KIT-PBL Education Program for Strengthening Student’s Skills of Creativity and Innovation

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KIT-PBL + Innovation Education System

Innovation Capability

Knowledge education
Foundational Courses
Specialized subjects

Practical education
Experimental exercises
Computer literacy

Note: DP: Design Project  I&O: Implement & Operate
KIT-PBL Education Program

First year

DP Intro.
- Experimental Technique

DP I
- Problem Finding
- Idea Creation

DP II
- Idea Creation
- Design
- Embodiment

2nd year

DP I&O
- Implementation & Operation of Ideas

Note:
- DP: Design Project
- I&O: Implement & Operate
KIT-PBL Design Process and CDIO

**Step ①** Problem Finding
- Dis-satisfaction
- Needs
- Market trend

**Step ②** Problem Clarification
- Project theme

**Step ③** Idea Creation
- Collecting information
- Divergent thinking
- Convergent thinking

**Step ④** Evaluation and Selection of Ideas
- Selection of the best ideas

**Step ⑤** Implementation of Ideas
- Production
- Prototype
- Model
- Software

Team activities

**Conceive**

**Design**

**Implement**

**Operate**
Key Point of KIT-PBL Education

KIT-PBL education is aimed at developing the habit of thinking independently and acquiring useful technical thinking and skills that are useful for society.

It is necessary to carry out the education, as follows

Students are happy to study matters of interest.

Wisdom = knowledge + knowledge

Basic academic skills + Curiosity

Invention

Discovery

To, instill confidence from interest
To motivate through praise
To inspire with high achievement

Praise the student
Practical Examples of Regional Cooperation with CDIO

Project theme:

Efficient Wind Turbine Generator

2013 2EM–E5 Team
Step ① Problem Finding

Problem:
Direction of natural wind changes often.
Power generation efficiency decreases.
Step Problem Clarification

Collecting information

- Internet
- Books
- Patent
- Library

Collected Wind Turbine Generator Examples
Step 3: Idea Creation

Divergent thinking

Convergent thinking

Brainstorming

Problem → Idea → IDEA

View Point

Novelty!
Inventive step!
Practical applicability!
Step 4 Evaluation and Selection of Ideas

Ideas Created by team members

- IDEA1
- IDEA2
- IDEA3
- IDEA4
- IDEA5
- IDEA6

360° Rotative Wind turbine
Step 5-1
Implementation of Ideas

Implement Mechanism to capture the wind from any direction

Smooth rotation using a bearing

Rotation about X-axis

Tail Assembly
Step 5-2
Implementation of Ideas

Completed Wind Turbine Generator

Tail Assembly

Counterbalance
Step⑤-3 Operate

About 50 laboratory tables
And 5 laboratories
Step 5-4 Operate

Power generation experiment with varying wind direction

- Fan
- Wind tunnel
- Tachometer
- Windmill
- Volt meter
- Anemometer
Presentation & Mutual Evaluation

Check item:  Novelty! Inventive step! Practicability!
Advice:  Information, New ideas, Improvement
Thank you for your listening

Best Poster Award