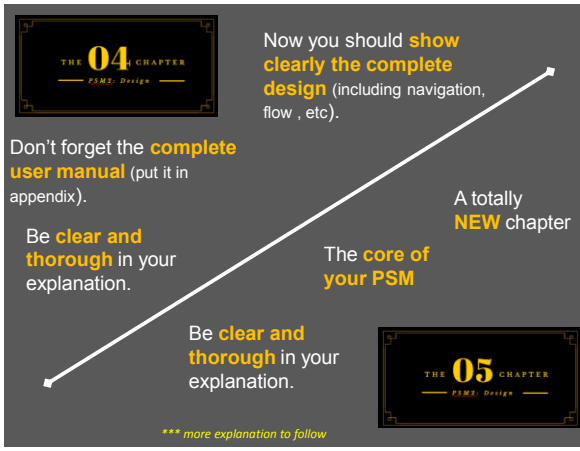
PSM 2: Some differences in report writing

Where are the changes?

- In PSM2, the changes in the report will be:
  - **CH2 (Literature Review)**
  - **CH3 (Methodology)**
    - Here the changes are more the tenses (to past tense)
  - **CH4 (Design/ Experimental Design)**
  - **CH5 (Implementation/ Results analysis & Discussion)**
  - **CH6 (Conclusion)**
  - ****Presentation**





Should be a summary of **project aims and objectives.**

*** For both research and system development projects

State all **achievements:**
- Results and contributions

It should reiterate **constraints and limitations of project** → ***Note: not your personal limitations (don't have enough time, no skill in programming)

It should be **honest, short and to the point.**

State all **suggested improvements** → e.g.: to make system better or research more wide and accurate

System Development Based Project	Research Based Project
Chapter 5: Results, Testing and Discussion	**Chapter 5: Results, Analysis and Discussion**
5.1 Introduction	5.1 Introduction
5.2 Coding of system's main functions	5.2 Research results and analysis
5.3 Essential interfaces that show system's results and achievements	• Discussion • Tables, Graph etc.
5.4 Testing	5.3 Chapter summary
5.4.1 Black box testing	
• System flow, input/output, error messages	
5.4.2 White box testing	
5.4.3 User testing	
5.5 Chapter summary	

Be careful of **chapter title** → **slightly different for System development and research**

System Development Based Project
Chapter 5: Results, Testing and Discussion
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5.2 → show the source code and explanation for main functions
Tips: main function include login, searching, matching, reminder

5.3 → highlight the important interfaces that makes your system better for users and better than other systems

5.4 → Testing is done in 3 parts:
- **White box**
- **Black box**
- **User testing**

Definition by ISTQB : white-box testing: Testing based on an analysis of the internal structure of the component or system.
http://softwaretestingfundamentals.com/white-box-testing/

White Box Testing

-Test each coding functions :
- Unit testing:
  - are all codes used? Are branches used and branches correctly? Are there codes not used, not needed?
  - does it function as it should?
- Integration Testing:
  - do the units function well together? Did changing or updating one unit affect others?
- Tester: Developer

Definition by ISTQB : black box testing: Testing, either functional or non-functional, without reference to the internal structure of the component or system.
http://softwaretestingfundamentals.com/black-box-testing/

Black Box Testing

-Test functionality of the system without looking at the codes:

- System flow:
  - are system flow correct? If you click a button or follow a module, does it do exactly what it is supposed to do? Are data stored and read correctly? And efficiently?
- Input/Output:
  - are I/O what it should be and correctly stored or displayed? Is it verified (eg.: phone number)?
- Messages (error and notification)
  - are there error messages? Are the error messages appropriate and clear? Are there notification when needed?
- Tester: Developer, User

**** User testing is of a much larger scale, but it is not as large in PSM (for obvious reasons)*

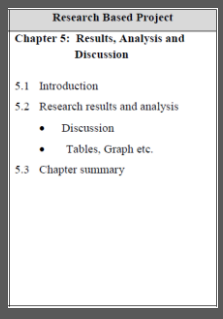
User Testing

- Users test the system to see that it:
  - Followed (or exceeded) their requirement
  - easily used by the users (usually with different background of IT proficiency)
- Tester: User
- Best to have a questionnaire or interview to help users answer.

How to do present testing results?

- In a form of a table.
  - Each different test has their own table
  - This is the simplest, most effective form

Item	Test	Expected Outcome	Results
1	Click on '***Submit***' button will store data into Table_A in database	Data stored/updated in Table_A in database	✓
2	Input data verification: IC Number (number only) Name (character and no number)	Error message will be presented if input is of wrong type	IC Number ✓ Name × (explain.....)


Research Based Project

Chapter 5: Results, Analysis and Discussion

5.1 Introduction

5.2 Research results and analysis

- Discussion
- Tables, Graph etc.

5.3 Chapter summary

5.2 → this is the CORE of Research-based PSM. Here you explain your findings

This includes:

-Experiment results
- -What did you find?
- -Are there differences? Anomalies?
- - generic results to specific
- - shown in table, graphs (with explanation)

Is male faster than female?

FEMALE	AGE	A1 SPEED 100m (s)	A2 SPEED 100m (s)	A3 SPEED 100m (s)	A4 SPEED 100m (s)	AVERAGE
1	24	34.00	35.00	34.45	34.44	34.47
2	24	34.01	34.05	34.03	34.00	34.02
3	21	24.05	24.00	24.02	24.03	24.03
4	22	27.33	27.30	27.31	27.33	27.32
5	23	33.31	32.22	33.21	NA	32.91
AVERAGE	22.80	30.54	30.51	30.60	29.95	30.55

MALE	AGE	A1 SPEED 100m (s)	A2 SPEED 100m (s)	A3 SPEED 100m (s)	A4 SPEED 100m (s)	AVERAGE
1	24	24.00	24.01	24.03	24.02	24.02
2	25	25.02	25.01	25.00	25.01	25.01
3	23	30.00	30.05	30.06	30.10	30.05
4	24	25.32	25.22	25.00	25.26	25.20
5	22	25.35	25.36	25.22	25.21	25.29
AVERAGE	23.60	25.94	25.93	25.86	25.92	25.91

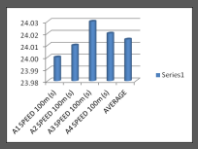
****Note: The richer your data, the better your analysis and discussion.*

5 Female and 5 Male test subjects, with the time taken on 4 different attempts of a 100m run

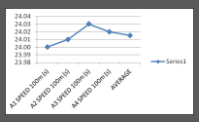
Expand this into more specific discussion by taking different views:

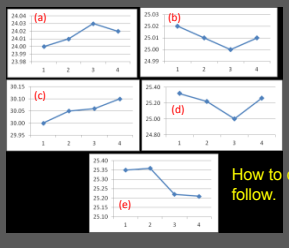
-The different time of each individual → become faster? Slower? Discuss the possible reasons

- Look at all the males → are the times really different? Why?
- what does other research say about speed of men and women ? → Discuss how does it compare to your findings?

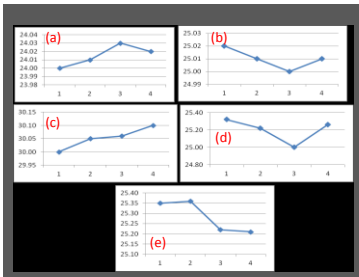


Which is better at showing the time took by one person? Bar or line chart?





How to discuss a finding? Example to follow.



5 Male test subjects, with the time taken on 4 different attempts of a 100m run

40% of test subjects are fastest on the first attempt, another 40% on the third attempt, while 10% had the greatest speed on the fourth attempt.

Youth may have a factor in energy regeneration as (e) is the youngest subject at 22 years old. Consequently, lack of technique and experience may be the reason for the performance.

The group with the greatest speed on the first attempt cannot regenerate the required energy to perform well in the later rounds. Q: Does BMI affect this?

Presentation & Demo

What to show evaluators?

Presentation

- Problem background, proposed solution
- Objective, scope, aim
- Relevant LR (main contributors to your solution)
- Methodology (with UML, system architecture)
- Design (simple because demo will follow)
- Results, analysis, discussion → this is a long discussion for research based PSM
- Conclusion (achievement, constraints, future works or suggestions)

***Note: understand your scope fully, so that you can deflect questions that is OUT of YOUR project scope.

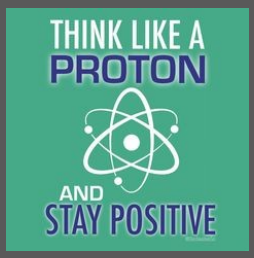
What to show evaluators?

Demo

- Go through the flow of every user of your system and the modules → example: staff, students, admin, guest
- Show some of the testing feature from your black box testing
  - Example: I/O verification, error messages
- Show your database and the storing and reading of data to and from it
- Always use real device and not emulators
- Do and trial run before demo day (present to your SV and take a video) → just in case something goes wrong on demo day → best be prepared.

Tips (same as in PSM1)

- You should:
  - Be clear and concise
  - Not clutter your slides
  - Always choose the correct colour combination and font size
  - Never cut and paste into slide
  - Always understand you project fully → easier to present and answer questions
- You should:
  - Ask for clarification if you are not sure what the question is
  - Ask your friend to come take notes for you (of questions and comments)
  - Dress smartly, well groomed
  - Be prepared → practice



End of class.