SIT105 – Thinking Technology and Design

Class 02

Claims and Issues

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Review of last week – Problem Solving Skills

The Process of Solving Complex Problems

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Acknowledgements

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Abstract

This article is about Complex Problem Solving (CPS), its history in a variety of research domains (e.g., human problem solving, expertise, decision making, and intelligence), a formal definition and a process theory of CPS applicable to the interdisciplinary field. CPS is portrayed as (a) knowledge acquisition and (b) knowledge application concerning the goal-oriented control of systems that contain many highly interrelated elements (i.e., complex systems). The impact of implicit and explicit knowledge as well as systematic strategy selection on the solution process are discussed, emphasizing the importance of (1) information generation (due to the initial intransparency of the situation), (2) information reduction (due to the overcharging complexity of the problem's structure), (3) model building (due to the interconnectedness of the variables), (4) dynamic decision making (due to the eigendynamics of the system), and (5) evaluation (due to many, interfering and/or ill-defined goals).

Keywords

Complex Problem Solving, CPS, Operative Intelligence, Dynamic Problem Solving, Dynamic Decision Making, Expertise

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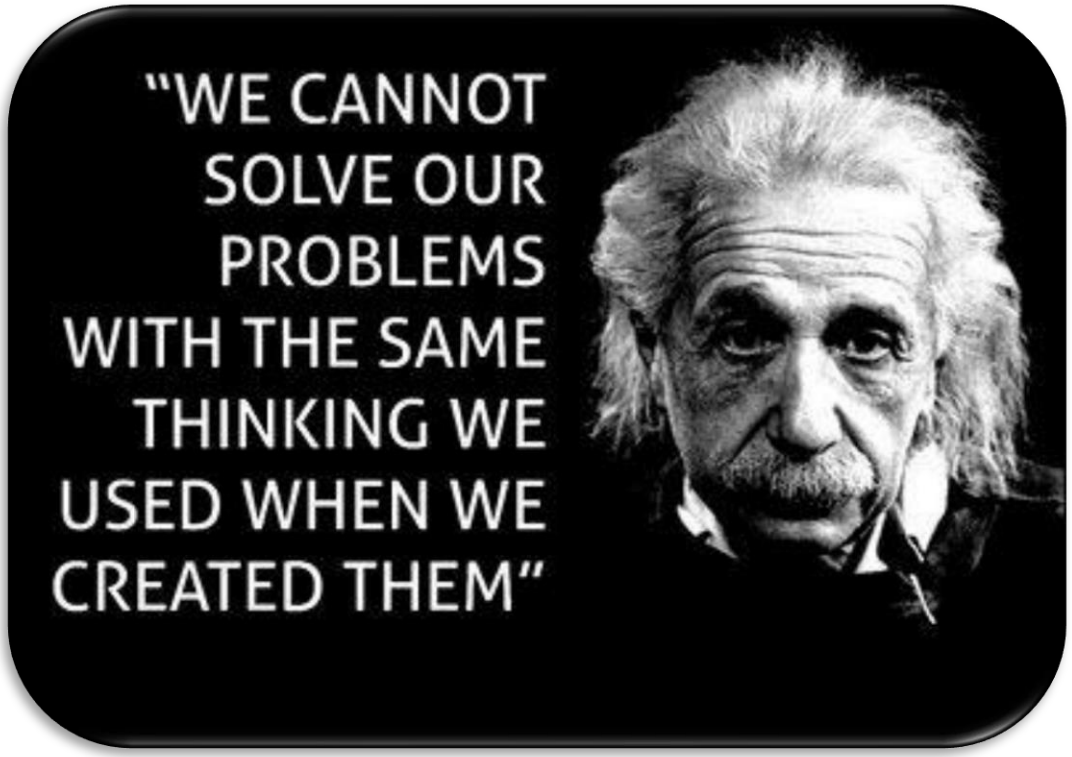
Critical Thinking Quote of the Week



Albert Einstein

Theoretical Physicist

Often as humans we fall into certain patterns to solve problems.

We need to recognize the problem and realise that you have to change the process to get a different result.

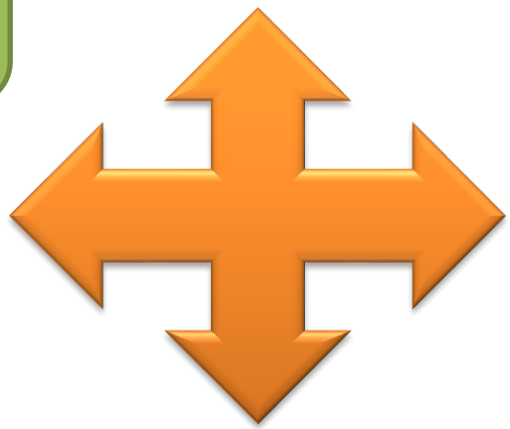
So let’s look at critical thinking: claims and issues!

This week’s ULO – [1] Apply critical thinking techniques and IT discourse to identify and analyse problems from technical and non-technical perspectives.

Last Week… Problem Solving

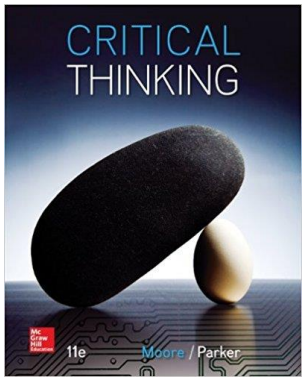
Knowing **where to start** solving a problem requires **critical thinking** to analyse and understand a **problem**.

- ***A problem often contains:***
  - Irrelevant information
  - Smaller problems
  - Valid and invalid claims or arguments
  - Knowing when to question a claim by making an issue
  - Agenda from others



Critical Thinking?

- It is an analytical stance on assessing claims, you have read, heard or saw.
- *It will be the process that allows you to go through to determine whether you agree or disagree*
- One popular definition of critical thinking is:
  - ***"The careful application of reason in the determination of whether a claim is true" –Moore and Parker***
- *What do you need to think critically?*
  - *Precise, careful and intentional thinking*
    - *It takes time to do this, as you often need to do thorough research.*
  - *Ensure you are using reason or logic.*
  - *Application to real world problems (like we cover in this class)*
  - *Focus on the issue at hand and all its complexities*



Why do we need Critical Thinking…

- The aim of **critical thinking** comes down to ensuring that we have good reasons for our beliefs.
  - *Evaluate completely ALL parts of a claim someone has made… every part as well as a whole.*
  - Some **critical thinking** *skills involve recognition, analysis and evaluation*…
  - These skills can be useful for participating in discussions about controversial issues such as the ones we will look at in class, ***but also with your study in other units.***

- Additionally, it will help you to be more **successful in your career**!
  - By avoiding being manipulated by people who want your *money or support*, and generally live a deeper more meaningful life.

Critical Thinking in Use

- Critical thinking will be useful in your studies, and when you graduate and work in the IT industry, because you will need to:
  - Assess claims made by the news, project clients, co-workers and your classmates.
  - You will often have to critically evaluate claims made by others.
    - Other times you will defend your own claims.
    - So you will need to think critically about your own perspectives.

When False Technology Claims Cause Problems

Let's read the main parts of this article together!

https://www.theguardian.com/technology/2016/jan/06/lumosity-fined-false-claims-brain-training-online-games-mental-health

Please read the case study.pdf if you are not able to open the link

Let's discuss this topic together:

1. What were the main claims Luminosity were making, that were deemed false?
2. Why were they particularly dangerous in this instance?

Lumosity fined millions for making false claims about brain health benefits

The Federal Trade Commission also issued a general warning that it is on the lookout for companies cashing in on the popularity of health-related mobile apps

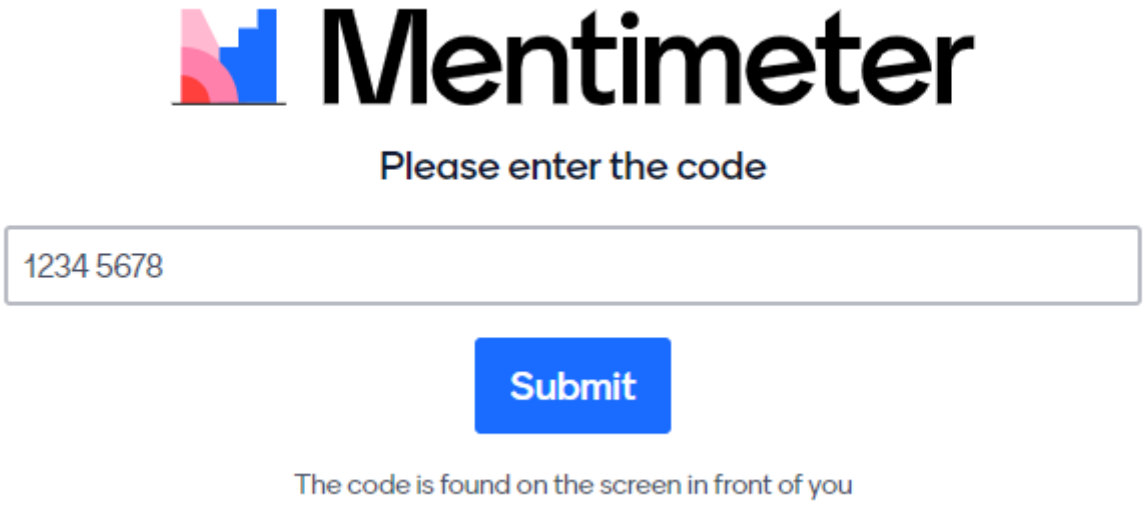
▲ Lumosity is the biggest name so far in a series of federal actions in the lpast year against companies that make apps claiming to bring users significant health benefits. Photograph: Alamy

It seemed like a win-win for fans of the online "brain training" memory game Lumosity - as fun as Candy Crush (almost) but actually good for you: a mind gym to sharpen mental performance and, for older consumers, ward off senility.

Forget that. The shine has come off Lumosity with an announcement by federal investigators that the makers must pay $2m to settle a charge that it made fraudulent claims and "preyed on consumers' fears".

Let’s go to www.menti.com

- Use the code 5643 5053



Critical Thinking, Mechanics?

- ***In our context Critical Thinking is:***
  - assessing whether a claim is true (or false)
    by carefully applying reason.

Reason to decide what to do and what to believe

- ***Critical thinking occurs when we:***
  - consider arguments,
  - develop arguments, and
  - reason.

More on Critical Thinking

- ***Critical thinking occurs when we can:***
  - identify claims,
  - develop issues and
  - develop arguments.

This week !

- ***These actions will help you:***
  - remove irrelevant information
  - focus on and assess the real problem
  - understand the real problem

Claims and Issues

- Most arguments start with a claim or an issue.
  - For example, when you are arguing **whether iPhones CPU is better than Galaxy's CPU** or **whether the iPhone is more secure than Galaxy phones**.
    - These are 2 separate issues but will end up in the same debate around what you might call 'quality'.
    - People will try to **mash these two issues together**, and this is when problems occur!
    - If issues get mashed together *your* ***thinking will get confused***, they will do this to try and confuse you or manipulate you.

What I hope for you is to be able to identify a claim and what issue that claim is connected to.

- ***Distinguish different issues, to cut through the crap!***

Let's Start on Claims

- Let's take a look into claims or what they can also be referred to as, statements.

- Basically, claims are the kind of sentences that are either **true or false** *(or in IT: binary - 1 or 0)*

- A claim is a statement, that declares that something is or is not the case.
  - A statement is going to be **true** if what it declares is the case, and it is **false** if what it asserts is not the case.

So….Claims?

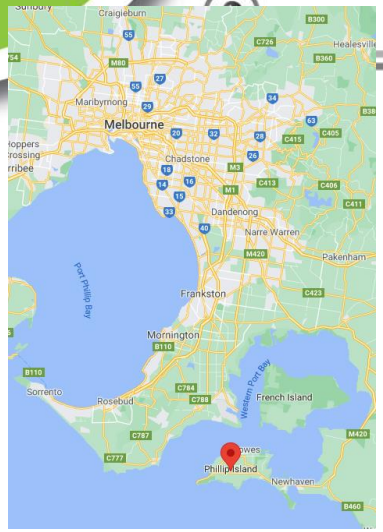
A **claim** is simply a statement which can be true or false.

The following are claims:

1. Australia is the driest continent on Earth.
2. Some penguins live in Australia.
3. The Sony PS4 is the most powerful gaming console.

Some penguins live in Australia

The Fairy Penguins Of Phillip Island



Not a Claim? Examples

A **claim** is a sentence where the main purpose is to communicate something that is either **true** or **false**.

Something can be a claim even if we don't know whether it's true or false!

Example: **The telephone in Dr. Nick's office is blue.**

This is false (it's not blue) but it's still a claim.

Questions, commands and advice are not claims!

- Go home !
- How did you do that ?
- I promise to return the book to the library.
- Thank you for your help.

Any Tips for Determining a Claim?

- I want to give you one way that helps me to determine *whether or not a sentence expresses a claim.*
  - Just remember that claims are the kind of things that can be **true or false**, not that we know whether they are actually true or false.

- One trick is that you can essentially use the phrase: **'it is true that'** before the sentence.
- The ones that make sense are claims; the ones that don't, are not claims.

Okay so now we know what claims are, but what are issues?

Issues

- An **issue** is a **question** regarding whether a claim is true or false.
- The issue is what is up for debate or what is being questioned!
- Producing **issues** is important.

With this we can:
- Conduct reasoning
- Ask questions

Why? So that we can participate in critical thinking and have good reasons for our beliefs or what we hold as accurate knowledge.

Issues

- Consider these two claims:
  1. Mobile phones are recent devices.
  2. A student does not need a mobile phone.

First do you agree or disagree with both?

When you make a question about the truth of a claim, you are making an issue!

Issues (Examples)

Claim – Mobile phones are recent devices.

Issue – Are mobile phones recent devices?

Claim – A student does not need a mobile phone.

Issue – Does a student need a mobile phone?

Claim – The Sony PS4 is the most powerful gaming console

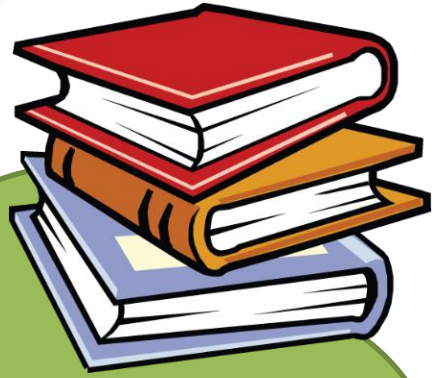
Issue – Is the Sony PS4 the most powerful gaming console?

In Conclusion…

- *Claims* are either **true** or **false**.
  - Remember it is about the structure, not necessarily is it true or false. Can it be true or false.
- *Issue:* a matter of controversy or uncertainty – a question about a claim! (we are suspicious and need to raise an issue).
- *Critical Thinking: The careful, deliberate determination of whether to accept, reject, or suspend judgment about a claim – and the degree of confidence with which we accept or reject it.*
- *Spying technology* – can be a benefit and a problem (if its lost into the wrong hands)!
- *WikiLeaks* has claimed the **CIA can pretty much hack into any device.** Is it true or false?

Any Questions?

End of Class!



Readings:

Extract 1 and 2.

Critical Thinking and Problem Solving for IT,

This article: **WikiLeaks CIA hack: What you need to know about the Vault 7 data dump**
http://www.abc.net.au/news/2017-03-08/what-you-need-to-know-about-cia-wikileaks-vault7-hack/8335072

It’s now the Game Time!

- Cranky Uncle
  - https://app.crankyuncle.info