

# POSSIBILITY OF DEVELOPING LEGAL MIND IN CAREER AND GLOBAL EDUCATION

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## Abstract

Amid the ongoing globalization, English or global education among KOSEN has been changing. We think it is necessary to give students more opportunities before they graduate from KOSEN to consider their future careers and experience in handling difficult legal issues at work. In 2019, we surveyed teachers and students in a Hong Kong institute and a Singapore institute to understand the actual situation of careers and global education in Asian countries. We enquired into the conditions that students should be aware of with respect to their career, what qualities and abilities they need in order to adapt to globalization, and so on. The results revealed that teachers regard “business ethics,” related to laws or social rules, as an important factor in career education. Developing a “legal mind,” which can be defined as an ability to find a reasonable solution for social or business problems in the context of laws, could be an important factor for global education. Further, we surveyed the students of our college, Tomakomai KOSEN, on the same questions to compare the results between Japan and Asian countries. We also conducted a survey of Japanese workers in Hong Kong regarding their opinions about careers and working overseas. We found that the students of the surveyed institute do not consider “business ethics” to be important, while some Japanese workers in Hong Kong regard business ethics as being important. We think it is necessary to create awareness among students about the importance of business ethics or laws. On the assumption that having opportunities to learn legal issues would help students develop their careers as global engineers, we plan to organize a new workshop for developing “legal minds” that would be conducted in the international exchange program of Tomakomai KOSEN. The workshop will give students a simulated experience to consider social or business problems and find a reasonable solution in discussion with others.

**Keywords:** *career education, global education, laws, legal mind, Asian countries*

## Introduction

The purpose of education at National Institute of Technology (hereafter, “KOSEN”) is to foster and train practical technicians. As globalization progresses rapidly, KOSEN are being charged with the education of technicians who can be active globally. Aesmen (2008) mentions legal issues as a key element of project management in the globally progressing engineering field, and Atsumi (2013) proposes the strengthening of “legal minds” in the education of global human resources.

A “legal mind” refers not only to the acquisition of knowledge about and an understanding of laws, but also the “legal ways of thinking” needed in negotiations and problem-solving based on laws and regulations. More broadly, the legal mind also encompasses common practices and culture. In fact, the ability to coordinate and make adjustments between interested parties to lead to reasonable solutions is essential for adapting within a global society.

In 2019, at the 13th International Symposium on Advances in Technology Education (ISATE 2019), we reported the results of our questionnaire survey of the teaching staff (hereafter, “staff”) at educational institutes in Hong Kong (hereafter, “HK”) and Singapore (hereafter, “SG”). The survey was performed as a step towards program development for fostering a legal mind. The survey questions concerned career education and global education performed by the aforementioned institutes. As for students’ considerations about their future careers, not only “life plans,” “work promotions,” and “salary,” but also “company ethics” ranked high. Inasmuch as company ethics are related to the social responsibilities of companies, including conformance to laws and regulations, our survey indicated that an emphasis is also placed on socio-legal aspects.

With regard to global education, a few participants responded with “differences in laws and social rules” as a cause of problems that could occur if students were to decide to work abroad in the future. This reveals that one

aspect of global education could be the understanding of other societies through an understanding of their laws.

Having obtained these results, to continue our investigation, similar surveys were conducted with students of both the aforementioned regions (HK and SG), Japanese (JPN) students, and JPN workers in HK. We then compared these results with those for the staff, and compared the results among the students. This paper reports the results, and their analysis. We also offer a broad overview of the program for fostering legal minds, which we intend to implement in the future.

### Performance of the questionnaire survey

We conducted a questionnaire survey of students at both of the above institutes, and of the JPN students at Tomakomai KOSEN. The survey questions were about career education and global education. To include the opinions of the people who were actually working abroad, we also performed a survey of JPN workers working in HK, using the same questionnaire. Question items described in this paper are presented in Table 1.

**Table 1 Questions**

	Target	Questions
Career Education	Staff, Students, Workers	Q1. Which items do you think students should be aware of when they think of their future career?
Global Education	Staff, Workers	Q2. To what level is it necessary for students to acquire each of the following?
	Students	Q3. To what level have you acquired each of the following?
	Staff, Students, Workers	Q4. When a student goes to work in a foreign country, what are the causes of trouble or difficulties he or she might face?

※The options and items in each question are shown in the related Table or Figure.

Question 1 (Q1) permitted multiple answers from nine options to choose all that apply. For Question 2 (Q2) and Question 3 (Q3), there were 13 items, each of which was responded using a scale from 1 (Not at all) to 5 (Very much so). For Question 4 (Q4), from seven options available, the respondents had to choose two. Table 2 presents the number of respondents, which also includes respondents from the previous questionnaire survey.

On the understanding that the responses could have some errors, we treated them without any amendment as what reflect the responders' opinions.

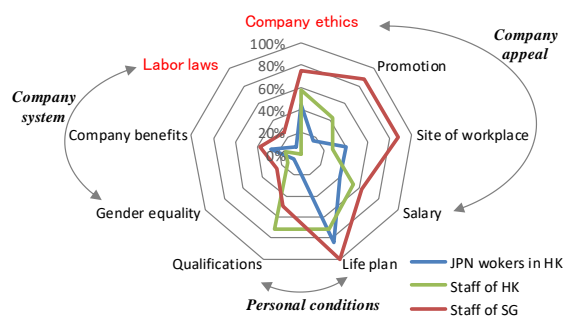
**Table 2 Number of respondents**

	Workers	Staff	Students
Japan	25		121
Hong Kong		26	67
Singapore		8	20

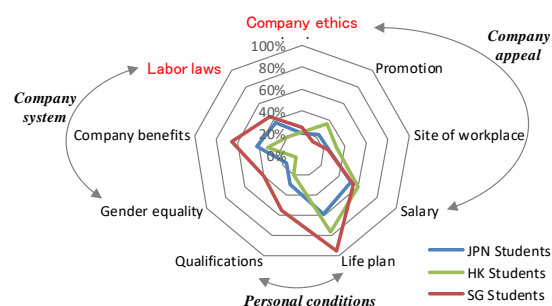
## Results and Discussion

### (1) Career Education

First, we look at the results for Q1, "Which items do you think students should be aware of when they think of their future career?" Figure 1 and Figure 2 present the graphs indicating the percentage of responses for the nine choices. Here, a classification can be made into three groups: company ethics, promotion, site of workplace, salary can be grouped under "Company appeal" while, life plan, qualifications can be placed under "Personal conditions," and finally gender equality, company benefits, labor laws under "Company system." The surveyed staff emphasized "Company appeal." Remarkably, we can observe that the SG staff focused on "site of workplace." This reflects that this small urban nation, SG, located at the southernmost part of the Malay Peninsula, is the gateway to ASEAN countries and serves as the hub for foreign corporations who seek to expand their business throughout the ASEAN region (Calder, 2016). Thus, "site of workplace" likely confirms this broad-ranging perspective. Meanwhile, student responses clustered at three points, life plan, salary, and company benefits.



**Figure 1 Responses of staff and Japanese workers**



**Figure 2 Responses of students**

Next, we look at "company ethics" and "labor laws," the options that related to "legal mind" which is the focus of the present study. Although the staff and JPN workers emphasized "company ethics," the relative student awareness was considerably low. When considering their future career, the staff wanted students to emphasize aspects connected with the general society, including conformance to laws and regulations, and societal

contributions. Meanwhile, students are orientated towards personal benefits, such as the above-mentioned life plan, company benefits, and salary.

As for “labor laws,” students had a higher percentage compared with the staff and JPN workers in HK. Perhaps this is due to an awareness that students have gained through their part-time work experiences, that labor laws are an essential means of protecting their rights in industrial relations.

While the staff emphasizes company ethics, students prioritize labor laws. In terms of a legal mind, however, both ethics and laws are involved. While the staff and students may have different viewpoints, both groups actually desire similar elements in their career education. Therefore, the questionnaire results of this study can be said to support the potential of introducing the development of legal minds within career education.

## (2) Global education

Table 3 outlines the 13 items specified as necessary qualities for adapting to globalization, most of which are based on the definitions of “global human resources” outlined in 2010 by the Ministry of Education, Culture, Sports, Science, and Technology (MEXT)-related institution in Japan. For these items, the Questionnaire for the HK and SG staff and for the JPN workers in HK asked Q2 “To what level is it necessary for students to acquire each of the following?” (hereafter, “acquisition necessity”), and each student was asked Q3 “To what level have you acquired each of the following?” (hereafter, “acquisition level”).

### (2) -1 Acquisition necessity

Questionnaire results were evaluated in the following two steps.

Step 1: The priority level of each item, and the qualities by country were ascertained by using basic statistical amounts.

Step 2: Principal component analysis was performed to ascertain the type of human resources necessary for globalization.

**Table 3 Necessary qualities for globalization**

1) English proficiency
2) Communication skills
3) Understanding of other cultures
4) Understanding of own country’s culture
5) Understanding of other countries’ laws or social rules
6) Understanding of own country’s laws or social rules
7) General knowledge
8) Positiveness
9) Challenger’s spirit
10) Cooperativeness
11) Sense of responsibility
12) Identity as JPN/HK/SG people
13) Technological skills

### (2) -1-1 Basic statistical values

Table 4 presents the averages and standard deviations for the Questionnaire results. Items in Table 4 that have high average values and low standard deviation signify that many respondents felt that the item was highly necessary. Asterisks (\*) in the Table indicate items rated with high levels of importance. The “level of importance” was calculated using the averages and SDs as follows.

\*\*\* : The average is greater than 4.5, and the SD is less-than 0.5

\*\* : The average is greater than 4.5, and the SD is less-than 0.7

\* : The average is greater than 4.0, and the SD is less-than 0.8

We can observe that JPN workers, and the staff of HK and SG all placed emphasis on item 2)—Communication skills, which also had the highest overall value. Worthy of note is that items 5) and 6)—Understanding of laws or social rules—were rated high by SG staff. SG is a multicultural society comprising diverse races, including Chinese, Malays, and Indians. This questionnaire result proves that SG people must adjust to different cultures and societies with an understanding of laws and social rules; a legal mind is essential. A further trend observed that JPN workers find item 8) and 9)—Positiveness and Challenger’s spirit—extremely important.

**Table 4 Averages and Standard deviations**

	JPN workers in HK		Staff of HK institute		Staff of SG institute	
	Average	Standard deviation	Average	Standard deviation	Average	Standard deviation
1) English proficiency	4.20	1.00	**4.73	0.53	***4.75	0.46
2) Communication skills	***4.72	0.46	***4.73	0.45	***4.88	0.35
3) Understanding of other cultures	**4.52	0.65	3.65	0.75	***4.75	0.46
4) Understanding of own country’s culture	**4.44	0.65	3.81	0.90	*4.38	0.52
5) Understanding of other countries’ laws or social rules	3.80	0.87	3.88	0.71	*4.25	0.46
6) Understanding of own country’s laws or social rules	3.80	0.65	3.96	0.77	*4.13	0.35
7) General knowledge	*4.20	0.76	3.96	0.60	*4.13	0.64
8) Positiveness	***4.88	0.33	*4.23	0.65	4.00	0.93
9) Challenger’s spirit	***4.84	0.37	4.04	0.82	4.00	1.07
10) Cooperativeness	**4.72	0.61	*4.46	0.58	*4.38	0.52
11) Sense of responsibility	*4.48	0.77	***4.73	0.45	**4.50	0.53
12) Identity as JPN/HK/SG people	4.08	1.00	3.35	1.06	3.63	0.92
13) Technological skills	3.36	1.04	4.29	1.08	3.88	0.64

(2) -1-2 Principal component analysis

Table 5 displays eigenvalues and contribution ratios. Table 6 presents the principal component loads; here, the higher the absolute value, the stronger the contribution of the variable. It can be seen from Table 6 that the first principal component expressed “Sociability,” inasmuch as Identity, Positiveness, Challenger’s Spirit, and Understanding of other cultures had high absolute load values. The second principal component was “Skills,” as English proficiency and Technological skills can be interpreted as the application of technical skills while using the English language. The third principal component are all items related to Understanding, and this is expressed comprehensively by “Understanding of different cultures”, including an understanding of one’s own country. The fourth principal component could not be analyzed. Principal components with an eigenvalue under 1 are determined to be insignificant; therefore, we will lay focus up to the third principal component, with eigenvalues of 1 and above.

In Figure 3, the horizontal axis depicts the first principal component, and the vertical axis, the second principal component. From the figure, it can be noted that JPN workers were distributed widely from the top to the bottom, and are located towards the right, which indicates that these workers desired overall “Sociability.” The HK staff is located at the top left, indicating a trend where “Skills” rather than “Sociability” is demanded. The SG staff, due to their small sample numbers, is not represented clearly.

Next, Figure 4 plots the second principal component on the horizontal axis, and the third principal component on the vertical axis. In the figure, a majority of the HK staff are on the right but lower than the x-axis vicinity. This indicates that “Skills” is emphasized more than “Understanding of different cultures.” Meanwhile, the SG staff is mostly on the positive side of the y-axis, with a demand for human resources with “Understanding of different cultures” rather than “Skills.” The above result establishes that JPN workers in HK value “Sociability,” HK staff favor “Skills,” and the SG staff attach importance to “Understanding of different cultures.”

(2) -2 Acquisition levels

Here, we discuss the responses of JPN, HK, and SG students to Q3, “To what level do you think you have acquired each of the following?”

(2) -2-1 Basic statistical values

Figure 5 presents the mean and median values of the questionnaire results. A “median value” means that half of the respondents chose the median value or above. Additionally, where the mean values are equivalent but median values differ, this indicates that the group with the higher median value had a higher acquisition level.

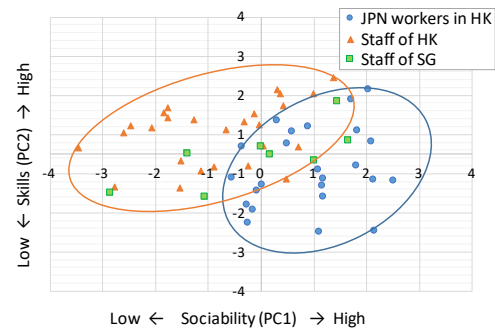
From Figure 5, we see that for items 10)—Cooperativeness and 11)—Sense of responsibility—of emphasis by the teaching staff, student acquisition levels were high in HK and SG. Thus, the fostering of

**Table 5 Cumulative contribution ratios (Q2)**

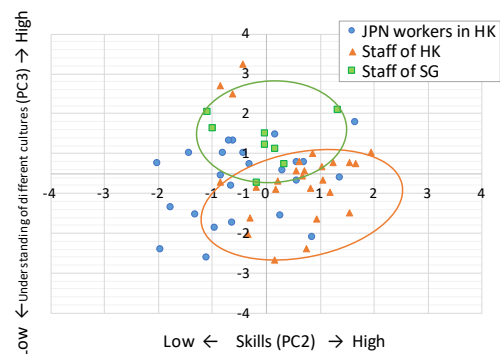
Principal number	Eigenvalues	Percentage of variance (%)	Cumulative contribution ratio (%)
1	2.0	27.1	27.1
2	1.3	17.3	44.4
3	1.1	14.4	58.7
4	0.7	9.4	68.1

**Table 6 Principal component loads (Q2)**

	PC1	PC2	PC3	PC4
1) English proficiency	-0.1445	0.4612	0.2038	-0.3736
2) Communication skills	0.0118	0.1193	0.2268	-0.1393
3) Understanding of other cultures	0.4640	-0.2668	0.3882	-0.0953
4) Understanding of own country's culture	0.4671	-0.0745	0.4047	-0.3390
5) Understanding of other countries' laws or social rules	0.0597	0.1120	0.5650	0.3770
6) Understanding of own country's laws or social rules	0.2012	0.1003	0.4464	0.1498
7) General knowledge	0.2240	0.1365	0.0007	-0.0181
8) Positiveness	0.4711	-0.0126	-0.1698	0.2249
9) Challenger's spirit	0.6738	0.0221	-0.1355	0.2302
10) Cooperativeness	0.2771	0.0405	-0.0457	0.2616
11) Sense of responsibility	0.1120	0.2767	-0.0907	-0.0083
12) Identity	0.8312	0.3501	-0.3154	-0.2345
13) Technological skills	-0.2021	0.8695	0.0491	0.1783
	Sociability	Skills	Understanding of different cultures	



**Figure 3 Score scatter plot of component 1 vs 2**



**Figure 4 Score scatter plot of component 2 vs 3**

“Cooperativeness” and “Sense of responsibility” is thought to be emphasized in HK and SG.

Meanwhile, for items 3) and 5) related to the legal mind, JPN students showed a tendency to have lower acquisition than the others.

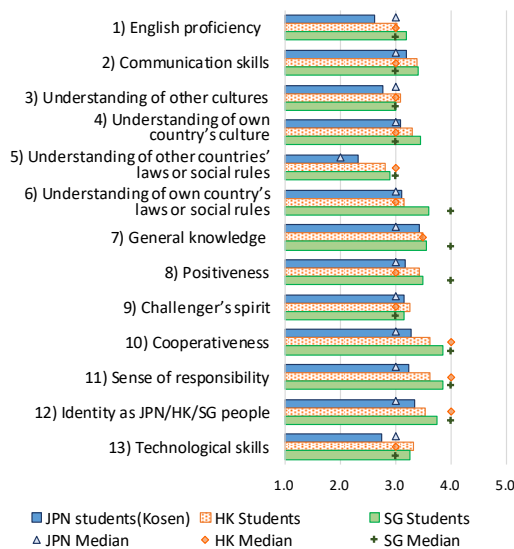


Figure 5 Mean and Median of Q3

(2) -2-2 Principal component analysis

Table 7 shows eigenvalues and contribution ratios, while Table 8 shows principal component loads. In Table 8, the first principal component expressed “Comprehensive abilities,” inasmuch as all categories were on the plus side, with high values. As for the second principal component, items 3)–5) were negative, while items 8) and 9) were positive; thus, this was called “Motivation.” Similarly, the third principal component was “Identity,” and the fourth principal component was “Skills.” Figure 6 is a plot of the first and second principal components, which had eigenvalues over 1 (in Table 7). Since the number of survey respondents differed considerably by country, we cannot confirm the following with certainty; however, we do note that HK and SG students had high “Comprehensive abilities,” and JPN students had low “Comprehensive abilities,” with “Motivation” somewhat high. As for items 8) and 9) indicating “Motivation” in Table 8 (the second principal component), the Table 4 responses for JPN workers showed this had an extremely high level of importance; this indicates that, in JPN, a high emphasis is placed on “Motivation.”

(2) -3 Causes of trouble or difficulties

Table 9 presents the results of Q4 “When a student goes to work in a foreign country, what are the causes of trouble or difficulties he or she might face?” With regard to understanding the “Differences between laws or social rules,” response percentages were around 30%. This proves that, in global education, enabling a deeper

understanding of laws and social rules should be a point of consideration, at least to a certain extent.

Table 7 Cumulative contribution ratios (Q3)

Principle number	Eigenvalues	Percentage of variance (%)	Cumulative contribution ratio (%)
1	5.7	50.9	50.9
2	1.2	10.6	61.5
3	0.9	7.6	69.1
4	0.6	5.5	74.6

Table 8 Principal component loads (Q3)

	PC1	PC2	PC3	PC4
1) English proficiency	0.6688	-0.0378	-0.2572	-0.3477
2) Communication skills	0.6427	0.1390	-0.2614	0.1161
3) Understanding of other cultures	0.7553	-0.4375	-0.1566	0.1853
4) Understanding of own country's culture	0.6458	-0.3427	0.1997	0.1887
5) Understanding of other countries' laws or social rules	0.7148	-0.5943	-0.1617	-0.1033
6) Understanding of own country's laws or social rules	0.6536	-0.1844	0.3269	0.0643
7) General knowledge	0.5183	0.0558	0.2065	0.1724
8) Positiveness	0.6636	0.3518	-0.2081	0.0330
9) Challenger's spirit	0.6915	0.4002	-0.2398	-0.0066
10) Cooperativeness	0.6531	0.2399	-0.0030	0.3201
11) Sense of responsibility	0.7132	0.2919	0.0841	0.0759
12) Identity	0.5997	0.2046	0.6081	-0.2261
13) Technological skills	0.6710	0.0095	0.0081	-0.4567
	Comprehensive abilities	Motivation	Identity	Skills

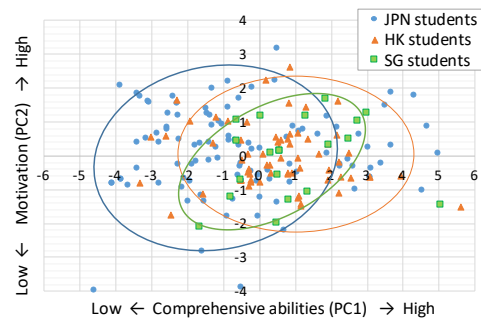


Figure 6 Score scatter plot of component 1 vs 2

Table 9 Causes of trouble or difficulties

	JPN(%)		HK(%)		SG(%)	
	Workers	Students	Staff	Students	Staff	Students
English proficiency	12.0	37.2	78.6	58.8	12.5	45.0
Communication skills	76.0	52.9	35.7	48.5	50.0	90.0
Difference between cultures	56.0	52.1	42.9	36.8	87.5	40.0
Difference between laws or social rules	32.0	30.6	28.6	29.4	25.0	30.0
Lack of general knowledge	20.0	18.2	7.1	16.2	12.5	20.0
Lack of Technological skills	4.0	3.3	7.1	11.8	12.5	5.0
Others	16.0	1.7	0.0	0.0	12.5	0.0

## Program scheduled for implementation

Based on the questionnaire analysis described above and the results presented in Table 9 (the section just above), we will create a program for the education of a legal mind. This program will consider problems likely to occur when students work abroad in the future, as well as the human relationships they will encounter. Contents will be designed to give students experiences that will lead to reasonable solutions of problems through logical thinking and via adjustments and coordination among interested parties, all based on a “legal mind.” This plan will be implemented within a student exchange and training program between the Tomakomai KOSEN and the HK institute. Specific implementation methods are listed below.

1. Themes will be set for common social problems involving laws and rights, with introduction of conditions and the opposing positions of interested parties.
2. A mixed group including students from both countries will discuss individual ideas about problem-solving methods, with explanations provided for the relevance of these methods.
3. Each group will select what they consider to be the best solution method, and make presentations thereof to other groups.
4. Recapitulation and reflection regarding the processes of the group interactions and conclusions will be executed.

HK experienced rapid economic development under British capitalism. However, since becoming a Special Regional Administrative Region before its return to China, prior research has indicated that there has been little involvement in HK by labor unions in wages and working conditions, with no adoption of models like that of Anglo-American collective bargaining, or those involving political movements including labor movements (England, 1981). Thus, it may be that JPN and HK students will have different levels of interest regarding issues of law and rights; one can also imagine that opposition of opinions and other problems will occur. In fact, this program aims to give students experiences where they will have to confront such conflicts and problems stemming from “different cultures,” as they work towards coordinating and resolving these conflicts.

## Conclusions

The summary of the analysis results from the questionnaire surveys conducted on career education and global education is listed below.

1. In career education, the teaching staff emphasized “company ethics,” while students had a higher awareness of “labor laws” compared to the teachers.
2. In global education, both the teaching staff and JPN workers in HK emphasized “sociability,” “understanding of different cultures and others,” and “skills”—in other words, “the application of their technical skills using the English language.” The JPN workers in HK especially emphasized “sociability,”

while the HK teaching staff emphasized “skills,” and “understanding of different cultures and others” was emphasized in SG.

3. With regard to “acquisition level” of global adaptability among students, HK and SG displayed a high tendency towards “comprehensive abilities,” which included a variety of elements, while Japanese students had a tendency towards high acquisition of “motivation.”

In global education, sociability, an understanding of different cultures and others, and the acquisition of English and technical skills are considered important. Added to this should be opportunities to learn and acquire a “legal mind,” with the ability to find reasonable solutions to problems based on an understanding of “laws and social rules.” With this addition, students will gain abilities that will enable them to adapt to new aspects of global societies.

## Acknowledgements

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