

Student-LED Project



**Center For
Engineering
Education
Innovation**

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Student-LED

- Learning Experience
 - Learning to teach, teaching to learn



Learning **E**xperience **D**esigner

- 
- Design
 - Creativity, Critical Thinking, Innovation, etc

**BEGIN
WITH
THE END
IN MIND**

Covey 1989





Attributes of an Educated Citizen

- **Creative and critical thinking abilities**
- **Interpersonal skills**
- **Lifelong learning**
- **Leadership**
- **Knowledge of disciplines**
- **.....etc.**



Informative approaches to characterizing **Student-led Design Thinking**

- **Tolerate ambiguity**
- **Maintain sight of the big picture**
- **Handle uncertainty**
- **Make decisions**
- **Think as part of a team in a social process**

CONVERGENT THINKING



The first handheld mobile cell phone was demonstrated by Motorola in 1973.



DIVERGENT THINKING



Steve Jobs

**Mobile
Phone**



DIVERGENT THINKING



Steve Jobs

Why Not Like This?



EXAMPLE

➤ ***Convergent:***

- I live 20 km from work. My car uses 10 litres/100km. I want to use less fuel in my commute for financial and conservation reasons. Money is no object.

Find the three best replacement vehicles for my car.

➤ ***Divergent:***

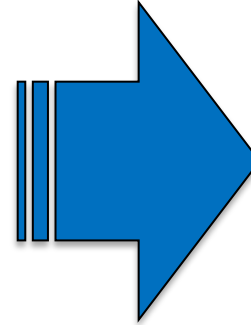
- I live 20 km from work. My car uses 10 litres/100km. I want to use less fuel in my commute for financial and conservation reasons. Money is no object.

What options do I have to reduce my fuel consumption?

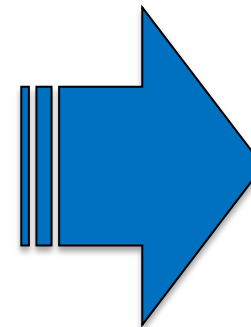
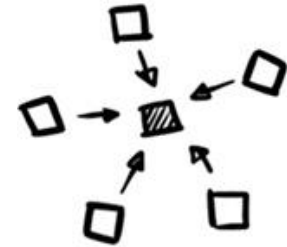
- The problem is the same, but the questions change slightly. The Convergent example asks for a vehicle, whereas the Divergent example doesn't rule out options like moving closer to work, telecommuting, walking, carpooling, taking public transportation, etc.

- A procedure to reach verifiable, “truthful” solutions.
- Operate in the knowledge domain

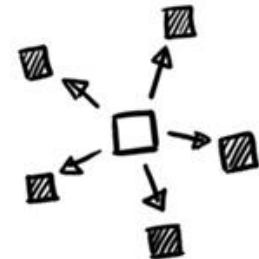
- In design situations, there always exist multiple alternative known answers, regardless of being true or false, as well as multiple unknown possible answers.
- Questioner attempts to diverge from facts to the possibilities that can be created from them.
- Operate in the concept domain

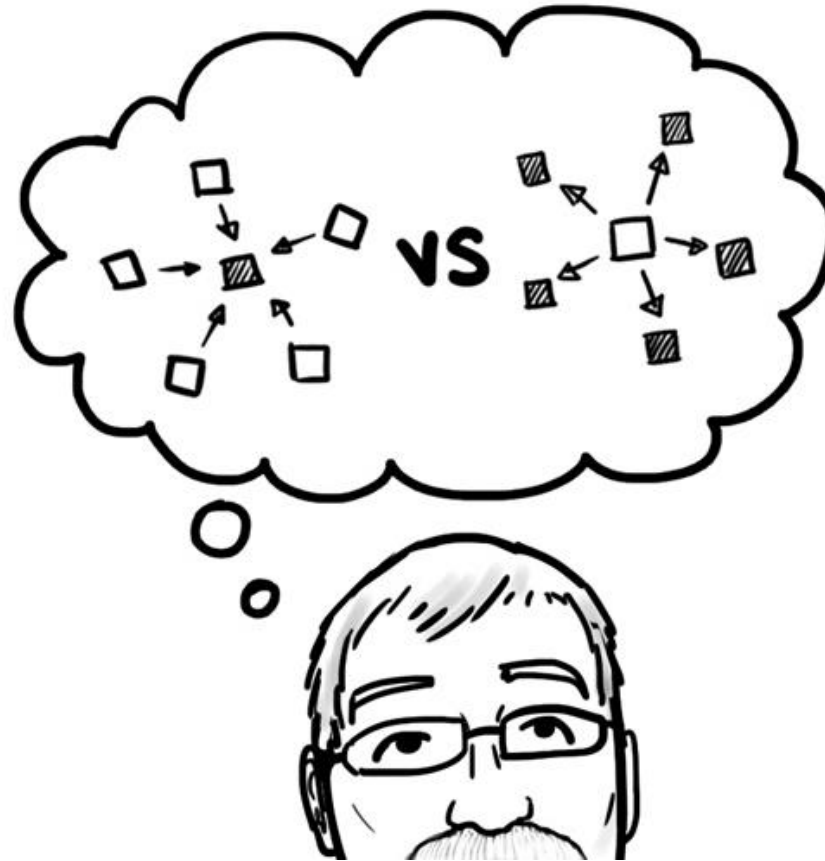


Convergent Thinking



Divergent Thinking





Convergent vs. Divergent thinking

Co-Di Thinking

- Teaching divergent thinking and inquiry is *challenging*
- Student LED Project leads to Convergent-Divergent thought process.





Congratulations

- I strongly believe this innovative project is a giant step in developing the future generation in Hong Kong to be leaders and innovators – as well as educated citizens.
- My sincere congratulations and may I urge you to further develop this concept throughout the education process.



Thank you