

A Study on the Management Plan for Promoting Key Competence of Dental Hygiene Students

Sook-Jeong Lee^{1*} and Yong-Ju Kang²

¹Department of Dental Hygiene, Silla University, Busan, Korea; maximize126@hanmail.net

²Department of Dental Hygiene, Jinju Health College, Jinju, Korea; 0408kang@hanmail.net

Abstract

Purpose: This study has a purpose of proposing the management methods and promotional directions of key competence for students of dental hygienic major and designing of improvement program for key competence by grade and level and to strengthen the employment ability education by considering the characteristics of students and excellent organizations in order to improve the employment competitiveness of graduating students and to contribute to the employment of excellent organizations and improvement of adaptability after the employment. **Method:** A survey was conducted on the status of key competence of J University students targeting 187 HR personnel and training personnel of dental medical institutions and mean, standard deviation, correlation analysis and one-way ANOVA was conducted. **Result:** In key competence, it was generally shown to have average level with interpersonal skills being the highest and the problem solving skills to be the lowest. In the sub-region of problem solving skills, specific problem solving skills were relatively shown to be insufficient but technology information application abilities were shown to be higher than average. In the sub-region of interpersonal skills, having consideration for others, forming relationships and cooperation was excellent but ability to lead others in order to achieve the task or proposing opinions or directions to others were relatively low. In the sub-region of communication skills, having appropriate presentation ability was shown to be the lowest. In the work ethics it has generally shown to have proper attitude and occupational view needed for professional life and in self-development, it was shown to have relatively lower career development ability or self-esteem compared to self management ability. The sub-region of key competence has shown statistically significant positive correlation. Especially, as the communication skills were higher, self development skills were shown higher as well.

Keywords: Communication Skills, Interpersonal Skills, Key Competence, Problem Solving Skills, Self-Development, Technology Information Application, Work Ethics

1. Introduction

Since founded in 1979 with the objective of fostering professionals, colleges has played a pivotal role of meeting the learning needs of each individual and nurturing the backbone workers required in the nation and companies. Now and for ever, they have to cultivate multi-talented human assets of employability who can have career throughout their life in the era of rapidly changing vocational environment¹. In order to produce talented people who can well adapt to professional life in a rapidly changing social environment, one must have a variety of skills². The key competence one should have in order

to achieve this, in other words, communication skills, problem solving skills, team work, leadership, etc, is being emphasized as essential condition to be possessed by the workers of modern society³. In addition, the key competence is the core element of human capital which becomes an essential basis in forming the vocational education and lifelong study^{4,5}. Especially in the case of our country, due to rapid changes of recent knowledge, technology, information, etc, and the advancement of global economy, a common ability which is general for performing any type of work in any type of working environment is becoming a key issue¹. In order to enhance such key competence, as its predisposing factors, a diagnostic evaluation on the

*Author for correspondence

awareness of key competence of graduating students by the recruiters of hiring companies is required⁷, but for analyzing the requirements on which key competence of what areas are needed, rather than the industrial field, the reality is that only the requirements of students and professors at the universities are being analyzed⁸. Based on humanitarian values, allow dental hygienic activities for promoting oral health with responsibility and sense of ethics, and dental hygienists having the purpose of fostering dental hygienists of medical professions that can sustain the self development for the improvement of professional skills, in order to respond to changes in a rapidly changing medical industry and to manage the professional lives, a key competence such as problem solving skills in addition to the knowledge of majoring field, information literacy skills, interpersonal skills, communication skills, professional ethics, self development skills, etc, should be enhanced. Therefore, by investigating and analyzing the status of key competence of J University students targeting the HR personnel and training personnel of dental medical institutions, the study aims to propose the enhancement directions and management plans of key competence of enrolled students.

2. Research Methods

2.1 The Research's Subject and Measurement Tool

This study has conducted a survey targeting 187 HR personnel and training personnel working at hospitals and clinics around the nation. The measurement tool was configured with a total of 35 questions in 6 areas of key competence and all questions have used Likert 5 point scale and considered that higher the scores, higher the level of key competence. The reliability of this study's measurement tool have shown to be reliable with more than $\alpha = 0.80$ Cronbach [Table 1].

Table 1. Reliability of the measurement toll

Variables	Number	Alpha
Problem solving skills	6	0.91
Technology information application	5	0.86
Interpersonal skills	7	0.94
Communication skills	7	0.95
Work ethics	4	0.92
Self-development	6	0.93

2.2 Data Analysis

SPSS WIN 18.0 program was used to collect the data of this study. The mean and standard deviation was used for the status of key competence of J University's graduating students. The correlation analysis was used for the relationship between sub-areas of key competence. One-way ANOVA was conducted to find the difference of awareness on the key competence according to the clinical experience of dental hygienist.

3. Method of Data Analysis

The general characteristics of the study subjects are as follows: Of a total of 187 subjects, 99.5% of them were women. In terms of the type of organizations they worked for, hospitals accounted for 79.7%, which was higher than the share of clinics at 20.3%. In terms of job function, dental hygienists accounted for 97.9% and dentists 2.1%. In regards to the length of clinical experience, 42.2% of them had 5 to 10 years of experience, followed by those with less than five years representing 40.1%, and those with ten years or more accounting for 17.6% [Table 2].

After examining the level of key competence of J University students in 6 areas of key competence, it was shown that generally students had more than average levels. Especially, among the key competence, interpersonal skills were the highest with 3.720 followed by work ethics with 3.661, self-development skills with 3.517 and the problem solving skills with 3.267 being the lowest [Table 3].

Table 2. General Characteristics

Variables		Frequency	Person(%)
Gender	male	1	0.5
	female	186	99.5
Type of organization	hospitals	149	79.7
	clinics	38	20.3
Type of occupation	dentist	4	2.1
	dental hygiene	183	97.9
Career	5 years or less	75	40.1
	5–10 years or less	79	42.2
	10 years or more	33	17.6
Total		187	100.0

Of the areas under problem solving capability, “I have a positive attitude that I can solve any problems” was the highest with 3.561 on average while “I suggest a novel and creative idea to solve a problem” was the lowest with 2.984 on average. It indicates that the graduates have relatively lower capability of solving specific problems than their thinking skills. For the questions under technology (information) utilization ability, it turned out that the graduates are above average as a whole. In the sub-factors of interpersonal competency, it turned out that the

graduates are considerate of others and have a good and cooperative ties with others while lacking in leadership, specifically, the ability to lead others to accomplish a task and to express their own opinions and show a direction to others, which was measured to be 3.214. The graduates showed slightly above-average ability in the sub-domains of communication skill. However, since the average of the response to the question “I have a proper level of presentation” turned out to be 3.239 on average, which is the lowest, it is known that the graduates have weakness with presentation skill. For job ethics, the respondents have overall satisfactory level regarding labor and community ethics (diligence, sincerity and moral), but they showed low sense of vocation with 3.380. Last, in the sub-factors of self-development ability, the graduates responded high to the question “I have an attitude to learn new knowledge and skill required for work”, which came out to be 3.701 while their answer to “I take advantage of the knowledge and skill I have creatively for work” and “I have clear vision for my career” turned out relatively low, which is 3.321, respectively [Table 4].

Table 3. Status of key competence of the students

Variables	Mean	Standard deviation
Problem Solving Skills	3.267	0.793
Technology Information Application	3.380	0.765
Interpersonal Skills	3.720	0.778
Communication Skills	3.440	0.799
Work Ethics	3.661	0.784
Self-development	3.517	0.772

Table 4. Analysis of questions on the sub-categories of basic employment skills

Variables	Sub-categories	Mean	Standard deviation
A	Looks for causes when problems occur	3.460	0.946
	Provides new and creative ideas to solve problems	2.984	0.907
	Sets possible goals or directions for problem-solving	3.150	0.903
	Takes a positive attitude and believes any problem can be solved.	3.561	0.951
	Constantly monitors (reviews) one's own behavior for problem-solving	3.219	1.047
	Sets priorities when there are several stages required in problem-solving.	3.230	0.959
B	Has computer skills required for carrying out work (ability to use software and internet).	3.139	0.951
	Selects and uses appropriate materials or equipment	3.524	0.876
	Proactively collects information related to work	3.390	0.963
	Has a habit of making notes when carrying out work.	3.455	1.048
	Makes the most of collected information.	3.390	0.900
C	Gets along well with people of various backgrounds at the hospital or clinic	3.829	0.923
	Is considerate enough to ensure other people are not bothered.	3.845	0.857
	If necessary, reaches out to people for help or offers others help.	3.941	0.831
	Prefers working with others to working alone and forms good relationships	3.802	0.932
	Collaborates with team members to get the task done	3.824	0.865
	Leads others to carry out work and presents opinions or directions to others	3.214	0.988
	Shows appropriate reaction to other's opinion or behavior during team work	3.588	0.925

Continued

Table 4. (Continued)

Variables	Sub-categories	Mean	Standard deviation
D	Speaks in a clear manner to ensure the other person's understanding	3.449	0.887
	Writes reports clearly to deliver what one intends to say	3.348	0.923
	Has appropriate presentation skills (voice tone, intonation, appropriate vocabulary, eye contact)	3.230	0.913
	Listens to the opinion of supervisors or colleagues and understands them clearly	3.583	0.902
	Is able to clearly understand official documents or reports	3.364	0.872
	Is able to understand non-linguistic expressions such as gestures of supervisors and colleagues	3.519	0.947
	IS able to carry out conversation appropriate for the audience.	3.594	0.895
E	Has the work attitude and qualities necessary for the work.	3.770	0.852
	Has the ethics required in the job.	3.850	0.867
	Takes pride in the work	3.647	0.876
	Has a sense of calling towards one's work	3.380	0.910
F	Understands clearly the strengths and weaknesses of one's work capability	3.487	0.832
	Is willing to learn new knowledge or skills related to one's job	3.701	0.925
	Is able to creatively apply one's knowledge or skills to work	3.321	0.876
	Works on improving one's weaknesses	3.583	0.943
	Uses one's supervisor or trainer as a mentor	3.690	0.910
	Has a clear vision of one's future career path	3.321	0.924

A:problem solving skills, B:technology information application, C:interpersonal skills, D:communication skills, E: work ethics, F:self-development

The results of examining the correlation by sub-areas of key competence have all shown statistically significant positive correlation. Especially, the sub-areas of key competence have shown a higher correlation with communication skills and between the sub-areas of key competence, the communication skills have shown the highest correlation coefficient of 0.869 for self development skills. When seeing such results, it was found that as the communication skills were higher, self development skills were also higher as well [Table 5].

Problem-solving skills was perceived by the highest degree among those with experience of less than five years, while technological application skills was perceived highest among those with ten or more years of experience. Both showed statistically significant differences ($F = 3.172$, $P < .05$). Inter-personal skills and communication skills were perceived the highest among those with ten or more years of experience, and the same was the case for work ethics, with the three categories showing statistically significant differences ($F = 3.144$, $p < .05$). Self-development skills were perceived the highest by those with ten or more years of experience [Table 6].

Table 5. Correlation analysis between sub-categories of key competence

Variables	A	B	C	D	E	F
A	1.000					
B	0.781***	1.000				
C	0.776***	0.810***	1.000			
D	0.835***	0.803***	0.827***	1.000		
E	0.720***	0.747***	0.817***	0.790***	1.000	
F	0.798***	0.789***	0.813***	0.869***	0.856***	1.000

A:problem solving skills, B:technology information application, C:interpersonal skills, D:communication skills, E: work ethics, F:self-development. *** $p < 0.001$

4. Conclusion

Although the key competence is the basis of job performance skills, in recent years with a rapid development and changes, it is recognized to be more advanced than job performance skills or professional competence⁶ and in this study, the status of key competence of J University's graduating students were analyzed in order

Table 6. Analysis on the key competence by clinical experience of dental hygiene

	variables	Mean	standard deviation	F*
A	5 years or less	3.398	0.682	2.193
	5 ~ 10 years or less	3.133	0.821	
	10 years or more	3.293	0.924	
B	5 years or less	3.400	0.707	3.172*
	5 ~ 10 years or less	3.251	0.765	
	10 years or more	3.642	0.838	
C	5 years or less	3.802	0.657	3.039
	5 ~ 10 years or less	3.564	0.830	
	10 years or more	3.909	0.855	
D	5 years or less	3.551	0.664	3.040
	5 ~ 10 years or less	3.275	0.862	
	10 years or more	3.589	0.872	
E	5 years or less	3.723	0.716	3.144*
	5 ~ 10 years or less	3.510	0.828	
	10 years or more	3.886	0.776	
F	5 years or less	3.607	0.695	2.446
	5 ~ 10 years or less	3.373	0.806	
	10 years or more	3.657	0.824	

A:problem solving skills, B:technology information application, C:interpersonal skills, D:communication skills, E: work ethics, F:self-development. * $p < 0.05$, F*: ONE-WAY ANOVA analysis.

to propose the enhancement directions and management plans of key competence for students of dental hygienic major.

After analyzing the level of key competence of J University's graduating students, it was shown that generally students had more than average levels. These matches with the study results obtained from targeting vocational college¹ and considered that education suitable with the purpose of vocational college of fostering professionals are being made. Especially, among the key competence, interpersonal skills were the highest with 3.720. This is because the education on the improvement of interpersonal skills between customers and teammates are emphasized since dental hygienist is a profession that provides medical services.

As a result of examining the questions in order to identify the detailed status by each sub-areas of key competence, in the problem solving skills, "showing a positive attitude of being able to solve any problem" was the highest with 3.561, followed by 'able to propose fresh and unique ideas to solve

problem' with 2.984. In other words, the detailed problem solving skills were relatively lower compared to the level of thinking^{1,8} and an aggressive education related to this is necessary. In the technology information literacy skills, it was shown that generally students had more than average levels. Especially, 'well utilize the instruments and equipments according to its characteristics' was shown to be highest with 3.524. This means that due to the nature of work and clinical practice centered education of dental hygienist who uses instruments and equipments. In the interpersonal skills, the aspect of considering for the others, forming relationships and cooperation have shown to be 3.82~3.94, but ability to lead others in order to achieve the task or proposing opinions or directions to others were relatively low with 3.214. This is because the work skills of majority of study subjects only had 1~2 years of experience and due to work characteristics of dental hygienist who considers the relationships between team members to be important. In the communication skills, creating and understanding reports, language proficiency and listening skills were shown to be a little higher than the average overall communication skills. When seeing that "have appropriate presentation ability" being the lowest with 3.239, it can be seen that the presentation ability of graduating students were relatively low. Therefore, a natural improvement of the presentation ability during the educational process is needed. In the work ethics, especially, 'have a sound sense of ethics' were the highest with 3.850 showing that students have attitude and occupational view required to practice the medical ethics and to have a smooth professional life. In self-development skills, 'have the attitude of trying to learn the new knowledge or techniques related to work' had the highest with 3.701, and 'able to creatively utilize the acquired knowledge and techniques at work' and 'have a clear vision for the career' have each shown a relatively low figure of 3.321. This means that acquiring a rapidly changing dental technique is considered to be important so the career guidance given after the admission should be able to propose a clearer vision. The results of examining the correlation by sub-areas of key competence have all shown statistically significant positive correlation. Especially, higher the communication skills, higher the self-development skills and the field practitioners were able to recognize that the students with higher communication skills have shown higher key competence in other areas as well¹. In the difference of awareness on the key competence according to the clinical experience of dental hygienist, it has shown some significant differences. This means that as experiences are gained, the level of work

will be different with difference in ability to recognize the importance, so it is considered that future educational programs that can enhance the key competence of dental hygienists considering their work is needed.

According to these results, in the dental hygienist major, a detailed problem solving skills, improving leadership skills, presentation skills and career development skills should be improved. In order to enhance the key competence of such students, the role of the professor is the most important. Therefore, the professors should recognize the importance of key competence and should try hard to design and to develop the program for improving the key competence through training and seminars related to the key competence and should reflect them in the education by investigating the key competence required by the industry to foster excellent professionals. In addition, the schools should actively utilize the programs for improving the key competence to realize the purpose of being a vocational college.

5. References

1. Kim SN, KwonYS, Shin JS. A Study for Promoting Key Competencies of College Students. The Journal of Korea Corporation Management Association. 2012; 19(2):57–77.
2. Kim NJ. Career Blue Ocean. Seoul: Dowon Media; 2005.
3. Jang GS, Jung YS. Plans Improving the Employability of Universty Student by Developing Basic Job Skills. Duksung Women's University.
4. Field J, Schuller T. Networks, norms and trust: explaining patterns of lifelong learning in Scotland and Northern Ireland. In: Coffield, F. editor. Differing visions of a learning society. Bristol: The Policy Press, 2000.
5. OECD. Education and employment. Paris: OECD; 1995.
6. Murray TS, Kirsch IS, Jenkins L. editors. Adult literacy in OECD countries: Technical report on the first international adult literacy survey. Washington, DC: National Centre for Education Statistics Office of Educational Research and Improvement; 1998.
7. Noh JJ. A Study on the Cognition of Professors and Students and the Differences in Student Characteristics Regarding the Key Competencies of Korea Polytechnics. The Korean Society of Human Resourie Development. 2011; 13(2):105–25.
8. Park JH, Lee JP, Park YH. A Study on the Needs Assessment of Key Competencies from Industries for Graduates of Korea Polytechnic Colleges. The J Vocat Educ Res. 2013; 32(1):83–105.
9. Lee JH, Kwon YR. A Study on Recognition Differences by Enterprises and Teachers regarding Basic Ability for Occupations. The Journal of Korea International Accounting Association. 2007; 19:203–18.