University-Industry Cooperative Education and Entrepreneurship: The Case of CAU

On the Path to Global Leading Higher Education

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Background

Industry 4.0

INDUSTRY 1.0
Mechanization, steam and water power

INDUSTRY 2.0
Mass production and electricity

INDUSTRY 3.0
Electronic and IT systems, automation

INDUSTRY 4.0
Cyber physical systems

Traditional Learning
- Told what we need to know
- Memorize it
- Problem assigned to illustrate how to use it

Problem Based Learning (PBL)
- Problem assigned
- Identify what we need to know
- Learn and apply it to solve the problem

<table>
<thead>
<tr>
<th>TRADITIONAL</th>
<th>FLIPPED</th>
</tr>
</thead>
<tbody>
<tr>
<td>Lecture</td>
<td>Lecture</td>
</tr>
<tr>
<td>Homework activities</td>
<td>Classroom activities</td>
</tr>
</tbody>
</table>
Background

Top 10 Skills To Be Relevant in Industry 4.0

<table>
<thead>
<tr>
<th>in 2020</th>
<th>in 2015</th>
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</thead>
<tbody>
<tr>
<td>1. Complex Problem Solving</td>
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</tr>
<tr>
<td>2. Critical Thinking</td>
<td>2. Coordinating with Others</td>
</tr>
<tr>
<td>3. Creativity</td>
<td>3. People Management</td>
</tr>
<tr>
<td>4. People Management</td>
<td>4. Critical Thinking</td>
</tr>
<tr>
<td>5. Coordinating with Others</td>
<td>5. Negotiation</td>
</tr>
<tr>
<td>6. Emotional Intelligence</td>
<td>6. Quality Control</td>
</tr>
<tr>
<td>7. Judgment and Decision Making</td>
<td>7. Service Orientation</td>
</tr>
</tbody>
</table>

Source: Future of Jobs Report, World Economic Forum
University-Industry Cooperative Education
Doosan Group acquired Chung-Ang University Foundation in 2008.
University-Industry Cooperative Education

- Showcase of UI Cooperation
  - Doosan Heavy Industry & Energy System Engineering
  - Samsung, LG & Computer Science, Electrical and Electronics Engineering
  - Power Plant Energy Supply Companies & Gas plant Safety Graduate Program

- Teaching Exchange
  - Doosan Infracore & Mechanical Engineering

- Internship & Field Trip
  - Samsung & Computer Science, Electrical and Electronics Engineering

- Samsung Talent Program

- Contract based Program

- Capstone Design Camp
  - Doosan Infracore & Engineering Education Innovation Center
University-Industry Cooperative Education

- **Teaching Exchange Program**
  - CAU–Doosan Infracore Cooperation Center (CDIC)

School of Mechanical Engineering
School of Electronic and Electrical Engineering

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- Professors at CAU trains and consults engineers at Doosan Heavy Industries and Doosan Infracore during summer and winter break.

- Engineers of Doosan Heavy Industries and Doosan Infracore participate the special lecture series for CAU students.
University-Industry Cooperative Education

- Internship and Field Trip Program

School of Energy System Engineering  

Doosan Heavy Industries

- On-site internship
- CAU students visit Doosan Heavy Industry Plant in Changwon for on-site internships.
**Industry Needs-based Customized Curriculum**

- **Samsung Talent Program (STP)**
  - Samsung Electronics provides scholarships to CAU students.
  - CAU customizes curriculum to meet the needs from Samsung Electronics.

- **Interdisciplinary translation professional training program for atomic energy**
  - In order to cultivate professional interpreting and translation experts, CAU GSIS invited experts in atomic energy science to give lectures, started simultaneous interpretation, translation evaluation, for atomic mechanics industry inspection and other activities.
University-Industry Cooperative Education

- **Capstone Design Camp**

  CAU Engineering Education Innovation Center ➔ Doosan Infracore

- **Creative Comprehensive Design Exhibition**
  - With the support from Doosan Infracore and Doosan Construction Machinery
  - CTOs participate for evaluation of CAU students’ creative comprehensive design ability and systematic integration ability.

- **Doosan Creative Integrated Design Coordination Course**
  - CAU Students from Engineering College participate solving problems experienced by Doosan Infracore.
  - Engineers of Doosan Infracore participate as a consultant during the semester.
University-Industry Cooperative Education

- **Industry Contract-based Department**
  - Employment Guaranteed for Graduates
    - School of Software
    - School of Electronic and Electrical Engineering
    - Samsung, LG
  - Continuing Education for Employees
    - Dept. of Gas-Plant Safety in Graduate School
    - Power Plant Companies
    - Energy Supply Companies
  - Industry-funded Joint Department in the field of power generation equipment
    - Industry experts and the professors jointly guide the students, in order to solve the actual business problems of the participating enterprises.
    - Dept. of Power Plant Engineering Design in Graduate School
    - Doosan Heavy Industry
    - Other small and medium enterprises
University-Industry Cooperative Education

- **Government-funded Department**

  - **Global Construction Energy Specialized Personnel Training**
    - Develop experts who can manage all courses such as planning and operation of overseas construction project plans

  - Graduate School of Construction Engineering
  - Ministry of Land, Infrastructure and Transport
  - Graduate School of Mass Communication
  - Korea Radio Promotion Association
  - Department of Standards Policy Graduate School of Public Administration
  - Korea Standards Association
LINC+
Government Funded Project
**LINC+ (Leaders in INDustry-university Cooperation)**

**Goal**
To Develop Industry-University Cooperation Friendly Education System

**Objectives**
- Advancing Industry-University Cooperation
  - Increasing employment and start-ups through industry-leading universities
  - Supporting innovation of small business
- Developing Curriculum Customized to Social Needs
  - Solving mismatch between demands of graduates and industry

**Period**
April 2017 – Feb. 2022 (5 years, (2+3)) decide whether to continue through performance evaluation after first 2 years

**Budget**
216 million USD for universities and 80 million USD for colleges in 2017
/ A total of 1.25 billion USD till 2017
(2.9 million USD per univ. and 1.4 million USD per college)

**Beneficiary**
75 Universities and 59 Colleges as of 2017

**Management.**
Ministry of Education, National Research Foundation

**History**

<table>
<thead>
<tr>
<th>Year</th>
<th>No. of Unis</th>
<th>No. of Colleges</th>
<th>Budget</th>
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<tbody>
<tr>
<td>2012</td>
<td>51</td>
<td>30</td>
<td>165 million USD</td>
</tr>
<tr>
<td>2013</td>
<td>51</td>
<td>30</td>
<td>212 million USD</td>
</tr>
<tr>
<td>2014</td>
<td>55</td>
<td>30</td>
<td>226 million USD</td>
</tr>
<tr>
<td>2015</td>
<td>55</td>
<td>30</td>
<td>212 million USD</td>
</tr>
<tr>
<td>2016</td>
<td>57</td>
<td>30</td>
<td>214 million USD</td>
</tr>
</tbody>
</table>
LINC+ (Leaders in INdustry-university Cooperation)

University Seeds

Industry Needs

University Seeds

Region Needs

**Education**
- Uni-Industry Cooperative Curriculum
- Capstone Design
- Field trip Internship

**R&D**
- Joint Technology Developmpt
- Technology Transfer
- Business Support

**Infra**
- Personnel Support
- Space Support
- Equipment Support

**Education**
- Uni-Industry Cooperative Curriculum

**Living Lab**
- Region Connected Project
- Regional Economy Revital
- Field trip Internship

**Infra**
- Personnel Support
- Space Support
- Equipment Support
LINC+ (Leaders in INdustry-university Cooperation)

**Health Tech**
- School of Chemical Engineering and Materials Science
- School of Mechanical Engineering
- School of Electrical and Electronics Engineering
- School of Software
- Department of Chemistry
- Department of Biological Sciences
- College of Medicine
- College of Pharmacy
- School of Business Administration

**Block chain**
- School of Business Administration
- Department of International Logistics
- Department of Industrial Security
- School of Software
- School of Integrative Engineering

**Smart Farm**
- School of Electrical and Electronics Engineering
- School of Software
- School of Mechanical Engineering
- School of Bioresource and Bioscience
- School of Food Science and Technology
- Department of Systems Biotechnology
### LINC+ (Leaders in INDustry-university Cooperation)

#### ICC - Culture & Art Base
- School of Media and Communication
- School of Performing Arts and Media
- School of Design
- School of Korean Music
- Department of Culture and Art Management

#### Social Economy
- School of Social Welfare
- School of Business Administration
- School of Economics
- Department of Sociology
- Department of Education
- Department of Advertising and Public Relations

#### RCC - Community SOC
- School of Civil and Environmental Engineering, Urban Design
- Department of Urban Planning and Real Estate
- School of Business Administration
- School of Economics
- School of Architecture
- School of Electrical and Electronics Engineering
- School of Mechanical Engineering
- School of Energy System Engineering

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Chung-Ang University
Entrepreneurship
University-Industry Cooperation

- MOU with global corporates
- Operate courses together – More than 50% of university-industry cooperation courses are given by the manager/supervisor from global companies.
- Internship and training opportunities
CAU Holdings Co., LTD

- CAU established university technology holdings company and has several subsidiary companies such as: CAU Healthcare, Tac-toon Enterprise, Smart-Vision System, etc.

- Those companies are trying to be a TOP5 leading University company in Korea with highly qualified human resource and the research strength from Chung-Ang University.
Entrepreneurship

TACTOON Enterprise - Animation

Galaxy Kids

The Folks with Spiky Hands

The Curious World of Linda

Teenie Scouts

BIG FIVE
Ari’s vision is to familiarize people with Korean traditional music by providing high-quality Korean traditional musical instruments with an affordable price.

For that, Ari also organizes local concerts for the residents and develop smartphone applications to get close to people.
CAU Healthcare

- CAU Moisture Returns Cream is born from Chung-Ang University’s advanced technology and students’ creative ideas.
- It is formulated with patented technology developed by Professor of Medicine at Chung-Ang University.
- CAU students coined the brand name and designed the packaging under CAU LINC Capstone Design Program supported by the Korean government.
Entrepreneurship

Student Start-up

Petfit Application

Petfit is an app that provides various services to help manage pets. The app features include:

- Attach: Managing the attachment of the device to the pet.
- Monitor: Monitoring the pet's activities and health.
- Take Action: Taking actions based on the pet's status.

The Petfit app allows users to track their pet's activity levels, rest periods, and other vital signs. The app is available on both iOS and Android platforms. Partnership by SK telecom.

- Goal: 22%
- Resting: 17 hours 15 minutes

Petfit helps pet owners keep their pets healthy and happy by providing comprehensive monitoring and management tools.
Thank You!