

What Kind of Job Characteristics are Important for Improving Students' Competencies in Co-op Education : KoreaTech IPP Case

Ji-young Lee¹, Sang-kon Lee^{2*}, Ji-yeon Lee³

¹IPP Center, Korea University of Education and Technology, Cheonan 31253, Korea

²School of Industrial Management, Korea University of Education and Technology, Cheonan 31253, Korea

³Department of Education, Inha University, Incheon 22212, Korea

[Abstract]

The purpose of this study was to examine the effect of on-site training environments and goals on learning outcomes of trainees. For this purpose, the study analyzed survey data collected from 752 students who participated in KOREATECH's Industry Professional Practice (IPP) on-site training program from 2017 to 2018. The following summarizes some important findings from the study results: First, on examining whether the effect of job characteristics on the academic competencies differs according to the characteristics of the group, it was found that the factors that affect the whole group were job content, coaching, and welfare benefits, but the effect of job scope was statistically significant. Second, on examining whether the effect of job characteristics on job competencies differs according to the characteristics of the group, it was found that the factors that affect the whole group were job content, coaching, and job scope, but the effect of welfare was statistically significant. Analyzing by training goals, it was found that the major influencers were job content in the Recruitment-intended group; and job content, coaching and job scope in the Training-intended group. Based on the results, the implications of the study and follow-up studies are suggested.

Key Words: IPP (Industry Professional Practice), On-site training, Learning outcomes, Comparative analysis

I. Introduction

In recent years, the employment market in Korea has changed its focus to recruitment centered on job competence. Students prefer onsite training to obtain job-specific skills. The university runs a variety of programs to. In line with such labor market trends, KOREATECH developed the Industry Professional Practice (IPP) Program

in 2013 to support students' on-site training. As of 2019, the IPP program has become KOREATECH's signature co-op program and its on-site training model has spread to 32 universities nationwide.

Long-term on-site training is becoming increasingly important as a practical academic subject that integrates work and learning. In Korea, similar to other subjects, where credits are given during the training period, long-term on-

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***Corresponding Author**

E-mail: sklee@koreatech.ac.kr

site training is treated like an essential or optional subject [1-3]. Long-term on-site training enables students to explore careers and occupations, and develop the skills and attitudes necessary for social life [4]. In particular, through on-site training, students can apply the knowledge learned at school in the industrial field and learn practical skills, which will help them acquire the necessary knowledge and skills for employment [5].

In order to increase the effectiveness of long-term on-site training, it is necessary to explore the conditions of on-site training. Job characteristics are important prerequisites to promote change and growth so that learning takes place during onsite training [6,7]. According to a previous study, variables that affect the usefulness of on-site training were institutional readiness, student sincerity, and student readiness. Practice conditions at the institution are reported to be the most important factors. Therefore, the purpose of this study was to investigate the effect of job characteristics (job scope, job content, coaching, and welfare benefits) as a predictor for improved learning outcome, and to examine whether there is any difference according to group characteristics. The research problems for this study are as follows:

First, is there any difference in the effect of the academic competencies on the group characteristics?

Second, is there any difference in the effect of the job competencies on the group characteristics?

II. KOREATECH's Co-op Program: IPP

KOREATECH's long-term on-site training program is a Korean-type Co-op model styled after the cooperative education model in North America and designed to fit the Korean interdisciplinary system. It is a program that supplements short-term on-site training (4 weeks or 8 weeks), which is limited to building job experience. Long-term on-site training has been evaluated positively in terms of improving real-world job capability by helping students put academic competencies into practice for a longer period of 4 months or 6 months [1,8].

KOREATECH's long-term on-site training has the

following characteristics: First, it is a semester-based quarter system that can conduct on-site training for four years. The extension of the school year due to IPP in Korea was not expected by students. Therefore, the existing academic year was changed into the second semester (spring semester, fall semester), and the third term of the 8th semester of the 3rd-4th grade was operated as the IPP semester. The absence of classes due to IPP enabled students to obtain the necessary credits during the summer and winter semesters of years 3 and 4. Second, academic credits are given proportionately. Unlike the co-op model, credits are given in proportion to the period of participation in IPP in Korea. A total of 15 credits is awarded in the IPP for 10 months. This is equivalent to 1.5 credits per month and 10% of graduation credit. In addition, since only 9 credits are allowed in the course of 15 credits, it minimizes the concern about the insufficiency of education due to IPP. Third, the IPP program is executed in phases of unequal terms. The first phase of the IPP is spread over 6 months out of a total of 10 months. This is because in their first experience of society, students require more time to adapt to the business. The second phase of the IPP is spread over the remaining 4 months. Since the first IPP phase already recognizes the environment of the company, it is possible to carry out IPP directly in the new company. Fourth, IPP is project/task-centered. In the process of participating in the IPP, students search for jobs or projects through the job descriptions provided by the company in advance. You can apply to a company that meets your abilities and aptitude, and participate in IPP through interviews. The evaluation of IPP participation is based on the job or project performance conducted by the company. The evaluation subject is assigned by company mentor (30%), IPP professors (30%), and major professors (40%).

With this differentiated operation of IPP, students have the advantage of being clear about their career choices through work experience, developing their majors and employment capabilities, and receiving economic consideration. Meanwhile, companies can secure a stable labor force, participate in IPP students' projects, and receive labor support. It is also possible for companies to perform a preliminary verification of talented candidates who can actually be hired subsequently [9].

III. Literature Review : Job Characteristics and Learning Outcome

According to the theory of job characteristics, job characteristics are the main predisposing factors affecting interest in work, job satisfaction, and organizational performance [9]. In this theoretical context, students' job scope, job content, coaching, and welfare benefits can be important in helping them immerse themselves in onsite training and enhance their learning outcome.

Do & Cho (2014) examined the relationship between social work practice characteristics (institutional environment, job content appropriateness, and supervision satisfaction) and the improvement of students' professionalism. The study found that only the supervision satisfaction factor significantly influenced professional improvement (direct practice technique, resource utilization ability improvement). These results show that the qualifications and expertise of the supervisor, who appropriately instructs trainees during the training period, are important [10]. Lee & You (2019) showed that onsite training affects job performance. The participation group showed significantly higher job capacity and career insight than the non-participation group [11]. Kim & Lee (2018) found a positive effect on the improvement of competencies (youth understanding, citizenship, artistic imagination, curriculum development, etc.) [12]. Lee & Kim (2017) showed that teacher competencies (change in perceived performance, change in perceived importance of competencies) of pre-service middle school teachers improved significantly through school practice. School practice has played a positive role in the development of competencies of pre-service teachers [13]. Derous & Ryan (2008) found that onsite training positively influenced learning outcomes and academic performance in relation to out-of-school educational activities and academic performance [4].

On the other hand, the educational outcomes of on-site training may differ according to group characteristics.

Lee & Lee (2018) reported that the leading factors (student characteristics, company characteristics, and school characteristics) affecting IPP satisfaction vary according to group characteristics (training goals, major type, and company type) [14]. Oh, Gang & Park (2009) showed

that students who practiced in related fields showed a positive response to self-development and job experience than students who did not [7]. Cha (2015) reported that age, distance, etc. did not have a significant effect on the effects of onsite training satisfaction on gender, major characteristics, and company characteristics [15].

Based on these results, this study aims to compare the influence of the job characteristics (job scope, job content, coaching, and welfare benefits) on learning outcome (academic competencies, job competencies) by group characteristics.

IV. Research Model

The purpose of this study was to analyze the factors affecting the learning outcome of KOREATECH's IPP participants. The practical characteristics (job scope, job content, coaching, and welfare benefits) were set as the independent variables and the academic competencies and the job competencies were set as dependent variables. The effect of each factor on learning outcome was compared by group characteristics (major type, company type, training goals). The relevant research model is shown in Fig. 1.

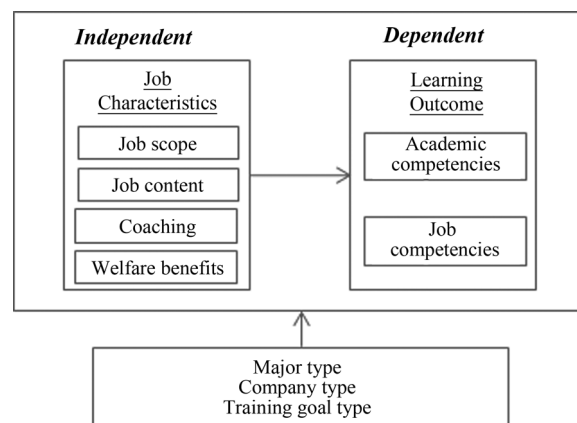


Fig. 1. Research model.

A. Survey overview

This study was conducted on 752 students who participated in KOREATECH's 2017 and 2018 IPP. Data collection was done through an online questionnaire. The

Table 1. Characteristics of respondents

Items	# of respondents	Percentage (%)	
Total	752	100.0	
Major Types	Mechanical engineering	219	29.1
	Computer & Information science	166	22.1
	Business major	170	22.6
	Other areas	197	26.2
Gender Types	Female	251	33.4
	Male	501	66.6
Company Types	Large	328	43.6
	Small/medium	182	24.2
	Public	242	32.2
Training goals	Recruiting	127	16.9
	General	625	83.1
Year of participation	2017	363	48.3
	2018	359	47.7

characteristics of respondents are shown in Table 1.

B. Measures

Job characteristics and learning outcome were measured using tools developed at K University and validated by Om & Oh [16]. practical characteristics consists of 14 questions, academic competencies are 6 questions, and job competencies are 8 questions. All measures used Likert-type scales with responses from 1 (strongly disagree) to 5 (strongly agree). The measures has been shown to have acceptable internal consistency reliability (all Cronbach’s alpha coefficients .718~.887).

Table 2. Descriptive statistics and Correlation Matrix

Factor	1	2	3	4	5	6
Job scope	1					
Job content	.658**	1				
Coaching	.604**	.548**	1			
Benefits	.497**	.461**	.509**	1		
Academic competencies	.371**	.424**	.379**	.317**	1	
Job competencies	.484**	.520**	.474**	.363**	.565**	1
M	4.05	4.17	4.39	4.03	3.68	4.10
SD	.81	.81	.74	.90	.70	.61

* $p < .05$, ** $p < .01$, *** $p < .001$

C. Analysis method

Statistical processing of data was used for analysis using SPSS 18.0. First, average, and standard deviation were calculated to identify the demographic characteristics of the subjects and to correlate the variables. Second, the effects of independent variables on dependent variables were verified by multiple regression analysis.

V. Data Analysis

A. Descriptive statistics analysis

Hypotheses were tested using a descriptive statistics and correlation analysis. Table 2 present the means, standard deviations, skewness, kurtosis and correlation measures. Descriptive statistical analysis showed that the average 3.68~4.39, standard deviation .61~.90, skewness .180~1.420, kurtosis .082~1.958. As a result of analyzing the correlation between variables, there was a statistically significant quantitative relationship between $r = .317 \sim .658 (p < 0.1)$.

B. Influence of Job Characteristics on Learning Outcome (Academic competencies)

As shown in Table 3, the effect of job characteristics on academic competencies was significant in terms of

Table 3. Influence of job characteristics on academic competencies

Factor	Unstandardized coefficients		Standardized coefficients	t-value	Tolerance	VIF
	B	S.E				
(constant)	1.625	.147		11.025***		
Job scope	.056	.040	.065	1.383	.467	2.142
Job content	.219	.038	.256	5.724***	.521	1.919
Coaching	.146	.041	.155	3.566***	.554	1.807
Benefits	.068	.031	.087	2.208*	.671	1.490

R=.468, R²=.219, F=52.495, p=.000, Durbin-Watson=1.818
 *p<.05, **p<.01, ***p<.001

Table 4. The effect of factors on academic competencies by trainees' academic major

Factor	Students with mechanical engineering major				Students with computer and information science major			
	Un. S.C		S.C	t-value	Un. S.C		S.C	t-value
	B	S.E			B	S.E		
(constant)	1.565	.302		5.179***	1.948	.271		7.191***
Job scope	.076	.078	.085	.980	-.018	.077	-.025	-.238
Job content	.235	.078	.264	3.006**	.242	.070	.314	3.477**
Coaching	.179	.085	.173	2.117*	.130	.071	.174	1.837
Benefits	.016	.061	.019	.263	.026	.060	.038	.426
model	F=14.836, R ² =.217				F=9.088, R ² =.184			
Factor	Students with business major				Students majoring in other areas			
	Un. S.C		S.C	t-value	Un. S.C		S.C	t-value
	B	S.E			B	S.E		
(constant)	1.360	.342		3.973***	1.648	.284		5.811***
Job scope	.087	.092	.091	.947	.081	.081	.096	.998
Job content	.234	.084	.261	2.798**	.164	.077	.198	2.124*
Coaching	.106	.088	.097	1.204	.163	.086	.175	1.888
Benefits	.164	.061	.214	2.684**	.065	.066	.081	.986
model	F=17.022, R ² =.292				F=13.334, R ² =.217			

*p<.05, **p<.01, ***p<.001

Table 5. The effect of factors on academic competencies according to company types

Factor	Large				Small and Medium-sized				Public			
	Un. S.C		S.C	t-value	Un.S.C		S.C	t-value	Un. S.C		S.C	t-value
	B	S.E			B	S.E			B	S.E		
(constant)	1.478	.211		6.986***	1.685	.270		6.248***	1.861	.310		5.997***
Job scope	.063	.056	.080	1.125	-.030	.078	-.036	-.380	.079	.086	.078	.910
Job content	.232	.052	.288	4.440***	.220	.071	.270	3.104**	.216	.085	.226	2.544*
Coaching	.130	.057	.142	2.271*	.149	.072	.179	2.084*	.166	.092	.154	1.818
Benefits	.096	.043	.127	2.251*	.135	.058	.198	2.338*	-.025	.066	-.028	-.373
model	F=29.667, R ² =.269				F=15.477, R ² =.259				F=10.602, R ² =.152			

*p<.05, **p<.01, ***p<.001

Table 6. The effect of factors on academic competencies according to training goals

Factor	Recruitment-intended				Training-intended			
	Un.S.C		S.C	t-value	Un.S.C		S.C	t-value
	B	S.E			B	S.E		
(constant)	1.532	.309		4.961***	1.708	.171		10.006***
Job scope	-.142	.095	-.167	-1.494	.096	.045	.112	2.150*
Job content	.234	.087	.265	2.687**	.216	.043	.254	5.044***
Coaching	.191	.080	.235	2.390*	.127	.048	.128	2.652**
Benefits	.239	.071	.337	3.379**	.030	.034	.037	.870
model	F=15.626, R ² =.339				F=39.591, R ² =.203			

*p<.05, **p<.01, ***p<.001

job content ($\beta=.256, t=5.724, p<.001$), coaching ($\beta=.155, t=3.566, p<.001$), and welfare benefits ($\beta=.087, t=2.208, p<.05$).

Table 4 shows the effect of job characteristics on academic competencies according to major type. There was a significant positive effect in each major type in the order of different aspects – job content ($\beta=.264, t=3.006, p<.01$) and coaching ($\beta=.173, t=2.117, p<.05$) for students with mechanical engineering major, job content ($\beta=.314, t=3.477, p<.01$) for students with computer and information science major, job content ($\beta=.261, t=2.798, p<.01$) and welfare benefits ($\beta=.214, t=2.684, p<.01$) for students with business major, and job content ($\beta=.198, t=2.124, p<.05$) for students majoring in other areas.

Table 5 shows the effect of job characteristics on academic competencies according to company type. There were significant positive effects in each company type in the order of following aspects, respectively – job content ($\beta=.288, t=4.440, p<.001$), coaching ($\beta=.142, t=2.271, p<.05$) and welfare benefits ($\beta=.127, t=2.251, p<.05$) for

large companies, job contents ($\beta=.270, t=3.104, p<.01$), welfare benefits ($\beta=.198, t=2.338, p<.05$), and coaching ($\beta=.179, t=2.084, p<.05$) for small and medium-sized companies, and job content ($\beta=.226, t=2.544, p<.05$) for public companies.

Table 6 shows the effect of job characteristics on academic competencies according to training goals. In each training goals, there was a significant positive effect in the order of the following aspects, respectively – welfare benefits ($\beta=.337, t=3.379, p<.01$), job content ($\beta=.265, t=2.687, p<.01$), and coaching ($\beta=.235, t=2.390, p<.05$) for the recruitment-intended group, and job content ($\beta=.254, t=5.044, p<.001$), coaching ($\beta=.128, t=2.652, p<.01$), and job scope ($\beta=.112, t=2.150, p<.05$) for the training-intended group.

C. Influence of Job Characteristics on Learning Outcome (Job competencies)

As shown in Table 7, the effect of job characteristics on

Table 7. Influence of job characteristics on job competencies

Factor	Unstandardized coefficients		Standardized coefficients	t-value	Tolerance	VIF
	B	S.E				
(constant)	1.884	.119		15.803***		
Job scope	.109	.033	.146	3.337**	.467	2.142
Job content	.217	.031	.289	6.995***	.521	1.919
Coaching	.164	.033	.199	4.955***	.554	1.807
Benefits	.038	.025	.057	1.552	.671	1.490

R= .579, R²= .335, F=94.241, p=.000, Durbin-Watson=1.920

*p<.05, **p<.01, ***p<.001

Table 8. The effect of factors on job competencies by trainees' academic major

Factor	Students with mechanical engineering major				Students with computer and information science major			
	Un.S.C		S.C	t-value	Un.S.C		S.C	t-value
	B	S.E			B	S.E		
(constant)	1.945	.227		8.566***	2.321	.239		9.690***
Job scope	.169	.058	.224	2.887**	.123	.068	.183	1.801
Job content	.291	.059	.389	4.952***	.130	.062	.181	2.109*
Coaching	.058	.064	.066	.906	.149	.062	.215	2.385*
Benefits	.005	.046	.007	.104	.024	.053	.038	.447
model	F=32.136, R ² =.375				F=14.317, R ² =.262			
Factor	Students with business major				Students majoring in other areas			
	Un.S.C		S.C	t-value	Un.S.C		S.C	t-value
	B	S.E			B	S.E		
(constant)	1.501	.263		5.704***	1.708	.237		7.197***
Job scope	.048	.071	.058	.673	.065	.068	.085	.963
Job content	.278	.064	.364	4.335***	.168	.064	.223	2.612*
Coaching	.231	.068	.249	3.413**	.246	.072	.289	3.410**
Benefits	.080	.047	.123	1.711	.066	.055	.090	1.203
model	F=30.598, R ² =.426				F=25.286, R ² =.345			

*p<.05, **p<.01, ***p<.001

job competencies was significant in terms of job content ($\beta=.289, t=6.995, p<.001$), coaching ($\beta=.199, t=4.955, p<.001$), and job scope ($\beta=.146, t=3.337, p<.001$).

Table 8 shows the effect of job characteristics on job competencies according to major type. It was discovered that there was a significant positive effect in each major type in the order of different aspects - job content ($\beta=.389, t=4.952, p<.001$), and job scope ($\beta=.224, t=2.887, p<.01$) for students with mechanical engineering major, coaching ($\beta=.215, t=2.385, p<.05$) and job content ($\beta=.181, t=2.109,$

$p<.05$) for students with computer and information science major, job content ($\beta=.364, t=4.335, p<.001$) and welfare benefits ($\beta=.249, t=3.413, p<.01$) for students with business major, and coaching ($\beta=.289, t=3.410, p<.01$) and job content ($\beta=.223, t=2.612, p<.05$) for students majoring in other areas.

Table 9 shows the effect of job characteristics on job competencies according to company type. There were significant positive effects in each company type in the order of following aspects, respectively job content ($\beta=.337,$

Table 9. The effect of factors on job competencies according to company types

Factor	Large				Small and Medium-sized				Public			
	Un.S.C		S.C	t-value	Un.S.C		S.C	t-value	Un.S.C		S.C	t-value
	B	S.E			B	S.E			B	S.E		
(constant)	1.963	.169		11.585***	1.609	.238		6.764***	2.025	.240		8.422***
Job scope	.133	.045	.196	2.976**	.124	.069	.154	1.797	.051	.067	.061	.756
Job content	.235	.042	.337	5.601***	.229	.063	.289	3.656***	.171	.066	.216	2.598**
Coaching	.092	.046	.116	2.003*	.206	.063	.255	3.264**	.255	.071	.285	3.599***
Benefits	.052	.034	.080	1.528	.034	.051	.052	.673	.014	.051	.019	.280
model	F=47.940, R ² =.373				F=28.386, R ² =.391				F=20.874, R ² =.261			

*p<.05, **p<.01, ***p<.001

Table 10. The effect of factors on job competencies according to training goals

Factor	Recruitment-intended				Training-intended			
	Un.S.C		S.C	t-value	Un.S.C		S.C	t-value
	B	S.E			B	S.E		
(constant)	2.089	.268		7.796***	1.799	.136		13.181***
Job scope	.106	.082	.149	1.299	.108	.036	.142	3.003**
Job content	.214	.074	.287	2.872**	.210	.034	.280	6.115***
Coaching	.111	.070	.160	1.588	.189	.038	.216	4.939***
Benefits	.063	.062	.104	1.018	.037	.027	.053	1.368
model	F=15.020, R ² = .339				F=79.750, R ² = .338			

*p<.05, **p<.01, ***p<.001

t=5.601, p<.001), job scope ($\beta=.196$, $t=2.976$, $p<.01$), and coaching ($\beta=.116$, $t=2.003$, $p<.05$) for large companies, job content ($\beta=.289$, $t=3.656$, $p<.001$) and coaching ($\beta=.255$, $t=3.264$, $p<.01$) for small and medium-sized companies, and coaching ($\beta=.285$, $t=3.599$, $p<.001$) and job content ($\beta=.216$, $t=2.598$, $p<.01$) for public companies.

Table 10 shows the effect of job characteristics on job competencies according to training goals. In each training goals, there was a significant positive effect in the order of the following aspects, respectively - job content ($\beta=.287$, $t=2.872$, $p<.01$) for the recruitment-intended group, and job content ($\beta=.280$, $t=6.115$, $p<.001$), coaching ($\beta=.216$, $t=4.939$, $p<.001$), and job scope ($\beta=.142$, $t=3.003$, $p<.01$) for the training-intended group.

D. Influence of Job Characteristics on Learning Outcome (Overall Result)

Table 11 summarizes the significant predictors of

influence of group type classification. Variables that have a significant influence on academic competencies and job competencies in the whole group were job content and coaching. The variable that was significant only in academic competencies was welfare benefits, and the variable that was significant only in job competencies was the job scope.

VI. Discussion and Conclusion

The purpose of this study was to investigate the effect of job characteristics on learning outcome (academic competencies, job competencies) according to group characteristics. The results of the study are as follows: First, on examining whether the effect of job characteristics on the academic competencies differs according to the characteristics of the group, it was found that the factors that affect the whole group were job content, coaching, and welfare benefits, but the effect of job scope was statistically

Table 11. Overall result for the effect of factors

Factor	Total	Major				Company			Training goals	
		Mechanical	IT	Business	Other	Large	S/M	Public	Recruiting	Training
Academic	Job scope									0
	Job content	0	0	0	0	0	0	0	0	0
	Coaching	0	0			0	0		0	0
	Benefits	0		0		0	0		0	
Job	Job scope	0	0			0				0
	Job content	0	0	0	0	0	0	0	0	0
	Coaching	0		0	0	0	0	0	0	0
	Benefits									

significant.

The findings are as follows: 1) In the mechanical engineering major, job content and coaching had a significant positive effect in that order. In the students with computer and information science major, job content had a significant positive effect. For students with business major, job content and welfare benefits had a significant positive effect in that order. For students majoring in other areas, job content had a significant positive effect. Job content was a common variable in all groups, while coaching was another important variable in the mechanical-related group. On account of the nature of the majors, there is a possibility that mentoring or coaching plays an important role in the mechanical-related group, which often requires direct practice on the field (facility, production system, control system, process management, etc.).

2) By company type, in the large companies group, job content, coaching, and welfare benefits had a significant positive effect in the order. In the small and medium-sized companies group, job content and welfare benefits had a significant positive effect in that order. In the public companies group, job content had a significant positive effect. Job content was a common variable in all types, while coaching and welfare benefits were also found to be significant variables in the Large company group and small-and medium-sized companies group, though not in the public companies group. In the recent unstable Korean labor market, it is possible to deduce that variables other than job content are not important variables, because it is the employment agency that can secure employment stability.

3) By training goals, in the recruitment-intended group, welfare benefits, job content, and coaching had a significant positive effect in that order. In the training-intended group, job content, coaching, and job scope had a significant positive effect in that order. Job content and coaching were important variables for both training goals, while welfare benefits were also an important factor in the recruitment-intended group. It seems that welfare benefits are considered more important from the position of the recruitment-intended group than from the position of the practitioner.

Second, on examining whether the effect of job characteristics on job competencies differs according to the characteristics of the group, it was found that the factors that

affect the whole group were job content, coaching, and job scope, but the effect of welfare was statistically significant.

The findings are as follows: 1) In the mechanical engineering major, job content and job scope had a significant positive effect in that order. In the students with computer and information science major, coaching and job content had a significant positive effect in that order. For students with business major, job content and coaching had a significant positive effect in that order. For students majoring in other areas, coaching and job content had a significant positive effect in that order. Job content was a common variable in all groups, and coaching was also an important variable in most groups. It seems that the job competencies related to communication and teamwork can be strengthened through the support of and relationship with the mentor during the on-site training period.

2) By company type, in the large companies group, job content and job scope had a significant positive effect in that order. In the small and medium-sized companies group, job content and coaching had a significant positive effect in that order. In the public companies group, coaching and job content had a significant positive effect in that order. Job content and coaching were found to be important variables for all types. These results also underscore the important role of mentor support in job competencies.

3) By training goals, in the recruitment-intended group, job content had a significant positive effect. In the training-intended group, job content, coaching, and job scope had a significant positive effect. Job content was found to be an important variable in both types, while the other variables were not considered to be important in the recruitment-intended group.

Based on the above results, conclusions and implications are presented as follows: First, in order to increase students' competencies in majors, clear job regulations and guidance are important. Job content and coaching were found to be important variables for increasing both major and job competencies. It can be seen that practically what type of duties are performed and how they are guided can help improve competencies. In particular, coaching seems to have more influence on job competencies, and is important for attaining the necessary attitude and skills for social life. Careful guidance is important. Systematic management and

monitoring will be necessary to clarify the content of the practical work in the company and to guide them according to the guidelines.

Second, support services need to be tailored based on the characteristics of trainees. As learning outcomes of on-site training, the factors that influence the academic competencies and job competencies are different according to the characteristics of trainees, which means that the types of participants and characteristics of the on-site training company can be important. It is necessary to consider the characteristics of the students and the characteristics of the company in training consultation and management.

Finally, the limitations of the study and the following studies are suggested. First, this study has a limitation that data were obtained through self-report questionnaire of respondents. Second, this study may have limitations because only some factor at the companies level have been verified. Considering various other variables, we can provide more meaningful implications.

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Ji-Young Lee_Regular Member

2007 : M.A. in Education, Yonsei University, Korea
2018 : Ph.D. in HRD, Chung-ang University, Korea
Present : Research Professor, IPP Center, Koreatech, Korea
Field : Co-op, HRD, Career Development



Sang-Kon Lee_Regular Member

1992 : B.A. in Business and Administration, Yonsei University, Korea
1994 : M.S. in Management Science, KAIST, Korea
2001 : Ph.D. in Management Engineering, KAIST, Korea
Present : Professor, School of Industrial Management, Koretech, Korea
Field : Co-op, Technology Strategy & Management



Ji-Yeon Lee_Regular Member

1996 : B.A. in Education, Seoul National University, Korea
1998: M.A. in Education, Seoul National University, Korea
2002 : Ph.D. in Educational Technology, Indiana University, U.S
Present : Professor, Department of Education, Inha University, Korea
Field : Future education & School innovation, Instructional design