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An Exploration of Students' Self-perception before Undergoing their Work-integrated Education (WIE)

Sylvester YEUNG[1*], Dorinda FUNG[2] and Chris LUK[3]
[1]School of Hotel and Tourism Management, The Hong Kong Polytechnic University, Hunghom, Kowloon, 852-27666345, 852-23629362, hmsylvester@polyu.edu.hk
[2]Student Affairs Office, The Hong Kong Polytechnic University, Hunghom, Kowloon, 852-27665411,
852-27745226,sadfung@polyu.edu.hk
[3]School of Hotel and Tourism Management, The Hong Kong Polytechnic University, Hunghom, Kowloon, 852-27666379, 852-23629362, hmchris@polyu.edu.hk

Abstract - Students can gain invaluable practical experience through Work-integrated Education (WIE), often referred to as co-operative education. To help design a WIE program and evaluate its effectiveness, it is crucial to assess the students' attitude, knowledge and skills before taking their WIE. A questionnaire survey was conducted in June 2006 with 542 students of The Hong Kong Polytechnic University to investigate their self-perceived quality and to ascertain any significant differences among students of different demographic background. Among the 19 attributes and with a Likert-scale of five, it is found that students have the highest agreement in 'I am honest' (3.90), 'I am willing to accept responsibility' (3.88) and the lowest agreement in 'I have extensive knowledge in at least one department' (3.26). Through factor analysis, three factors namely 'competence and attitude towards work' (3.61), 'language skills' (3.45) and 'professionalism' (3.23) are identified. Significant differences are found in "professionalism" and "language skills" between SHTM students and non-SHTM students, among BA(hons) students, BSc (hons) students and Higher Diploma students, between WIE duration of 47 weeks or shorter and 48 weeks or longer. However, there is no significant difference between male and female students. The findings of this study would help both educators and their industry co-op partners decide how efforts and resources should be allocated to develop the different aspects of students through the WIE. In the second phase of the study, a post-WIE self-evaluation will be conducted to help determine the effectiveness of the WIE.

Keywords – Work-integrated-education, self-perception, co-operative education, students, effectiveness

1. Introduction

In The Hong Kong Polytechnic University (HK PolyU), the work-integrated education (WIE), often referred to as the co-operative education, is implemented in every program as part of the students' total learning process. The key objective is to expose the students to actual working environment so that they can become value-added graduates "preferred" by employers. The university believes that a well-designed WIE program will help students to develop a range of valuable generic abilities and apply theories to real life situations in a specific industry. Development would include professional competence, an appropriate level of operational experience, and understanding of industry operations and managerial decision-making. These future graduates will have practical, real-world experience; who possess the skills to immediately play a productive role in an organization; and who are best equipped to succeed in an intensely competitive marketplace.

Among the many programs in the HK PolyU, the School of Hotel and Tourism Management (SHTM) is one of the forerunners in providing WIE to students. The school has always been committed to its WIE programs so that its graduates will be well qualified to adapt and respond to the demands of the industry and its customers. Currently, students may opt for a 20- week or 48-week WIE. For most of the other programs in the university, the WIE program is only made mandatory in 2005.

However, a well-planned and designed WIE does not come easily. It requires careful planning, organizing, implementing and monitoring. It should be able to achieve its stated goals and objectives in terms of changing, enhancing and reinforcing students' attitude, skills and knowledge as well as their understanding and commitment to the industry. As a first step of designing an effective WIE, it is crucial to assess the students' attitude, knowledge and skills before taking their WIE. This will help us to understand their areas of deficiency and identify areas where training should be focused on. In view of this, this study intends to conduct a questionnaire survey with the students of The Hong Kong Polytechnic University, in particular with the SHTM and non-SHTM students to investigate their self-perceived quality and to ascertain any significant differences among students of different demographic background. The findings of this study would help both educators and their industry co-op partners decide how efforts and resources should be allocated to develop the different aspects of students through the WIE. It hopes to develop a suite of WIE tools which are applicable to most, if not all, departments in the university. This study forms the initial phase of a larger project which will include a post-WIE self-evaluation to help understand student's learning experience in an industry environment and identify industry's partners' best practices in WIE.

2. Methodology

The survey was conducted before the respondents undertook their WIE. It used a self-administered questionnaire, containing two sections, as the research instrument. The first section asked the respondents to self-evaluate themselves against 19 attributes concerning their attitude, skills and knowledge. Respondents were asked to indicate the level of agreement to the statements in a 5-point likert scale, ranging from "1" for strongly disagree to "5" for strongly agree. The second section of the questionnaire collected demographic information about the respondents, such as gender, age, course of study and length of WIE.

The target samples of the study included the degree and sub-degree students in the different programs of The Hong Kong Polytechnic University. The programs of study included applied science and textiles, business, communication, construction and land use, engineering, health and social science and hotel and tourism. The questionnaire survey was conducted between May to August, 2006. The questionnaires were distributed and collected with the help of a staff member of the programs under study.

Initial analysis of the raw data included a summary of means and standard deviations of the demographic information of the respondents and results of the survey of the 19 statements. The mean scores were used to calculate the central tendency measure of the level of agreement of the statements and the standard deviations to explain the dispersal of scores around them. Factor analysis was adopted to define a set of common underlying dimensions among the 19 statements. Independent t-test and One-way ANOVA were also adopted to identify any significant differences among different demographic groups.

3. Results

Respondents' profile

Out of the 550 questionnaires distributed, 542 questionnaires were returned and this represents a response rate of 98.5%. Table 1 shows the characteristics of the respondents. Thirty-two percent were male and 68% female. Among them, 13.1% were aged below 20, while 79.3% were between the ages of 20 and 22; the age group of between 23 and 25 represented 7.6%. As for the course attended, 32.5% of the respondents studied Bachelor of Arts (honours) and 13.9% were taking Bachelor of Science (honours) and 53.6% were higher diploma students. Since 51.4% of the respondents were from the School of Hotel and Tourism Management (SHTM), the study combined all respondents from other programs such as engineering and business under one generic category called "Non-SHTM" which represented 48.6%. For the duration of WIE, 48.6% has opted for 47 weeks or shorter while 51.4% has opted for 48 weeks or longer.

Table 1: Respondents' Profile (N=542)

Gender		Course		WIE duration	
Male	32%	BA (Hons)	32.5%	47 weeks or shorter	48.6%
Female	68%	BSc (Hons)	13.9%	48 weeks or longer	51.4%
		Higher Diploma	53.6%		
Age					
Below 20	13.1%	Faculty			
20-22	79.3%	SHTM	48.8%		
23-25	7.6%	Non-SHTM	51.1%		

Mean scores and standard deviations for the 39 ethical issues

As Table 2 shows, 18 statements received a mean score of more than 3. These results indicate that they generally perceived themselves positively in terms of attitude, skills and knowledge. The four top attributes that received the highest mean scores are "I am honest" (3.90), "I am willing to accept responsibility" (3.88), "I have great interest in joining this profession" (3.74) and "I am able to work co-operatively with others as a team member" (3.74). At the same time, the four attributes that received the lowest mean scores are "I have good understanding about relevant computer software" (2.95), "I have extensive knowledge about the workplace in at least one department" (3.26), "I have updated professional knowledge" (3.31) and "I can lead others effectively" (3.34).

Table 2: Mean Scores and Standard deviations of 19 statements

Statement	Mean	Standard Deviation
I am honest	3.90	0.87
I am willing to accept responsibility	3.88	0.80
I have great interest in joining this profession	3.74	0.83
I am able to work co-operatively with others as a team member	3.74	0.75
I have genuine desire to help people	3.72	0.79
I am adaptable and flexible to cope with a changing work environment	3.66	0.73
I am able to work independently with minimal supervision	3.62	0.75
I possess good professional attitude	3.58	0.76
I can manage other people's problems with understanding and sensitivity	3.49	0.69
I possess effective reading skills	3.48	0.69
I can define and solve problems effectively	3.47	0.69
I can communicate effectively in foreign language	3.46	0.72
I have good presentation skills	3.42	0.69
I possess effective writing skills	3.41	0.71
I am creative	3.41	0.79
I can lead others effectively	3.34	0.68
I have updated professional knowledge	3.31	0.71
I have extensive knowledge about the workplace in at least one department	3.26	0.82
I have good understanding about relevant computer software	2.95	0.84

Factor analysis

As shown in Table 3, this study adopted factor analysis to consolidate the 19 statements into a set of underlying dimensions reflecting the self-evaluation of respondents on their own attitudes, skills and knowledge. For the purposes of quality control of the factors, the data was first tested using Barlett's test of sphericity, a statistical test for the overall significance of the correlations within a correlation matrix. The result of the Barlett's test was 5,252 (sufficiently high) with a significant level of 0.00. This indicates that factor analysis could be performed to further analyze the data. The final test conducted was the test of Kaiser-Meyer-Olkin (KMO), which is a measure of sampling adequacy. Hair et al. (1995) have claimed that data are valid if

the value for the KMO test is found to be greater than 0.5. Since the value of KMO for the data in this study was found to be 0.945, it is concluded that factor analysis was valid in this study.

According to Hair et al. (1995), only those factors with Eigenvalues or latent roots greater than 1 can be considered significant; all factors with values of less than 1 can be considered insignificant and should be discarded. This assumes that any individual factor should account for the variance of at least a single statement if it is to be retained for interpretation. The factor analysis used Principal Components with Varimax Rotation and the Eigenvalues for the three factors in the data from this study, as indicated in Table 3, were all found to be greater than 1 and together they explained 61.79% of the cumulative variance.

Table 3: Result of Factor Analysis of the 19 Statements

Factor Name and Statements	Eigenvalue	Cumulative Variance explained (%)	Factor loading	Factor Mean
Factor 1: Competence and Attitude towards Work	8.99	47.35		
I am willing to accept responsibility			0.80	3.61
I am honest			0.78	
I have genuine desire to help people			0.76	
I am adaptable and flexible to cope with a changing work environment			0.75	
I am able to work co-operatively with others as a team member			0.71	
I have great interest in joining this profession			0.69	
I am able to work independently with minimal supervision			0.69	
I possess good professional attitude			0.67	
I can manage other people's problems with understanding and sensitivity			0.61	
I have good presentation skills			0.59	
I can lead others effectively			0.55	
I can define and solve problems effectively			0.52	
I am creative			0.51	
Factor 2: Language skills	1.56	55.55		
I possess effective writing skills			0.83	3.45
I possess effective reading			0.82	

skills				
I can communicate effectively in foreign language			0.63	
Factor 3: Professionalism	1.19	61.79		
I have updated professional knowledge			0.76	3.23
I have good understanding about relevant computer software			0.70	
I have extensive knowledge about the workplace in at least one department			0.64	

Factor 1: COMPETENCE AND ATTITUDE TOWARDS WORK

The first factor identified which includes 13 attributes was named "Competence and Attitude towards Work" They include top attitude-related attributes such as "I am honest", "I am willing to take up responsibility', "I have great interest in joining this profession" and competence-related attributes such as "I have good presentation skills", "I can lead others effectively" and "I can define and solve problems effectively". The factor mean score is 3.61, the highest among the three factors identified.

Factor 2: LANGUAGE SKILLS

The second factor identified was named "language skills" which consists of three attributes namely "I possess effective writing skills", "I possess effective reading skills" and "I can communicate effectively in foreign language". The three statements are all related to the language and communication skills of the respondents. The factor means score is 3.45.

Factor 3: PROFESSIONALISM

Factor 3 comprises three attributes that are closely related to the professionalism of the respondents towards their industry. They include "I have updated professional knowledge", "I have good understanding about relevant computer software' and "I have extensive knowledge about the workplace in at least one department". This factor recorded the lowest factor mean of 3.23.

Ranking of the three factors

Table 4 shows in descending order how the respondents ranked the level of agreement of the factors - "competence and attitude towards work" (3.61), "Language skills" (3.45), "professionalism" (3.23).

Table 4: Ranking of the three factors

	Mean	Standard Deviation
Competence and Attitude towards work	3.61	0.55
Language skills	3.45	0.61
Professionalism	3.23	0.64

Independent t-tests and One-way ANOVA

Independent t-tests and one-way ANOVA were conducted to ascertain if there are any significant differences between the different demographic groups in relation to the three identified factors. As shown in table 5,6,7 and 8, significant differences are found in "professionalism" and "language skills" between SHTM students and non-SHTM students, among BA(hons) students, BSc (hons) students and Higher Diploma students, between WIE duration of 47 weeks or shorter and 48 weeks or longer. However, there is no significant difference between male and female students.

Table 5: Independent t-test between factors and faculty

	Mean			
	SHTM N=268	Non-SHTM N=255	T-value	Sig. (2 tails)
Professionalism	3.18	3.32	2.66	0.01*
Competence in Work	3.60	3.66	1.47	0.14
Language skills	3.39	3.52	2.48	0.01*

Table 6: One-way ANOVA between factors and courses

	Mean			
	BA(Hons) N=171	BSc (Hons) N=73	Others N=282	Sig. (2 tails)
Professionalism	3.36	3.27	3.18	0.01*
Competence in Work	3.69	3.64	3.59	0.16
Language skills	3.54	3.52	3.39	0.02*

Table 7: Independent t-test between factors and WIE duration

	Mean			
	Below 48 Weeks N=244	48 weeks or above N=258	T-value	Sig. (2 tails)
Professionalism	3.29	3.17	2.18	0.03*
Competence in Work	3.65	3.59	1.23	0.22
Language skills	3.52	3.38	2.51	0.01*

Table 8: Independent t-test between factors and gender

	Mean			
	Male N=176	Female N=374	T-value	Sig. (2 tails)
Professionalism	3.29	3.21	1.33	0.18
Competence in Work	3.59	3.62	0.62	0.53
Language skills	3.40	3.47	1.19	0.23

4. Discussion, Recommendation and Conclusion

This papers only attempts to report the initial results on the first part of the research study. As revealed in this study, the students in The Hong Kong Polytechnic University have a relatively positive self-perception toward their competence and attitude towards work, followed by their language skills and lastly professionalism.

However, it should be noted that the mean score for the three factors are all below four which can be interpreted as not having a high self-confidence on themselves especially in terms of professionalism. This may be indications to both curriculum designer and WIE industry partners when designing their curriculum and the training content during the WIE. Since this is only the first part of a larger research study which only looks at the self-perception of the students before taking the WIE, the second phase of the research project will examine the effectiveness of the WIE by asking the respondents to complete a post-WIE evaluation on themselves using the same 19 attributes. This will help us to assess how the WIE has helped the students in the areas of competence and attitude towards work, language skills and professionalism. The significant differences which exist between the various demographic groups would also indicate the need to cater the syllabus and training content in accordance with the findings from the t-tests and one-way ANOVA. At times, the attitude, skills and knowledge developed by students with different demographic background can be very different. This should draw the attention and concerns of both the university and the industry partners. However, solid recommendation in designing an effective WIE can only be drawn at a later stage when a comparison is made between pre- and post- WIE questionnaire survey. In addition, both qualitative and quantitative comments from industry employers will also be solicited in regard to the performance of