CSE/ISY/ITE 4100

Undergraduate Research Proposal 2017

The Researchable Problem

Why is this talk relevant to you now?

Project Ideas

Solution vs. Research

Right track

What is research?

Research is a **systematic inquiry** that **investigates** hypotheses, **suggests new** interpretations of data or texts, and **poses new questions** for future research to explore

What is Research?. (2017). *Real.ucsd.edu*. Retrieved 14 September 2017, from https://real.ucsd.edu/students/what-is-research.html

Why do I have to do research?

To graduate?

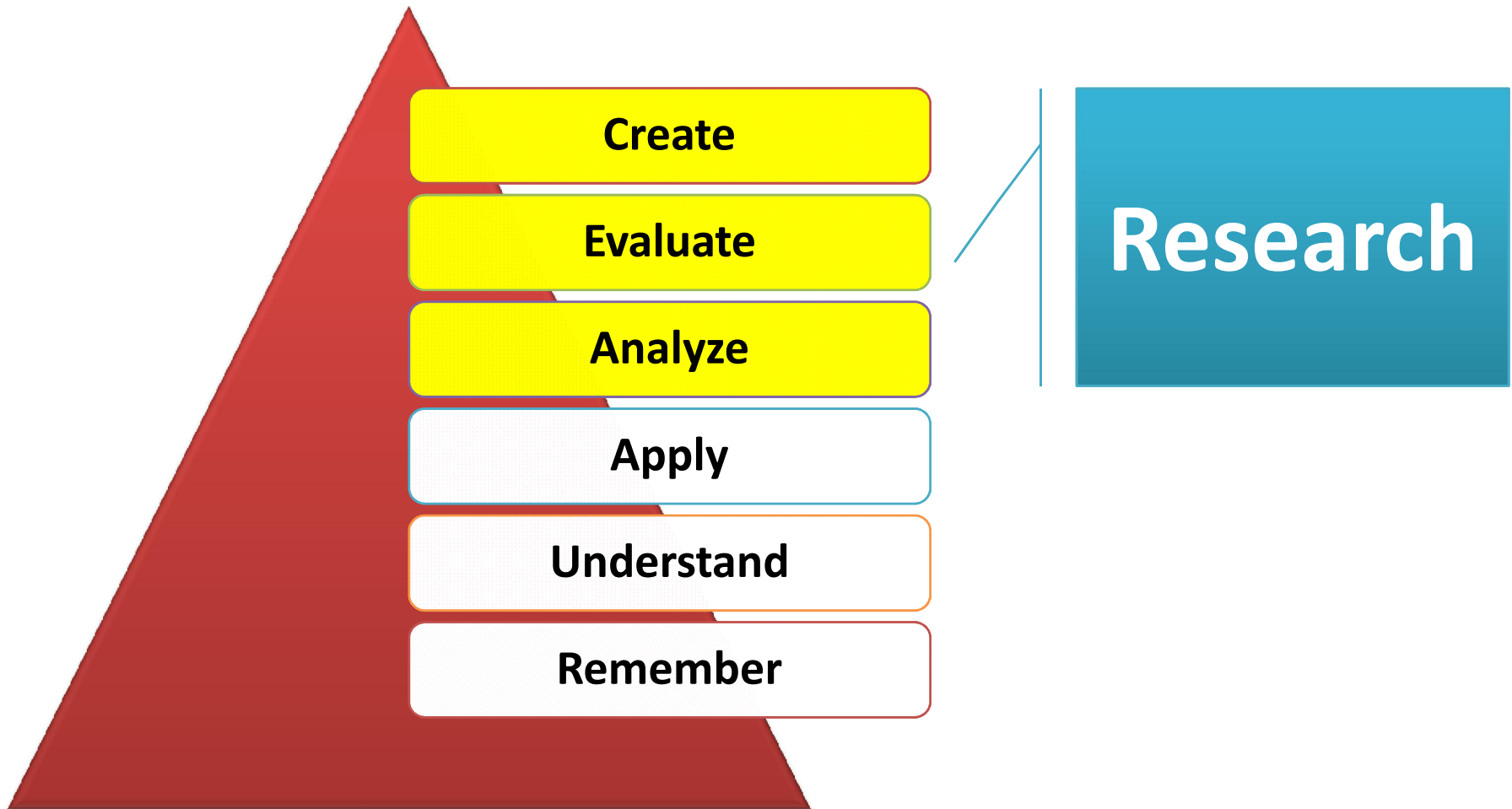**GPA?**

Course requirement?

Why do I have to do research?

3-4 Years of knowledge

Core academic skill

Higher level learning

Bloom's Taxonomy – Education Goals Higher Level Learning

Create

Evaluate

Analyze

Apply

Understand

Remember

Research

Bloom's Taxonomy. (2017). *Vanderbilt University*. Retrieved 15 September 2017, from https://cft.vanderbilt.edu/guides-sub-pages/blooms-taxonomy/

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Some Initial Research Ideas

Create a system to automate patient management at health centres

Develop an algorithm to allocate house lots in Guyana

Create an application to help people manage multiple chronic conditions

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But those were "new"!

Final year project delusion

Research is NOT implementing a solution you already know to a problem

If you have an answer before you start, then it is not research

So what is a researchable problem?

Generate new knowledge

- **Innovation**
- **New ideas about existing concepts**
- **Do not reinvent the wheel**

Fill a research gap

- **Existing research**
- **Limited or insufficient knowledge**

Entirely new ideas?

- **Possible not probable**
- **No giant's shoulder!**

Developing a Research Question

What is a research question?

- Fundamentally, a question related to the topic
- Your research seeks to answer this question
- An active pursuit
- Focuses the research

Refining your research question

- Of course …researchable
- Not too broad
- Not too narrow

Bad Example 1

Too narrow/not researchable

- Who was the first man on the moon?
- When was World War I?
- Is cigarette smoking dangerous to health?

Implication of narrow research questions:

- Yes or No conclusion
- Not very open ended

Bad Example 2

Too broad or vague question

- **Is television a bad influence?**
  - Which audience?
  - Which programs?
  - What do you mean by "bad"?

Implication of broad research questions:

- Unfocused paper that does not come together

From Unfocused to Focused

Unfocused

- **Are social networking sites harmful?**

Focused

- **How are online users experiencing and addressing privacy issues on Facebook?**

What's different?

- **Clearly defined who, what and where**
- **Not a close ended question**

Adapted from: George Mason University Writing Center. (2008). How to write a research question.

From Unfocused to Focused

Unfocused

- **What is the effect of global warming on the environment?**

Focused

- **How is glacial melting affecting penguins in Antarctica?**

What's different?

- **Clearly defined who, what and where**
- **Not unmanageable**

Adapted from: George Mason University Writing Center. (2008). How to write a research question.

General Advice

Research should be interesting and significant

Start with a general area of interest

Read the literature! Be open minded

News and recent developments

Be critical of what you read

Summary

Research skills are required at higher levels of education

Research does not involve implementing solutions

Create original work; generate new knowledge; fill research gaps

Research question – focused vs. unfocused