Needs Analysis of Generic Skills on Engineering Students for Work Preparation

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Abstract

The purposes of this study were 1) to investigate the necessity knowledge of engineering students for work preparation; 2) to study needs of English skills for work preparation; and 3) to study supplemental opinions and suggestions. The population of this research was 220 engineering students enrolled in English for Communication 3 Course in 2016 academic year. The samples of this research were the 140 engineering students derived through Simple Random Sampling technique. The instrument used in this study was rating-scale and open-ended questionnaire. The statistical values were the frequency, percentage, mean, standard deviation and content analysis. The results from the study will be used as a guideline to improve teaching-learning process, teaching materials and teaching activities in the future.

Keywords: *English Teaching-Learning Process, Generic Skills in EFL Classroom, Teaching English for Engineering Students*

Introduction

Generic skills are originally from Australia as a set of skills that are transferable within the Australian workforce (Chiswick et al., 2002). They are also known by many other terms such as soft skills, key skills, common skills, essential skills, employability skills, basic skills, necessary skills, competency skills, and transferable skills (Yassin and Hasan, 2008).

According to Nabi (2003), Generic skills are divided into three categories which are personal skills, communication skills and problem solving skills. In addition, McLoughlin and Luca (2000) note that Generic skills are formed into four management areas which are management of self, management of others, management of task, and management of information. This is supported by Crosbie (2005) who states that Generic skills are listed as collaboration, communication, initiative, leadership, personal development, personal effectiveness, planning and organizing, and presentation.

Luca and Oliver (2002), moreover, point out that teaching and learning process for Generic skill development as the need for learning environment that concerns on dialogue, feedback, reflection, and task-oriented activities. Thus, learning activities are needed to be situated in a contextual environment as in a 'real-world activity'.

In brief, it might be concluded that the main concepts of Generic skills are to focus on the development of technical ability, knowledge and qualifications. These principles are used in the design of learning activities that are integrated into a course that is delivered in learning tasks, learning supports and learning resources. As a result, the outcomes of this learning technique might assist in a development of TNI students' English ability and career advancement.

Research Purpose

The purposes of this study were

1) to investigate the necessity knowledge of engineering students for work preparation;

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2) to study needs of English skills for work preparation; and
3) to study supplemental opinions and suggestions.

Research Methodology

Population and Samples

Population of this study were 220 engineering students in the second semester of 2016 academic year at Thai-Nichi Institute of Technology.

Samples in this study were 140 fourth-year TNI students in the second semester of 2016 academic year derived through simple random sampling technique.

Instrumentation

The instrument used in this study was a questionnaire based on needs analysis of Generic skills on engineering students for work preparation.

The first part (Part 1) of this questionnaire asked for the demographic information on the students' gender. The second part (Part 2) concerned a study of needs analysis of Generic skills on engineering students for work preparation. This part comprised 40 items of a study of needs analysis of Generic skills on engineering students for work preparation in three major skills: 4 items of Basic Skills; 10 items of Conceptual skills; and 26 items of Personal Skills; The five levels of opinion used in the questionnaire were ranked as "The highest needs", "High Needs", "Moderate needs", "Low needs" and "The lowest needs". Responses from the student questionnaires were subsequently coded. The data of the students' coded responses were statistically calculated and analysed. The computation of Cronbach's Alpha as a measure of reliability was employed to indicate hoe reliable the research questionnaire results were. Reliability was defined as the proportion of the students' responses to each item in the questionnaire and the reliability coefficient or calculated alpha was a lower bound of the true reliability of the research instrument, or the questionnaire. The descriptive statistics was also used to determine the individual summary statistics for each of the 40 items in the questionnaire.

The third part (Part 3) asked for more opinions and suggestions of needs analysis of Generic skills on engineering students for work preparation based on open-ended questions.

Data collection

Needs analysis of Generic skills on engineering students for work preparation were accessed through the questionnaire in the second semester of 2016 academic year.

The administration of the research questionnaire was conducted in English classes. Part 1 concerns the demographic variables about the students' gender. The 40 items of Part 2 covered needs analysis of Generic skills on engineering students for work preparation in three major skills. Therefore, the participants were requested to consider each item carefully and indicate how important each item was for their study. A total of 140 engineering students completed the questionnaire. The students' responses from the questionnaire were subsequently coded using computer program as follows: "1 = male and 2=female" for genders; and "1=the lowest needs, 2 =low needs, 3 = moderate needs, 4 = high needs, 5 = the highest needs" for each of the five levels of importance on 40 items in Part 2.

The analyses of the research data were conducted by means of descriptive statistics. The descriptive statistical analyses of the frequencies and percentages of the students' responses were employed to report their demographic variables and to indicate the rank order of the items in each area of needs analysis of Generic skills on engineering students for work preparation listed in the questionnaire. The frequency distributions were analysed to determine the proportions of the students' responses to the five levels of importance on the 40 items in three major skills: 4 items of Basic Skills; 10 items of Conceptual skills; and 26

items of Personal Skills. Process analysis was conducted with the second research question in determining the associations of the participants' needs analysis of Generic skills on engineering students for work preparation to each of these demographic variables.

Data Analysis

Data analysis from questionnaire both single item and whole questionnaire which presented a form of rating scale. These rating scales were calculated to find out mean and standard deviation and then translated based on criteria developed by Best (1981) as follows:

1.00 <= < 1.50 refers to students had the lowest needs.
1.51 <= < 2.50 refers to students had low needs.
2.51 <= < 3.50 refers to students had moderate needs.
3.51 <= < 4.50 refers to students had high needs.
4.51 <= < 5.00 refers to students had the highest needs.

The collected data was analysed using computer program. The statistics used for analysing the data were frequency, percentage, mean, standard deviation, and content analysis.

Results

Phase 1: The results of demographic data

The analysis of the data from the students' questionnaire was presented in the first section deals with the demographic variables from the students' responses to Part 1 of the questionnaire in the following table.

Table 1: Table of the results of demographic data of respondents

Demographic data of respondents	**n=140**	**Percentage**
Gender		
1.1 Male	77	55
1.2 Female	63	45
Total	**140**	**100**

The table showed that percentages of engineering students in gender ranged from 55% for male students and 45% for female students.

Phase 2: Needs analysis of Generic skills on engineering students for work preparation

Table 2: Table of Mean ($\bar{x}$) and Standard Deviation (S.D.) of needs analysis of Generic skills on engineering students for work preparation in overall

No.	**Cluster**	$\bar{x}$	**S.D.**	**Level**
1.	Basic Skills	4.59	0.52	The highest
2.	Conceptual Skills	4.50	0.58	High
3.	Personal Skills	4.25	0.52	High
Total		**4.44**	**0.61**	**High**

The above table presented that the overall mean score of needs analysis of Generic skills on engineering students for work preparation was at high level

($\bar{x}$=4.44). The highest cluster was at Basic Skills ($\bar{x}$=4.59), followed by Conceptual Skills ($\bar{x}$=4.50) and Personal Skills ($\bar{x}$=4.25).

Table 3: Table of Mean ($\bar{x}$) and Standard Deviation (S.D.) of Needs analysis of Generic skills on engineering students for work preparation in Basic Skills

No.	Basic Skills	$\bar{x}$	S.D.	Level
1.	Literacy	4.82	0.66	The highest
2.	Numeracy	4.33	0.63	High
3.	Use of Technology	4.88	0.75	The highest
4.	Administration	4.35	0.79	High
Total		**4.59**	**0.77**	**The highest**

The above table presented that the mean score of needs analysis of Generic skills on engineering students for work preparation on Basic Skills was at the highest level ($\bar{x}$=4.59). The highest skill was at Use of Technology ($\bar{x}$=4.88) and Literacy ($\bar{x}$=4.82), followed by Administration ($\bar{x}$=4.35) and Numeracy ($\bar{x}$=4.33).

Table 4: Table of Mean ($\bar{x}$) and Standard Deviation (S.D.) of Needs analysis of Generic skills on engineering students for work preparation in Conceptual Skills

No.	Conceptual Skills	$\bar{x}$	S.D.	Level
1.	Reasoning	4.77	0.83	The highest
2.	Planning	4.81	0.84	The highest
3.	Being Creative	4.88	0.78	The highest
4.	Decision-Making	4.39	0.88	High
5.	Problem-Solving	4.56	0.87	The highest
6.	Adaptability	4.29	0.58	High
7.	Information/Resource Management	4.44	0.62	High
8.	Pursuit of Lifelong Learning	4.41	0.68	High
9.	Memorising	4.32	0.70	High
10.	Ensuring Accuracy	4.19	0.64	High
Total		**4.50**	**0.55**	**High**

The above table presented that the mean score of needs analysis of Generic skills on engineering students for work preparation on Conceptual Skills was at high level ($\bar{x}$=4.50). The highest needs of conceptual skill was at Being Creative ($\bar{x}$=4.88), followed by Planning ($\bar{x}$=4.81). The lowest needs at high level was Ensuring Accuracy ($\bar{x}$=4.19).

Table 5: Table of Mean ($\bar{x}$) and Standard Deviation (S.D.) of Needs analysis of Generic skills on engineering students for work preparation in Personal Skills

No.	Personal Skills	$\bar{x}$	S.D.	Level
1.	Self-Confidence	4.81	0.61	The highest
2.	Self-Management	4.39	0.65	High
3.	Self-Awareness	4.41	0.69	High
4.	Responsibility/Reliability	4.75	0.56	The highest
5.	Professionalism	4.22	0.58	High
6.	Values/Ethics	4.69	0.61	The highest

7.	Motivation	4.51	0.70	The highest
8.	Initiative	4.31	0.64	High
9.	Ability to Work Independently	4.33	0.63	High
10.	Ability to Manage Stress	4.45	0.58	High
11.	Promoting Skills	4.21	0.56	High
12.	Curiosity	3.81	**0.64**	High
13.	Practicality	4.12	0.62	High
14.	Judgement	4.77	0.61	The highest
15.	Sensitivity	4.27	0.71	High
16.	Cooperative Attitude	4.33	0.55	High
17.	Commitment	3.81	0.68	High
18.	Efficiency	4.22	0.58	High
19.	Achievement Orientation	4.27	0.72	High
20.	Ambition	3.32	0.71	High
21.	Enthusiasm	4.36	0.78	High
22.	Maturity	3.79	0.64	High
23.	Integrity	3.99	0.56	High
24.	Persuasiveness	3.98	0.76	High
25.	Balanced Attitude to Work and Home	4.22	0.75	High
26.	Work Ethic	4.18	0.59	High
Total		**4.25**	**0.54**	**High**

The above table presented that the mean score of needs analysis of Generic skills on engineering students for work preparation on Conceptual Skills was at high level ($\bar{x}$=4.25). The highest needs of conceptual skill was at Self-Confidence ($\bar{x}$=4.81), followed by Responsibility/Reliability ($\bar{x}$=4.75). The lowest needs at high level was Ambition ($\bar{x}$=3.32).

Phase 3: Suggestion from the respondents

The suggestions from the respondents were listed as follows:

1. Communication and Presentation Skills should be highlighted as the students should have a chance to practice these skills in the real situation setting.
2. Activities or projects based on a real industry setting are important.
3. Teaching English and Japanese languages in a real context is important.

Conclusion

1. The overall mean score of needs analysis of Generic skills on engineering students for work preparation was at high level ($\bar{x}$=4.44). The highest cluster was at Basic Skills ($\bar{x}$=4.59), followed by Conceptual Skills ($\bar{x}$=4.50) and Personal Skills ($\bar{x}$=4.25).

2. The mean score of needs analysis of Generic skills on engineering students for work preparation on Basic Skills was at the highest level ($\bar{x}$=4.59). The highest skill was at Use of Technology ($\bar{x}$=4.88) and Literacy ($\bar{x}$=4.82), followed by Administration ($\bar{x}$=4.35) and Numeracy ($\bar{x}$=4.33).

3. The mean score of needs analysis of Generic skills on engineering students for work preparation on Conceptual Skills was at high level ($\bar{x}$=4.50). The highest needs of conceptual skill was at Being Creative ($\bar{x}$=4.88), followed by Planning ($\bar{x}$=4.81). The lowest needs at high level was Ensuring Accuracy ($\bar{x}$=4.19).

4. The mean score of needs analysis of Generic skills on engineering students for work preparation on Conceptual Skills was at high level ($\bar{x}$=4.25). The highest needs of

conceptual skill was at Self-Confidence ($\bar{x}$=4.81), followed by Responsibility/Reliability ($\bar{x}$=4.75). The lowest needs at high level was Ambition ($\bar{x}$=3.32).

5. The suggestions from the respondents were listed as: Communication and Presentation Skills should be highlighted as the students should have a chance to practice these skills in the real situation setting; Activities or projects based on a real industry setting are important; and Teaching English and Japanese languages in a real context is important.

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