

How innovation and creativity develop from science subjects : Fun, tools or burdens?

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27 September
2018



Guest lecture in Mathematics and Science Fair 2018 at UTAR

Nature of our CPU (Control Unit)

Analytic & Logic
Organised
Communication
Factual
Practical
Conservative



Sensation
Imagination
Excitement
Adventurous
Futuristic
Foresight

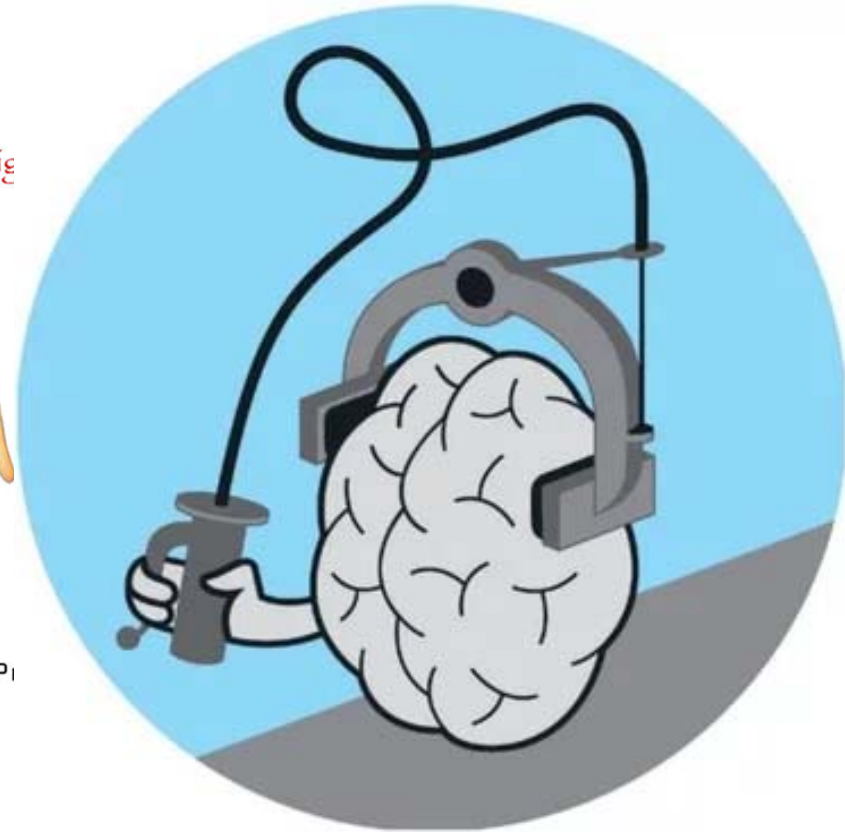
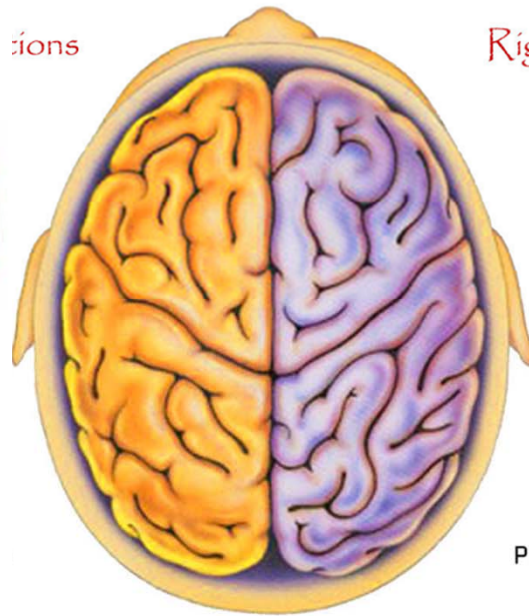
Amplification & Suppression of our CPU

BRAIN DESIGN

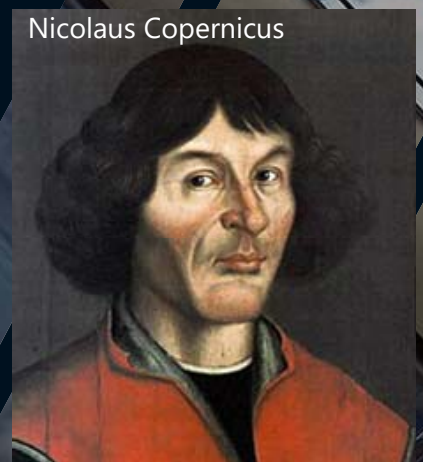
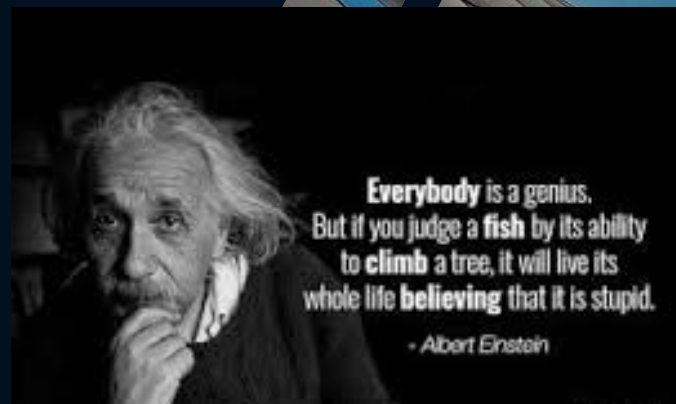
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Rig

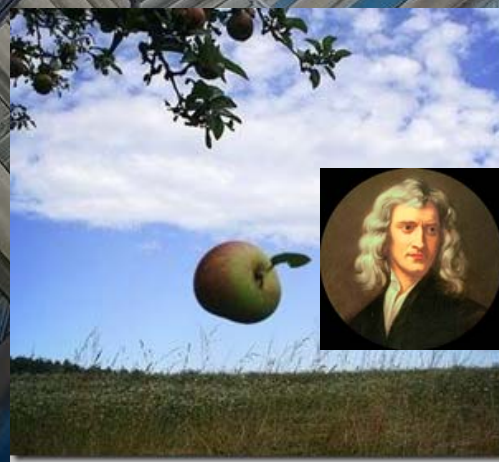
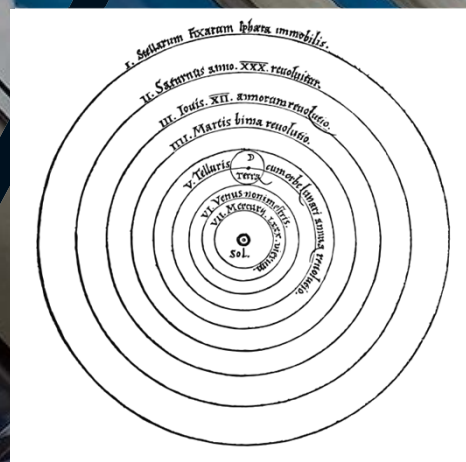
Pl



Science & Math



Nicolaus Copernicus



Law & Business



Arts & Music



<https://theculturetrip.com/asia/malaysia/articles/the-10-most-famous-malaysian-athletes/>

The 10 Most Famous Malaysian Athletes



F-16 jets to escort Taiwan athletes home with heroes' welcome

2018/09/02 18:03:01



CNA file photo

Lee Chong Wei
Nicol Pietrangeli
Pandey Julian
Azizulhasni
Welson Soong
Shalin Zaidi
Farah Diba
Abdul Kader
Aaliya

Taipei, Sept. 2 (CNA) The Air Force is expected to dispatch two fighter jets to escort the last batch of Taiwanese athletes who are scheduled to fly home from Jakarta Monday, as part of a heroes' welcome for the national squad, a source told CNA Sunday, speaking on condition of anonymity.

Taiwan's national team, competing under the name of Chinese Taipei, finished in seventh place on the medal table with a total of 67 medals -- 17 gold, 19 silver and 31 bronze -- as the games concluded Sunday.

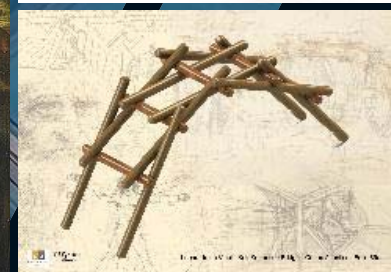
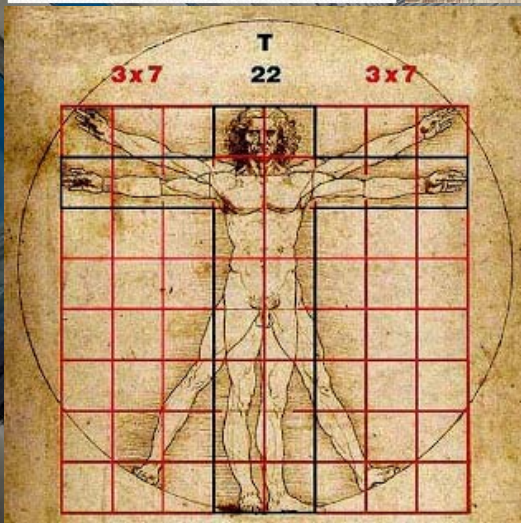
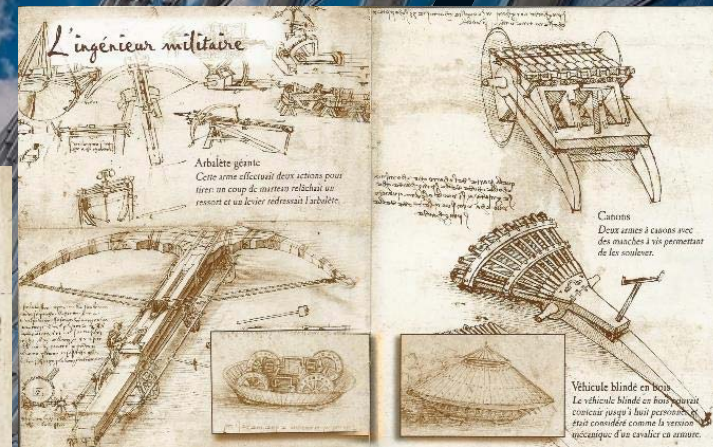
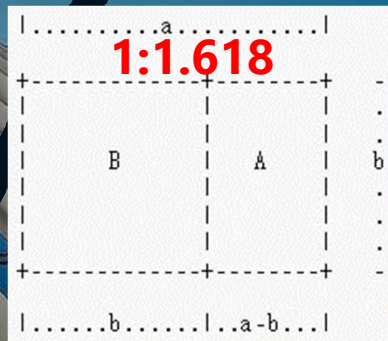
The results are the second-best performance in terms of gold medal count for Taiwan at the Asian Games. Taiwan's best performance was in the 1998 Asian Games in Bangkok, when it took 19.

The two fighters will accompany the plane once it enters Taiwan's Air Defense Identification Zone.

Jack of All Trades

Artist
Musician
Architect
Scientist
Engineer
Mathematician

Leonardo da Vinci



Balanced Brain

Utilitarianism

Average starting salaries of teachers in comparison to other professions in Malaysia

Average starting salaries including allowances
RM per month (2010)



¹ Private sector includes only base salary as allowances are usually provided to reimburse out-of-pocket expenses and do not form a significant portion of compensation

Why boring comes about?

Reasons

- Haven't appreciated the powerfulness of the tools at the t
- No developing story line & force feeding (resisting)
- Too much knowledge to digest within short period of learning
- Subjects are not taught with aspect of imminent applications & idling most of time
- We all take things for granted (outcome of consumerism)



Why "fun" is important in learning?

Surprise & Unexpected/Mystery (**WOW!**)

Allow imagination (**Go wild**)

First time experience (**Adventurous**)

Have drive to continue (**Challenging**)

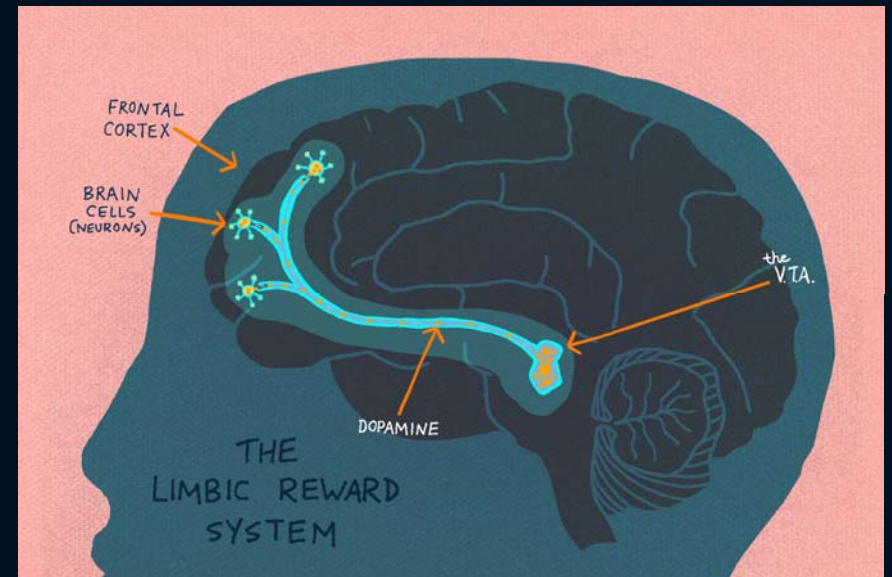
Curiosity to pursue (**Satisfying**)

Creativity to flourish (**Harvesting**)

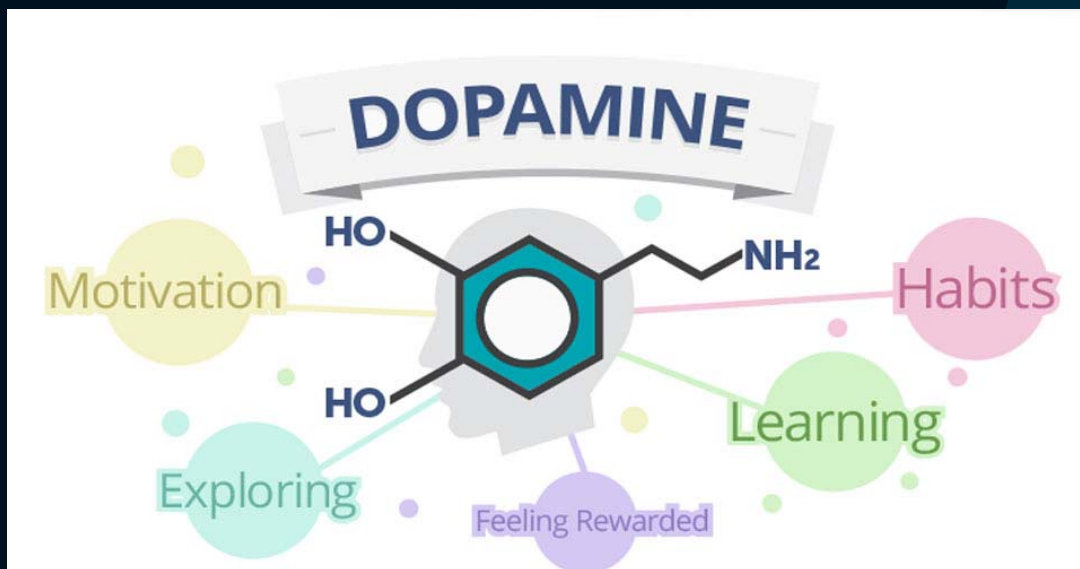


Curiosity

Curiosity is like a mental itch and the only way to scratch it is to seek out new knowledge. Albert Einstein once said: "I have no special talents. I am only passionately curious."



Satisfaction



Creativity

Problem solving capability for better efficiency, convenience and affordability



How Innovation solves Problems

Challenges

- Limited resources (Two wooden planks + 6 strong stunt persons)
- Tasks to attain (To bridge the open gap for passage)

Problem solving

- Conceptual development & innovation
- Configure available materials & resources
- Calculate & analysis for safety adequacy
- Construct to materialise

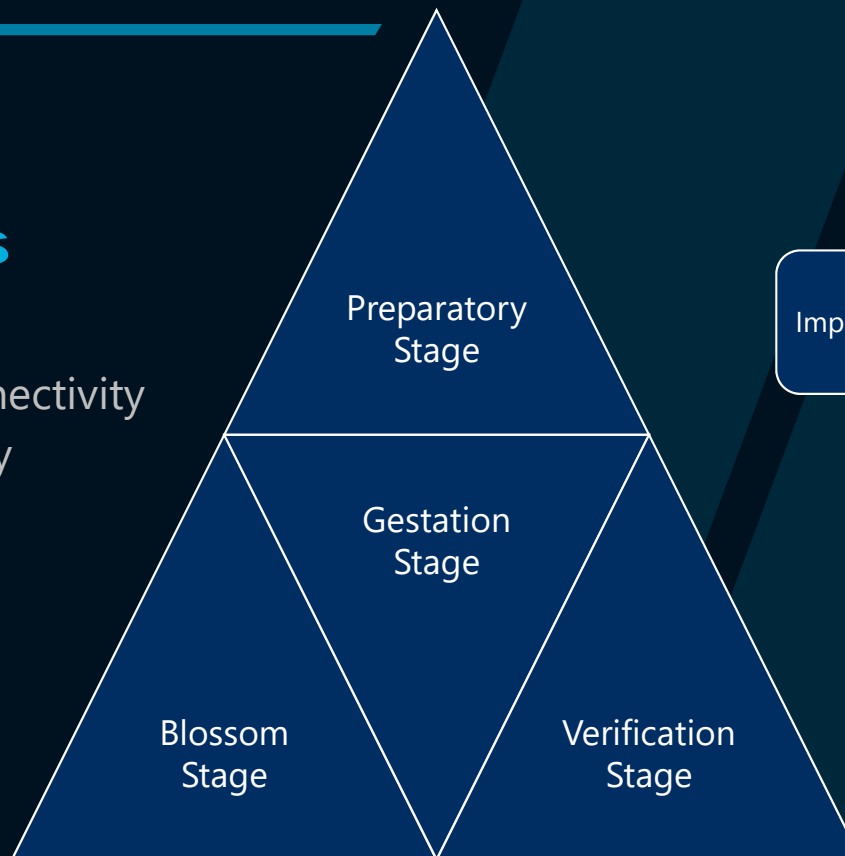
Go far, Go high & Flying in Civilisation



Creativity Process

Ingradients

- Curiosity
- Observation/Connectivity
- Discovery/Mystery
- Imagination
- Creativity
- Passionate
- Revolutionary



Creative Response

课时 7

ān yào qiú zuò tí wǒ zuì bàng
一、按 要 求 做 题 我 最 棒。

1. 把数倒着数写在□里。

0 1 2 3 4 5 6 7 8 9 10

0	1	2	3	4	5	6	7	8	9	10
---	---	---	---	---	---	---	---	---	---	----

2. 把下面的数从小到大排一排。

美侖美奂 / 学生吧

四、请按照要求写出1-9的数字

个圆形

从小到大:

1 2 3 3 4 5 6 7 8 9

正方形

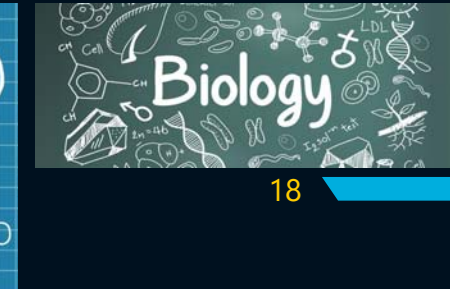
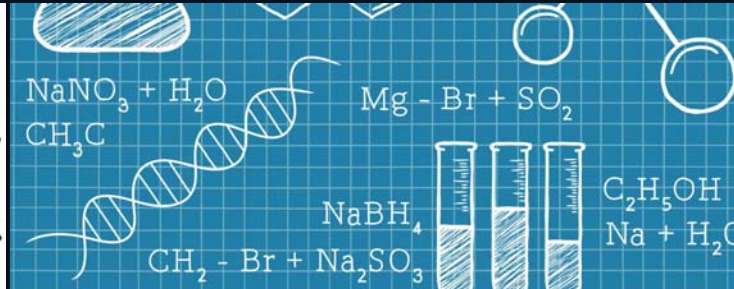
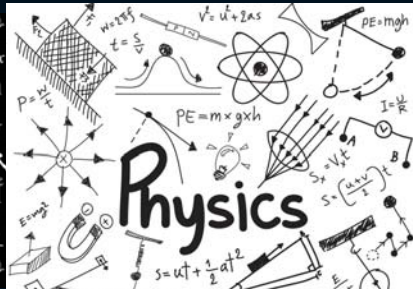
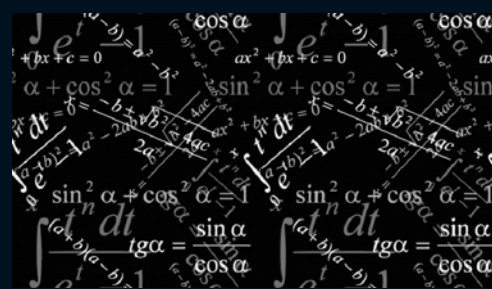
从大到小:

9 8 7 6 5 4 3 2 1

Are tools useful along journey of learning?

What benefits tools can give us?

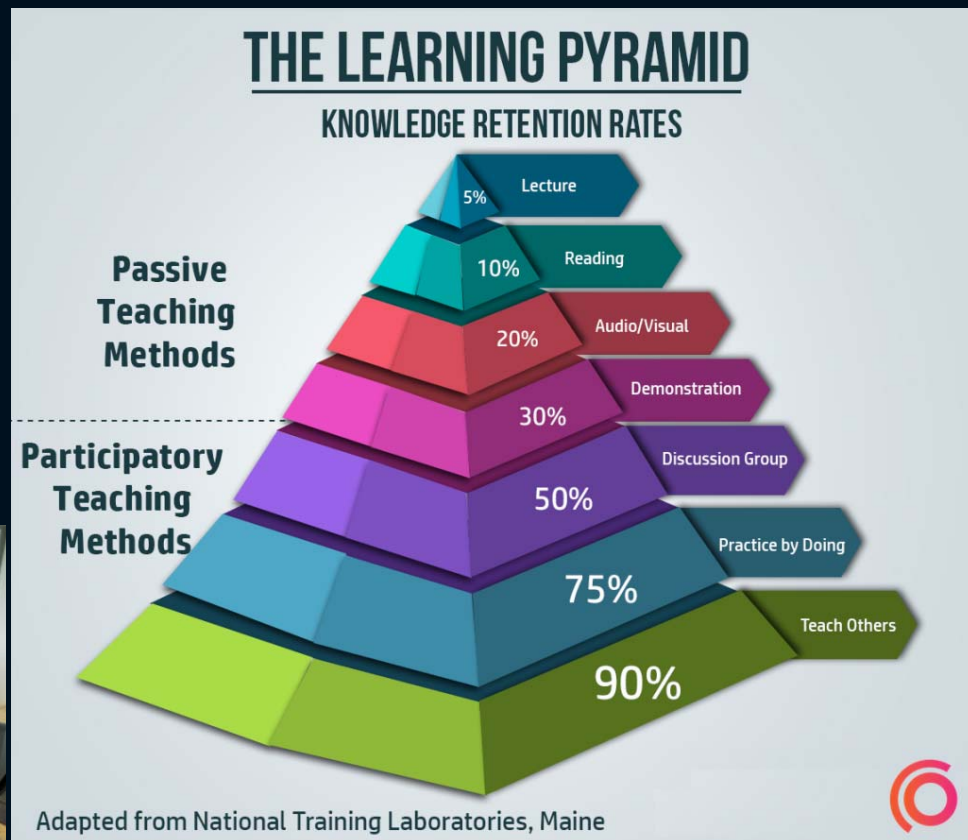
- Fast (can complete more tasks)
- Accurate (incoming parameters for next move)
- Knowledge platform to advance (stepping platform)
- Complementary between rationale & sensational mind (balance)



Learning Pyramid

By the factual findings of Learning Pyramid, you can decide which level you want to engage yourself at.

Learning is a very personal matter. No one to be blamed or to be accountable to your success except yourself.



Summary

- **Balanced development of your brain : Never over suppress your dominant strengths**
- **Do what you enjoy most, not expectation from others**
- **Work through the knowledge acquisition stage at your comfortable pace, no rushing**
- **Find out interesting story line of achievements by others**
- **Nurture your curiosity**
- **Collect ideas for creativity & innovation**
- **Put your hands together to build things/prototypes : Practices perfect your skill with time**
- **Participate competitions & engage in forum discussions**
- **Passive learning + Active participation**



**THANK
YOU!**

Ir. Liew Shaw Shong



References

Issue

- <http://blog.xuite.net/kc6191/study/25178768-創造力%28Creativity%29的本質>
- <http://epaper.heeact.edu.tw/archive/2016/07/01/6577.aspx>
- <https://www.scienceofpeople.com/curiosity/>