Training of Trainers on Innovation, Entrepreneurship and Commercialisation

COLLEGE OF ENGINEERING, DESIGN, ART AND TECHNOLOGY (CEDAT)

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Introduction to Creativity, Invention, Innovation & Entrepreneurship

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The Creativity-Innovation-Entrepreneurship Chain

Latest science and technology

Creativity

- Production of novel ideas
- Discovery of opportunities
- Output: new ideas

Invention

- Refining,
- evaluation and
- first prototypes of the new ideas
- Output:
- prototype

Innovation

- Creation of value
- Evaluation of opportunities
- Output: usable product, service, or process

Entrepreneurship

- Creation of value \
 in the marketplace
- Exploitation of opportunities
- Output: Markets



Needs in society and the marketplace

Theoretical Foundations of Entrepreneurship

- Cantillon, 1751 -
 - Facilitates exchange and circulation in the economy in order to earn an uncertain profit – A MIDDLEMAN
- Adam Smith (1776)
 - An entrepreneur is a person who acts as agent in transforming demand into supply - .
- Jean Baptiste Say (1803)
 - An entrepreneur is a person who shifts resources from an area of low productivity to high productivity – A MERCHANT
 - A factor of production that coordinates all other factors of production (land, labour & machinery) in the production process – AN INDUSTRIALIST.
- Joseph Aloysius Schumpeter (1934)
 - An innovator who moves economies through leaps and bounds through a process of creative destruction.

The entrepreneur

- Is in an innovation perspective by focusing on the perception of new economic opportunities and the subsequent introduction of new ideas in the market (Schumpeter, 1934).
- Specializes in taking responsibility for and making judgmental decisions that affect the location, form, use, and the coordination of scarce resources (Carson, 1982).
- Always searches for change, responds to it and exploits it as an opportunity (Drucker, 1986)
- Sees potentially profitable opportunities and organizes resources in order to exploit them (Saha, 1989).

Defining Entrepreneurship

- It is more than mere creation of business
- Entrepreneurship is the
 - 1. ABILITY to identify and exploit opportunities.
 - 2. PROCESS of generating incremental wealth (Value) by individual or groups of individuals.
 - 3. ATTITUDE or BELIEF that opportunities can be exploited despite of the many associated obstacles.
- The entrepreneurship process is aided by collaborative networks in government, education and institutions.

Why every engineer **MUST** study entrepreneurship

- Identify and solve problems (opportunity) in the communities
- Generating incremental Value through innovation and creativity.
- Changing the ATTITUDE or BELIEF that problems cannot be resolved despite of the many associated obstacles.
- Why Engineers make good Entrepreneurs
 - They can solve problems
 - They are optimistic
 - They can build trust
 - They are humble and yearn for knowledge
 - They have potential to build on exiting products

Engineering and entrepreneurship;

The unofficial marriage

ENGINEERING

- Do it alone all with like minded technical others to ensure quality and speed
- If we build it well, they will come
- Focus on functionality
- Hate chaos, unpredictability and taking risks.
- Don't worry about making money, though they love it when it comes
- Thrive on perfectionism

ENTREPRENEURSHIP

- Involve everyone, including fools, in order to ensure that everyone is onboard
- If they want it, we will make it
- Focus on the customer
- Thrive on Chaos, Unpredictability and risk
- Making money is paramount. It is the reason they do what they do.
- Thrive on satisfying



The entrepreneurial mindset and action

- Growth versus Fixed mindset
- Some aspects of an entrepreneurial mindset:
 - Internal Locus of control
 - Persistence
 - Proactive
 - High need for achievement
 - Risk propensity
 - Tolerance for ambiguity
 - Need for Independence (autonomy)

