HKU Symposium on Assessment as Learning

Formulae to engage students with D&I® assessment
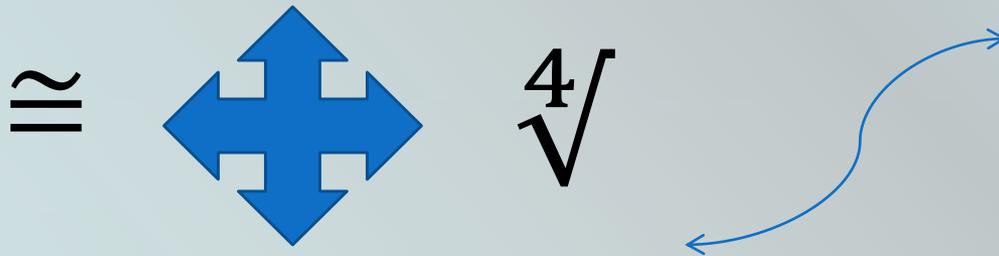
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Symbol of relating creativity to success ◯

- Being creative ◯ Achieving good grades in academics

$$\cong \quad \text{✥} \quad \sqrt[4]{\ }$$

- Being creative ◯ Performing well at work

Innovation and creativity

Innovation: 'insertion of the effective novelty.'

Cropley and Cropley (2009)

'Creativity: early stages of innovation processes with innovation implementation later.'

Michael West (2002)

Discovery and Innovation (D&I) @CityU

'Discovery-enriched curriculum (**DEC**) may make changes in students' attitudes toward learning and creativity, including their **ability to draw ideas** from different areas to **generate unique knowledge**; and their taking advantage of opportunities to **try out their ideas**.'

Prof. Arthur Ellis

The **Discover&Innovate**@CityU® (D&I) theme in DEC creates an educational experience to equip students with the targeted attributes through a combination of Gateway Education (GE) courses, disciplinary studies, and co-curricular activities.

'GE2304'

Student comments about the course

'Apart from experiencing differences in culture and the different approach that the teacher had, the topics are **not just academic related**.'

Non-local student

'It is not just a course. It includes a lot of other subjects, from marketing, commercializing the product; marketing strategies; conducting survey to supporting the investment.'

'It is **an interesting course** and is **very creative**. Not just about thinking about a product, but actually how to produce it. It really goes into depth, and each team has to come with a study, examine if it is feasible and **actually create something**.'

Local students

Student feedback

- Dr. Sun has given me **useful** information and given me a lot of new ideas about innovation. I like his teaching style and course materials. He is also well prepared for every lesson and makes us feel **interested**. He can make me try to think in many ways for the same thing.

- **Excellent**!

- It was my great experience to attend his course. I am very appreciative of his communication skills to keep audience **attention**.

- Vvvvvvvvvvvvvvvvvvvvery **Good**!!!!!!!!!!!

- Interesting course, wonderful personality and **very different from other courses I had before**.

- This lecture is **completely different** experience from others. The teacher can stimulate me to think deeply about the topic.

- The tutor is highly **devoted** and well **prepared** for each lecture. He is good at stimulating the **interest** of the students about each topic. He truly **liberates the joy of learning** for all students.

- Dr. Sun's class is very **useful and interesting** , and he has incredible ability, which can **attract** us in the class.

Outline

- Course background:
  D&I® assessment

- Process

- Formulae suggestion

What is GE2304 about?

**Innovation and Entrepreneurship
for Young Professionals.**

This course aims to help university students to understand the characteristics and work of **innovator** and **entrepreneur**. It also aims to nurture students' innovation mindset, entrepreneurial spirit and team collaboration skills in a multi-disciplinary environment.

Course objectives

- What are the **characteristics** of innovators/entrepreneurs?

- How to work with innovators and entrepreneurs in a team?

- How to generate new product/service ideas and identify business opportunities from daily needs and real-life problems?

- How to assess the potential of an innovative idea from a **multi-disciplinary** perspective?

- How to **work** with **people from different fields**?

What will students do in GE2304?

The course will provide an opportunity for students from **engineering** and **sciences**, **management** fields and **social sciences** to work together in their own mock companies and play the roles of **CEO** and various other **managers** to simulate an innovation and entrepreneurship process.

DCIE model

Discovery	Creativity	Innovation	Entrepreneur-ship
Problem Discovery	Idea generation	Product Development	Enterprise establishment
Problem →	**Idea →**	**Product →**	**Enterprise**
Any problem from daily life and work by observation and curiosity **No. of problems Competition**	Original, Influential No. of ideas Benchmarking **Screening 1 Screening 2**	Technical feasibility, User-friendly, Environmental-friendly, IP checking Patent Product design	Market feasibility **(market survey),** Financial Feasibility **(financial report)** **Business plan assessment template**

Creativity: Divergent thinking
Analytical and evaluative skills: Convergent thinking

Image source: http://www.designtnt.com/creativity-desktop-create-cool-wallpaper-photoshop-interface/

Group assessment task

Rounds of group evaluation

- **Discovery of problems**

- **Ideas generation and screening [Checking existing products]**

- **Product development [Conducting market survey, checking IP]**

Report and assessment

- **Group project report and presentation**

- **Peer assessment on individual participation and contribution**

- **Group presentation assessment by:**

  Course leader

  Peer groups

  Industrial experts

  Educational experts

Screening ideas by students

	Ideas	I1	I2	I3	I4	I5	I6	I7	I8
	Criteria (0-10)								
Attractiveness (50%)	Original (IP, new) (idea)	8	8	7	6	7	5	6	**5**
	Creative (surprise, interesting)	8	7	7	6	6	5	7	**5**
	Simple (clear, practical)	7	8	8	8	8	8	7	**8**
	User-friendly (easy+safe)	7	7	8	8	7	8	7	**7**
	Degree of impact (influential)	6	6	6	6	6	6	6	**5**
Feasibility (50%)	Market feasibility (need)	7	7	6	6	7	7	7	**6**
	Technical feasibility (design)	5	7	6	7	6	7	6	**6**
	Production feasibility (produce)	6	5	6	7	7	7	7	**6**
	Marketing feasibility (ad+sell)	7	7	6	6	7	7	7	**6**
	Financial feasibility (profitable)	5	5	6	7	5	5	5	**7**
	SCORE (SUM)	66	67	66	67	66	65	65	**61**
	Note (name, problem, product)	In- balance population	moke & Health	erson behind the Door	Air releaser	nd person take bus	No battery	Catch bus	ernet addiction

Group process [reported in FG interview]

- How are problems discovered?

  - Talking to classmates

  - Surveying classmates

  - Searching the Internet

  - We asked questions, identified problems and tried to find the solutions. I asked myself problems that I encountered daily, and I asked friends whether they encountered similar problems and how they managed them.

Group process [reported in FG interview]

- How are ideas generated / negotiated in the team?

  - **Brainstorming** a lot of ideas to see **which are more feasible**, and we developed further along the line; then thought about alternative ideas with similar processes before we finally decided which one or two to work along; finally we decided which one to work on.

  - **Vote** on it.

  - It goes through a process of suggestion, receiving opposing ideas, **reworking** to see if it can reach **another round** of acceptance.

  - We certainly have group members with different opinions. But I think it is good because it gives the opportunity for groupmates to provide different thoughts and they can explain the issues or problems; it is okay that people assert opposite ideas. The **process of stating the pros and cons of ideas was good until they receive a consensus;** learn how to **compromise** with one another.

Group process [reported in FG interview]

- ## How are creative products protected?

  - At the current stage is to file a patent. As a group, if people have the interest to continue, they can continue. First is to 'license' the idea; 'patent' it, then open it up and have the idea further extended.

Formulae for engaging students with D&I® assessment

#1   Design of assignment: having students identify problems > reinforcing discovery in early stage.

#2   Assessment criteria: including creativity/innovation component > advocating the need for originality.

#3   Team combination: multidisciplinary > more quality ideas generated.

#4   Process: embedding investigation of, negotiating, testing and evaluating ideas > advocating diverging thinking, critical thinking and developing of evaluative skills.

#4   Assessment: expertise from disciplines, peer group evaluation, individual contribution to own group > pertaining to professional standards and accountability.

#5   Ownership of IP: individual/collective intellectual accomplishment > protection of IP, and potential of advancement/maturation of patent/licensed ideas.

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References

- West, Michael A. (2002) 'Sparkling fountains or stagnant ponds: an integrative model of creativity and innovation implementation in work groups', *Applied Psychology*, Volume 51, Issue 3, pp. 355–87.

- Cropley, A. and Cropley, D. (2009) *Fostering Creativity*: *A Diagnostic Approach for Higher Education and Organizations*. Hampton Press, Cresskill, NJ.

THANK YOU

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