

Industry & Academy Collaboration in University of Ulsan

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Abstract – University of Ulsan initiated and executed the new version of Industry & Academy Collaboration Programs (IACP) since 2007. It emphasizes the cooperation of Education programs. Various programs such as IAC networking, retired-CEO professors, industry-adjunct professors, and long-term internship are launched. It is based on the close relations between the university and local industries. In this paper, the typical programs that have been proceeding successfully are presented and analyzed. It has been observed that the IAC Education program not only provides better educational outcome, but also produces better relations between the university and industries.

Index Terms – Industry & Academy Collaboration (IAC), Education, Long-Term Internship, retired-CEO professor

INTRODUCTION

A well-organized Industry and Academy relations offer various opportunities with great benefits for both parties. [1] University has the advantages of prosperous research activities with funds and practical educational environment. It can also enhance the competitiveness of students in various ways. The associated companies would obtain the cutting edge technologies and would also have a chance to recruit well-prepared and highly educated students. It can also be a way of contributing to the local society. Various advantages and benefits for university and outside organizations are reported in [1-2].

University of Ulsan (UOU) was established to foster the well-educated engineers for the industries in Ulsan Metropolitan City: the world famous industrial city. UOU developed and executed various industry & academy collaboration programs that cover research and education programs. UOU proclaimed a new version of “Industry & Academic cooperation” MOU in 2007 and activated close collaborative programs. It emphasizes the cooperation on Education programs. Hyundai Heavy Industry, Hyundai Motor Co., SK Co., SamChang and other 78 companies in Ulsan Metropolitan City joined the MOU to open a new era of practical Industry & Academic Cooperative Education Programs (IACEP). With these backgrounds, UOU sets up its new objective as “World’s Best in Industry and Academy Cooperative Education”.

One of the typical programs designed by New Industry & Academic cooperation committee is Long-Term Internship Program (LTIP). It was first launched in fall of 2008. The internship programs are designed for students to obtain both practical knowledge and experiences from the industry during the academic years. It also can lead students to have better opportunities to be employed with an advantage of practical field-adapted knowledge. A well-designed internship program promotes various opportunities for students not only to experiment their academic theories in practical field, but also to adapt themselves to industrial environment. Together with these advantages of internship for students, the company would obtain fresh ideas armed with new academic theories along with a chance to collect information about the students for future recruits. [3-8]

In this paper, important issues of IACEP, such as IAC networking, retired-CEO professors, industry-adjunct professors, and long-term internship, have been described in detail. It has been observed that the IAC Education program not only provides better educational outcome, but also produces better relations between the university and industries.

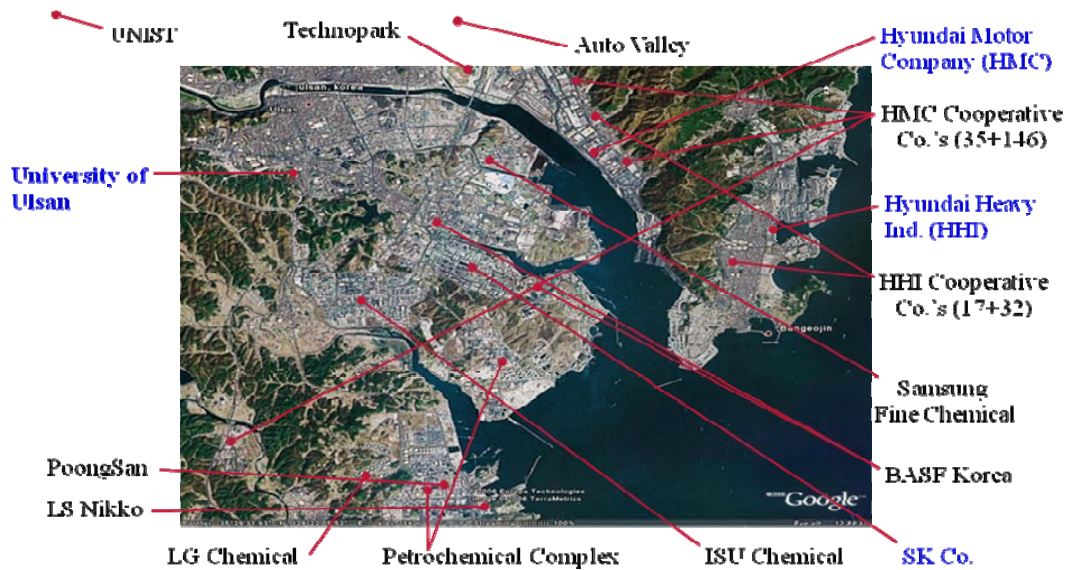


FIGURE 1
INDUSTRIAL ENVIRONMENT OF UMC

INDUSTRY & ACADEMY COLLABORATION COMMITTEE

University of Ulsan (UOU) is located in the world famous industrial city, Ulsan Metropolitan City (UMC), where Hyundai Motor Company, Hyundai Heavy Industry, SK Co. and more than 400 mid and small size industries operate. There is a huge petrochemical complex in suburban area of UMC. Figure 1 shows this industrial environment of UMC. According to industrial statistics, total amount of industrial production of UMC in year 2006 was 105.5 billion dollars. Hyundai Heavy Industry is keeping their record of world's most shipbuilding since 1983. They produced 11.7 billion dollars in 2006. Hyundai Motor Company established and maintained the world's largest auto manufacturing factory in Ulsan complex. In 2006, they produced 23.8 billion dollars. SK Co. is the one of the best petrochemical companies in Korea. They have the world largest oil refining capability in single site. The petrochemical complex in UMC such as SK Co., LG, SamSung Fine Chemical, and etc. produced 42.7 billion dollars in 2006. The total population of UMC has been reported as 1.1 million.

Until 2009, UOU was the only 4-year university in UMC. Ulsan National Institute of Science and Technology (UNIST) was newly founded in 2009. UOU was established by Hyundai group in 1970 and has made great effort to educate future engineers especially for industries around UMC. As a result, most of the companies around UMC employ UOU graduates. In the case of Hyundai Heavy Industries, about 1,000 UOU alumni engineers are currently on duty.

Recently, many industries have requested field adaptive education programs in the university. They also appealed that they have to spend too much on reeducation expenses for new employees who graduate from the university. On that account, in 2007, newly improved Industry & Academic collaboration committee was proposed and carried on. Four major companies in UMC: Hyundai Motor Company, Hyundai Heavy Industry, SK Co., SamChang Co., and a research institute: Ulsan Technopark joined the program and organized the core committee. Many programs including retired-CEO professor, Long Term Internship, and etc. are designed and proposed by the core committee. Also, 78 mid and small size industries were organizing the UOU family companies association. Two distinguished support programs: SOTOP (Ship & Ocean engineering for world TOP) and EXCEED (EXcellence in Chemical Engineering EDucation), were engaged by Hyundai Heavy Industry and KCC, respectively. Hyundai Heavy Industry has been supporting SOTOP program where they contributed 2 million dollars per year for the Dept. of Naval Architecture & Ocean Engineering. KCC has been supporting EXCEED program for the Dept. of Chemical & Bioengineering. They are funding 1.6 million dollars per year. Recently, Hyundai Heavy Industry announced to support more programs for both Mechanical Engineering and Electrical Engineering. Figure 2 shows the organization of IAC committee in UOU.

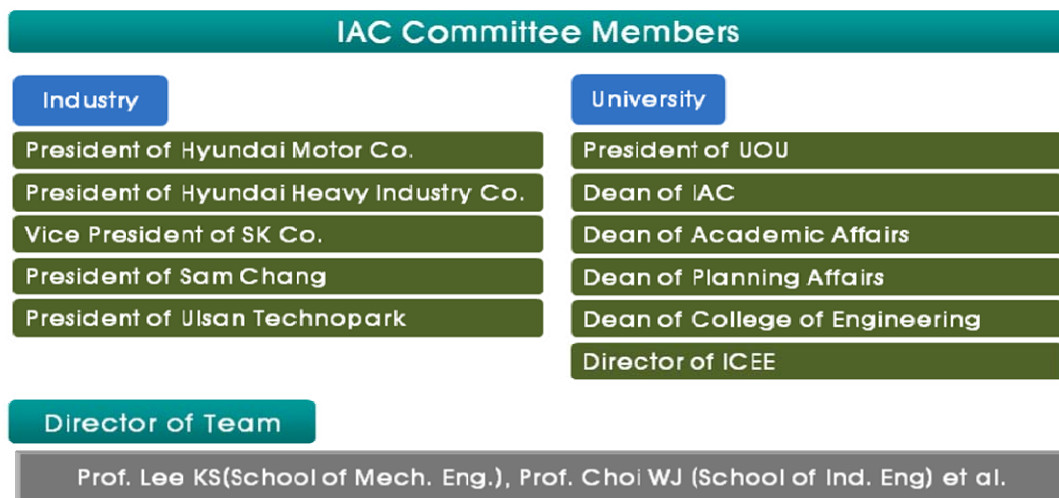


FIGURE 2
IAC COMMITTEE IN UOU

RETIRED-CEO PROFESSOR AND INDUSTRY-ADJUNCT PROFESSOR

Due to its industrial environment, UMC is filled with diverse professions. UOU could construct a cooperative network of these professionals and open the faculty positions for the outstanding professionals. In UOU, two faculty positions, retired-CEO professor and industry-adjunct professor, are available for the selected industry professionals. These new faculty positions are so attractive for both retired-CEO and current professionals, that it helps to construct and operate the close network of industry experts in UMC.

Industry professionals who have more than 20 years of experience in the industry before the retirement could be candidates for retired-CEO professor. Their major missions are organizing and managing the field studies and various internship programs. They also develop special curriculum for the field adaptive merged-technologies that are requested from the industries. Moreover many of them contact the students in class and refer them to the companies.

The industry-adjunct professor is formed with incumbent industry professionals who possess much experience in their current occupation. About 100 industry-adjunct professors are employed at UOU. These include researchers, factory managers, local officials, and numerous industry professionals who can enhance both the field-adaptive curriculum and the relationship for Industry & Academic collaboration programs.

Retired-CEO professor and industry-adjunct professor system not only enhance the Industry & Academic cooperation network but also provide strong driving forces for IAC education in UOU.

LONG-TERM INTERNSHIP PROGRAM (LTIP)

Long-Term Internship Program, LTIP, is the one of the typical programs designed by the new Industry & Academic cooperation committee and was first launched in the fall of 2008. It is designed as a 6-month program: Term 1 - January to June; and Term 2 - July to December. The participated students earn 14 credits. During the program, the industry would be involved in the evaluation of students. This provides an opportunity for the companies to closely observe the students. They can also obtain useful information about their future recruits through the internship program. UOU raises fund for LTIP and supplies payments for both participating students and mentors in industries. This increases students' involvement and lightens the burden of the industries'. After the program, the students receive official certificate of internship which is issued by both university and the industry. [3]

LTIP made up for the weak points of the previous internship programs. Specific strategies of LTIP that fortify the weak points of the ordinary internship programs are as follows. It is part of a regular

curriculum for one whole semester that covers 14 academic credits with accreditation. Preliminary education before the program is mandatory for the program participants. The entire program is designed and executed under the thorough management and evaluation: from the job specification to the competitive conference.

Preliminary education is the most important procedure that differentiates LTIP from other internship programs. It can determine the degree of gratification for both students and industry. It is scheduled one month prior to the LTIP and held for one to four weeks depending on the request of the host company. The preliminary education includes not only the technical subjects but also the essential curriculums such as safety issues in industrial field, reaction knacks over the calamities and accidents, industry and social etiquettes, and computer related skills.

After the LTIP, each participant must submit reports about the individual activities during internship to receive a certification of LTIP. The reports are reviewed by conference committee. The selected reports are presented at a conference where students, mentor, and professor participate as a team. Through this conference, students present their experience and appreciation of the program. The conference committee then determines the acknowledged exceptional presentation. This conference not only makes LTIP valuable, but also encourages all participants. Detailed information about LTIP in UOU is reported in [3, 7, 8]

Outcome evaluation of LTIP was conducted via two surveys: one for students and the other for industries. The first survey, Table 1, shows that the majority of students were satisfied with the program. The second question of the student survey indicates the effectiveness of preliminary education. Supplementary measures for practical preliminary education are intensively discussed and studied to maximize the mutual satisfactions. The second survey, Table 2, is the evaluation of LTIP from the industry side. Field-mentors and related personnel of participating companies responded to the survey. They also pointed out the insufficient preparation of technical abilities of students and suggested more practical preliminary education.

Scale: 5pts

Items	Fall 2008	Spring 2009	Fall 2009
① Were you satisfied with LTIP?	3.90	4.17	4.06
② Did you have sufficient knowledge about your tasks in LTIP?	3.15	3.60	3.44
③ Did you do your best for LTIP?	4.43	4.59	4.56
④ Was your mission in LTIP successful?	4.19	4.46	4.29
⑤ Did you well adapt to field organization?	4.30	4.57	4.36
⑥ Were you satisfied about the support and management on LTIP?	3.60	4.12	3.65
⑦ Did your ability improve through LTIP?	4.01	4.38	4.11
⑧ Is the duration adequate?	3.51	3.77	3.70
⑨ Do you want to have a permanent job at the company you took LTIP?	4.16	4.40	3.95

TABLE 1
STUDENTS SURVEY (SATISFACTION RATE)

(%)

Items	Excellent	Good	Average	Poor
① Student's working attitudes	58.2	37.2	2.3	2.3
② Student's technical abilities	23.3	58.1	18.6	0
③ Student's enthusiasm for given duties	51.2	41.9	7.0	0
④ Student's contribution during LTIP	44.2	44.2	11.6	0

TABLE 2
INDUSTRY SURVEY

CONCLUSION

Recently, more than half of senior students are going through a predicament because of the lack of job positions. Yet industries are complaining of difficulty in finding well-educated employees and the high expense that they have to spend on training a new employee. These problems clearly support the need for Industry & Academic co-education programs. In this paper, some of the IAC education programs were introduced and discussed. It has been investigated through interviews and surveys that both industries and university are satisfied with Industry & Academic co-education programs. Some of the programs, like retired-CEO professor program, significantly improved the relation between the university and industries. Under these close relations, many Industry & Academic co-education programs are developed and executed in both university and participating companies. Long Term Internship is another successful program in University of Ulsan. It is observed that the LTIP participants have better chance at finding a job after they graduate.

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