Problem Identification, Preparations

Thesis 1: Methods of Research

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Research Problem

- Any significant and challenging situation, real or artificial, the solutions of which requires reflective thinking.

- **Directed to any community/environmental issues**.
- Example: **Disaster-Risk Management, Disaster-Risk Analysis, Risk-Reduction Management.**

Tips:

- Clearly and concisely tell your readers what your project is, keeping in mind that not all may be familiar with terminology that is unique to your field. Focus your project approach for your readers.
- **Choose a topic as soon as possible**. It is highly recommended that you start thinking about a topic when you enter the program—make notes along the way, even if you do not yet know if you want to do a thesis or capstone.

Tips:

- Think about interesting topics you have encountered and determine whether there are problems or gaps.
- Talk to faculty who work in areas of interest to you.
- Consideration of any potential obstacles and the feasibility of the proposed thesis.
- Read Materials Regularly for us to generate additional ideas.

Design Project Coverage

- Climate Change
- Resilient Communities
- Risk Reduction Management
- Public Health and Community/Environment
- **Alternative Electronic Communication scheme**
- Technology Modifications
- Etc.

- Faculty to provide supplement materials to aid students to gather data and develop a research proposal. (e.g. sample topic, downloaded research lectures, sample technology for innovations)

Related Literature and Studies

Literature:

- Discussions of facts and principles to which the present study is related.
- Materials – books, websites, professional journals, magazines, newspapers and other publications.
- Classifications: LOCAL, FOREIGN.

Related Studies:

- Inquiries or investigations already conducted to which the present proposed study is related or has some similarity.
- Usually unpublished materials such as manuscripts. (Finished Thesis)
- Classification: LOCAL, FOREIGN

Importance of Related Literature and Studies

- Foundation of the Proposed Study.
- Guide the researcher for selecting a better research problem or topic.
- A replication of similar problem may be found better than the problem already chosen.
- Clarify vague points about his problem.
- Ensures that there will be no duplication of other studies.
- Most of the time, this is the 1st Step that a researcher shall do prior to developing a research / design project topic.

Criteria for Literature and Studies

- Must be recent as possible. (at least 3 years late) – 2017
- 2016 below – phased out
- Must be objective and unbiased.
- Must be relevant to the study.
- Based upon genuinely original and true facts to make them valid and reliable.
- Must not be too few or too many.
- WIKIPEDIA IS NOT RELIABLE SOURCE

Resources:

- Journal Article
- National Library (Manila)
- Reports from seminars
- **Unpublished thesis** (former students)… but expect faculty panel to be stricter for title approval.
- Etc…..

- Example of Journal Article:

1. IEEE – UP, TIP, DLSU, Ateneo
2. ACM
3. IJERA - free
4. And so on….

Experimental Research

- Describes and analyses variables in carefully controlled conditions as a basis for inferring or concluding.
- Consists of manipulating an experimental variable under highly controlled conditions to determine how and why a particular event occurs.

- Variable – anything that may change or may be changed from one condition to another, either qualitatively and quantitatively.
  Ex: Current, Voltage, Power, Charge, luminous density etc.

Independent vs Dependent Variable

- **Independent variable** – is anything, condition, or process which is controlled and manipulated by the researcher and applied to another thing, condition or process intended to have or produce a change in or reaction from the latter.

- **Dependent variable** - is anything, condition, or process exposed to or upon which treatments or actions from the independent variable are applied.

Independent vs Dependent Variable

- The response of or change in the dependent variable is measured and some statistical method (machine learning process) are applied to determine the effects of the independent or experimental variable.

Independent variable

The variable the researcher changes.

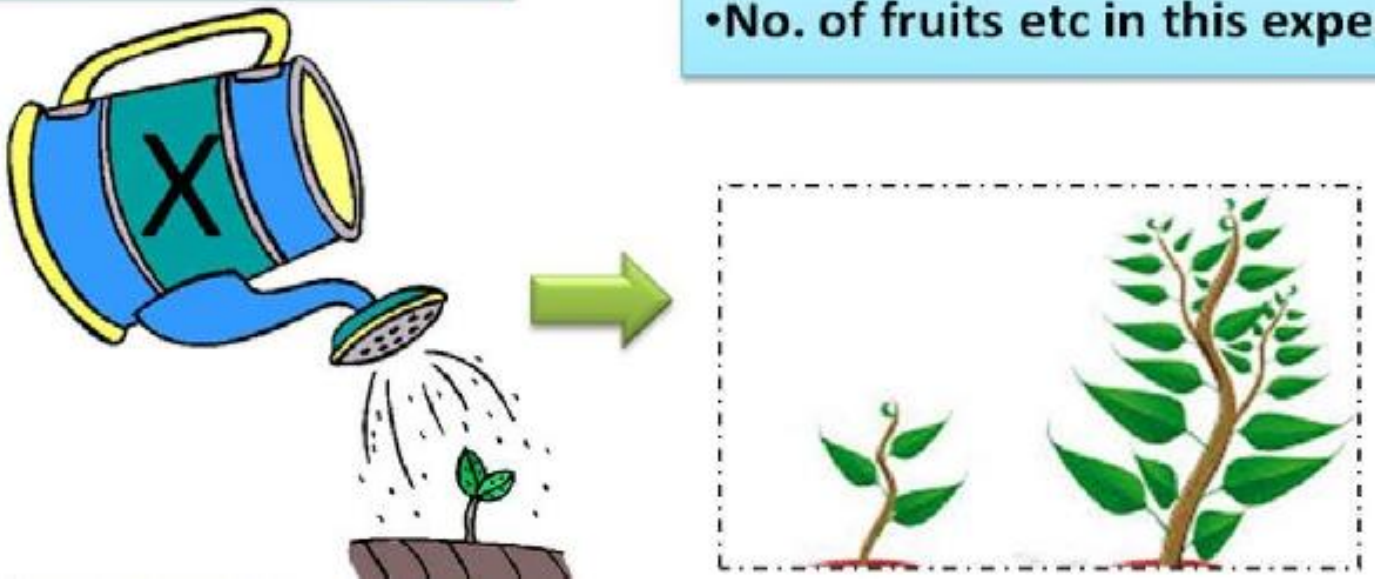
Application of fertilizer 'x' in this experiment

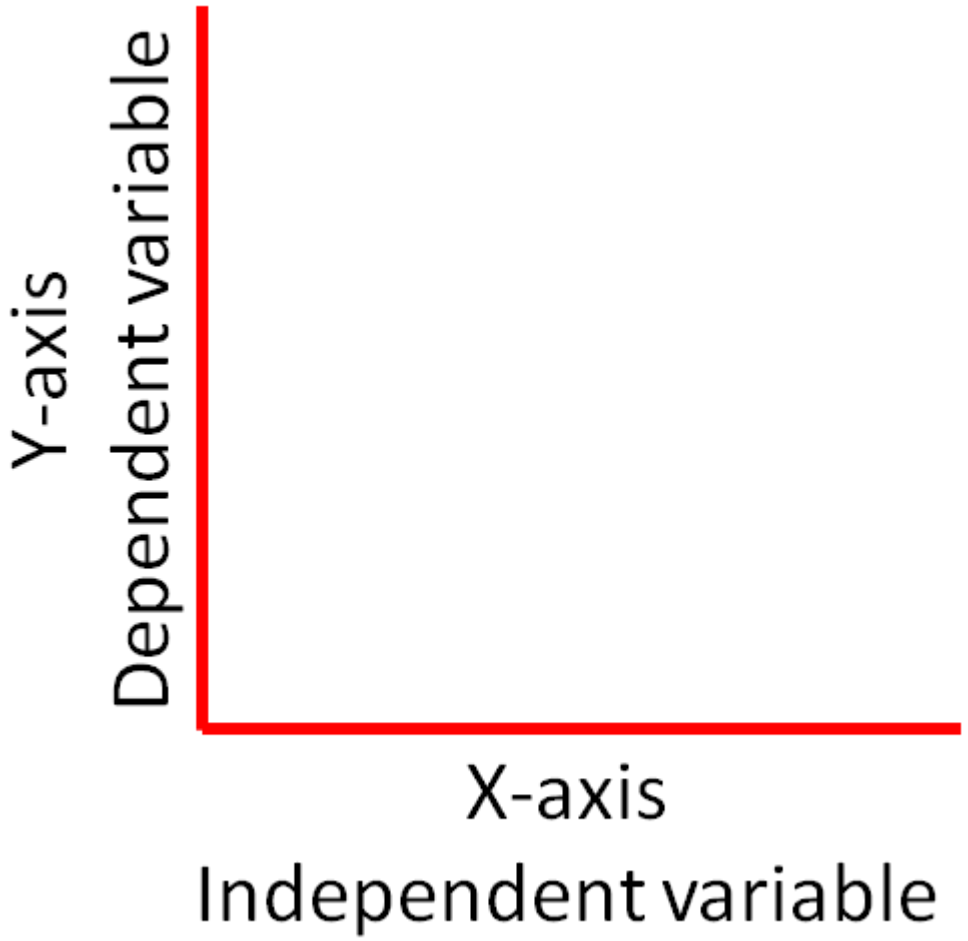
VS

Dependent variable

Variable affected by change in independent variable

- **Plant growth**
- **No. of leaves,**
- **No. of fruits etc in this experiment.**





$$Y = -5x - 4$$

Dependent

Independent

THIS IS AN EXAMPLE ONLY. ASSUMING THAT THE OBTAINED RELATIONSHIP WAS PROPORTIONAL TO EACH OTHER.

Types of Variables

Independent

The one thing you change. Limit to only one in an experiment.

Example:
The liquid used to water each plant.

Dependent

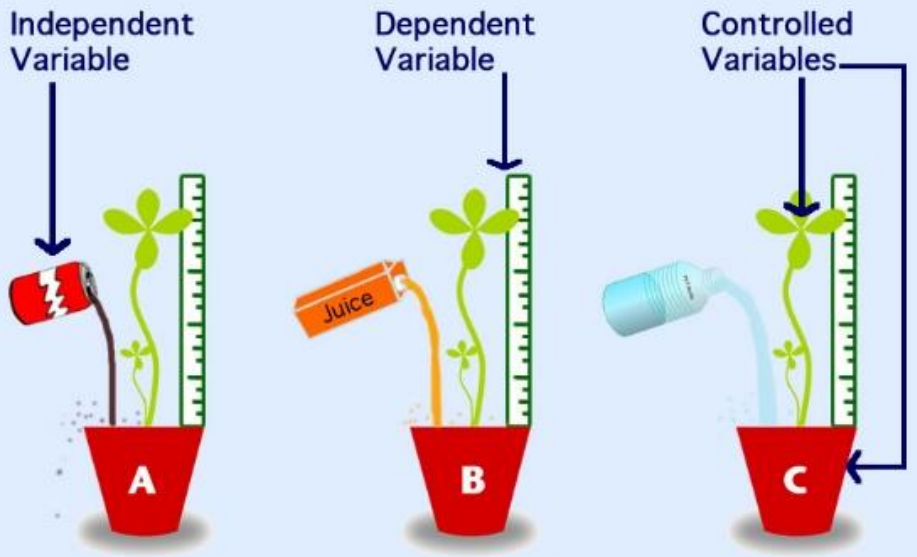
The change that happens because of the independent variable.

Example:
The height or health of the plant.

Controlled

Everything you want to remain constant and unchanging.

Example:
Type of plant used, pot size, amount of liquid, soil type, etc.



Experimental Research

- Independent Variable (time)
- Dependent Variable (achievement)

- Example: Suppose Student A and Student B are in the same grade level and have the same level of mental ability. Student A is given three hours to study a certain lesson and Student B is given two hours to study the same lesson. Same tests are provided. **A gets higher score than B** .

Experimental Research

- **The result of the experiment infers that the longer the time one is given to study a material, the higher his achievement is on the material in terms of scores.**

- More factors had been omitted but may consider that would expand the **scope** of the sample experimental research.
- Other factors / variables: Emotional Status, Family Background, Diet, Lifestyle etc.

Relationships:

- One to one
- Two variable relationship
- Complex relationship (ANOVA) – MULTI-VARIABLE RELATIONSHIP.

Reminder:

- The more variables we have, the more our research conclusions is reliable.
- However, the more variables that we have, the more complex our research methodology will it be. Sometimes, it is not possible to complete the project based on the existing timeframe.

ALWAYS CONSIDER CHECK AND BALANCE → Courtesy of your Adviser

THANK YOU ☺
STAY SAFE!!!