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A Study of Instructional Needs on Japanese for Engineering Perceived by Thai-Nichi Institute of Technology Students

Chareeluk TANTIP*, Bundit ANUYAHONG
College of General Education and Languages
Thai-Nichi Institute of Technology, Bangkok, Thailand
*Corresponding authorH;chareeluk@tni.ac.th

ABSTRACT

The purposes of this research were 1) to study instructional needs on Japanese for engineering perceived by Thai-Nichi Institute of Technology students in seven aspects: Contents, Teaching Materials, Japanese Language Skills, Teaching-Learning Process, Teaching Activities, Teaching Approach and Instructor 2) to compare students' needs on the seven aspects according to students' gender, academic year and faculty, and 3) to gather supplemental suggestions. Research samples were 306 TNI students in the second semester of 2015 academic year, derived through simple random sampling technique. The instruments used for gathering the data were the rating-scale and open-ended questionnaire. The statistics used for analyzing the data were frequency, percentage, mean, standard deviation, t-test, F-test, and content analysis. The research findings were as follows: 1. Instructional needs on Japanese for engineering perceived by Thai-Nichi Institute of Technology students as a whole were at high level ($\bar{x} = 4.15$). When considered in each aspect, it was found that their needs were at high level on Contents ($\bar{x} = 4.06$), Teaching Materials ($\bar{x} = 4.08$), Japanese Language Skills ($\bar{x} = 4.26$), Teaching-Learning Process ($\bar{x} = 4.17$), Teaching Activities ($\bar{x} = 4.09$), Teaching Approach ($\bar{x} = 4.14$) and Instructor ($\bar{x} = 4.28$) respectively. 2. The students with different genders showed statistically significant differences in overall at .05. When considered in each aspect, it was found that there were statistically significant differences at .05 level on Contents, Teaching Materials, Japanese Language Skills, Teaching-Learning Process, Teaching Approach and Instructor. For the rest aspect, it was found that there were no significant differences. 3. The students with different academic year showed statistically significant differences in overall at .05. When considered in each aspect, it was found that there were statistically significant differences at .05 level on Contents, Japanese Language Skills, Teaching-Learning Process, Teaching Approach and Instructor. For the rest aspect is was found that there were no significant differences. 4. The students with different faculty showed statistically significant differences in overall at .05. When considered in each aspect, it was found that there were statistically significant differences at .05 level on all aspects. 5. TNI students had supplemental suggestions: TNI should provide teaching activities by taking students on a field trip in a factory to observe real production process; and simulation activity should be created in classroom to enhance the authentic situation in the workplace.

Keywords: Instructional Needs, Japanese for Specific Purposes, Japanese Teaching.

Introduction

Nowadays, Japanese language courses are offered at many universities in Thailand. This might be Japan is the top of foreign investor in Thailand. The Japanese Chamber of Commerce in Bangkok, further, shows that number of Japanese companies operating in

Thailand have been gradually increased in the recent years (Japanese Chamber of Commerce, 2015). Moreover, Saeng-urai (2013)'s study indicated that not only the jobs that must gain Japanese language skills such as translator or secretary, but Japan enterprises also need the labors in others particular fields with Japanese language skills. A more radical approach is advocated by Damrongchai (2012) who stated that although many universities in Thailand offer more Japanese language course in response to the needs, many companies are faced with a dearth of qualified personnel who can work in their major fields with outstanding Japanese language skills.

Consequently, it is important for university to design appropriate Japanese course that suits learners and meets labor demand, then instructional needs analysis can be used to determine the contents of Japanese language course. In additions, Phetcharat (2012) supported that needs analysis on language helped instructors to plan and design curriculum and course content to meet object and language needs of their learners. In view of these concerns, Carter (1983) identified the characteristics of language for specific purpose course are a) authentic materials b) purpose-related orientation and c) self-direction.

Thai-Nichi Institute of Technology (TNI) is a private educational institute in Bangkok Thailand, comprises 3 faculties; Engineering, Information Technology and Business Administration, and now offers Japanese language courses to all 3 faculties. All courses offered in TNI, the students are subject to an intensive study in both English and Japanese languages to make sure that student's language proficiency meets further continuing study and the needs of Japanese enterprises that want students to acquire Japanese communication ability good enough to cooperate with Japanese staffs in their professional fields. To serve students' in each faculty, Japanese languages for specific purpose courses are offered such as Business Japanese and Japanese for Engineering. To plan and design appropriate Japanese language course that suit all students of each faculty can be very challenging and exactly different from Japanese language course for Japanese language major student.

Although all students have learned business Japanese language as required subjects, it seems that Engineering students need more Japanese knowledge to meet the labor demand. The subject named "Japanese for Engineering" at TNI offered as an elective subject when students passed all required subjects with the aim to improve language abilities of Engineering student to fulfill the need of Thai-Japanese industries with specialist who can communicate Thai, English and Japanese in particular fields.

Instructional needs on Japanese for Engineering of TNI students will be studied to find out content to design effective Japanese course that will cover the specific Japanese language needs of our students. This study proposed relevant topics which could be determined in a Japanese language course for Engineering student in TNI.

Research Purposes

1. To study instructional needs on Japanese for engineering perceived by Thai-Nichi Institute of Technology students in seven aspects: Contents, Teaching Materials, Japanese Language Skills, Teaching-Learning Process, Teaching Activities, Teaching Approach and Instructor
2. To compare students' needs on the seven aspects according to students' gender, academic year and faculty
3. To gather supplemental suggestions.

Methodology

Population and Samples

This research was to study of instructional needs on Japanese for engineering perceived by Thai-Nichi Institute of Technology students in seven aspects: contents, teaching materials, Japanese language skills, teaching-learning process, teaching activities, teaching approach and instructor which consisted of population and samples as follows:

Population of this research was 1,200 TNI students in 3 faculties of Engineering, Information Technology and Business Administration in the second semester of 2015 academic year. Samples of the research were 306 TNI students derived through simple random sampling technique. The instruments used for gathering the data were the rating-scale and open-ended questionnaire. The statistics used for analyzing the data were frequency, percentage, mean, standard deviation, t-test, F-test, and content analysis.

Instrumentation

The instrument used in this study is a questionnaire. The questionnaire was constructed by the researcher, based on instructional needs on Japanese for engineering.

The first part (Part 1) of this questionnaire asks for the demographic information on their genders, academic year and faculty. The participants were asked to report their information by ticking in only one box.

The second part (Part 2) concerns a study of instructional needs on Japanese for engineering. This part comprises 67 items of a study of instructional needs on Japanese for engineering in 7 major areas: 10 items of contents, 10 items of teaching materials, 8 items of Japanese language skills, 10 items of teaching-learning process, 10 items of teaching activities, 11 items of approach, and 8 items of instructor. The participants were asked to check by ticking in only one box under the five levels of importance on each item in Part 2 to indicate their instructional needs on Japanese for engineering in each area listed in the questionnaire.

The five levels of needs used in the questionnaire are "Strongly Agree", "Agree", "Neither agree nor disagree", "Disagree" and "Strongly disagree". Responses from the student questionnaires were subsequently coded. The data of the students' coded responses were statistically calculated and analyzed. The computation of Cronbach's Alpha as a measure of reliability was employed to indicate how reliable the research questionnaire results are. Reliability is defined as the proportion of the students' responses to each item in the questionnaire and the reliability coefficient or calculated alpha is a lower bound of the true reliability of the research instrument, or the questionnaire. The descriptive statistics is also used to determine the individual summary statistics for each of the 76 items in the questionnaire.

The third part (Part 3) asks for more opinions and suggestions of TNI undergraduate students about a study of instructional needs on Japanese for engineering perceived by Thai-Nichi Institute of Technology students which based on open-ended questions.

Data Collection

Instructional needs on Japanese for engineering were accessed through the questionnaire in the second semester of 2015 academic year.

The administration of the research questionnaire was conducted in Japanese classes. Part 1 concerns the demographic variables about their genders, academic years and faculties. The 67 items of Part 2 cover instructional needs on Japanese for engineering. Therefore, the participants were requested to consider each item carefully and indicate how important each item was for their study. A total of 306 TNI students from the 3 faculties completed the

questionnaire. The students' responses from the questionnaire were subsequently coded using computer program as follows: "1 = male and 2=female" for genders; 1 = first year, 2 = second year, 3 = third year, 4 = forth year" for academic years; "1 = Engineering, 2 = Information Technology and 3=Business Administration for faculties and "1=strongly disagree, 2 =disagree, 3 = neither agree nor disagree, 4 = agree, 5 = strongly agree" for each of the five levels of importance on 67 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 instructional needs on Japanese for engineering students listed in the questionnaire. The frequency distributions were analyzed to determine the proportions of the students' responses to the five levels of importance on the 67 items in 7 majors area: 10 items of contents, 10 items of teaching materials, 8 items of Japanese language skills, 10 items of teaching-learning process, 10 items of teaching activities, 11 items of approach, and 8 items of instructor. Process analysis was conducted with the second research question in determining the associations of the participants' instructional needs on Japanese for engineering to each of these demographic variables: genders, academic years and faculties.

Data Analysis from Questionnaire

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:

$1.00 <= \bar{x} < 1.50$ refers to students strongly disagree on instructional needs on Japanese for engineering

$1.51 <= \bar{x} < 2.50$ refers to students disagree on instructional needs on Japanese for engineering

$2.51 <= \bar{x} < 3.50$ refers to students neither disagree nor agree on instructional needs on Japanese for engineering

$3.51 <= \bar{x} < 4.50$ refers to students agree on instructional needs on Japanese for engineering

$4.51 <= \bar{x} < 5.00$ refers to students strongly agree on instructional needs on Japanese for engineering

The Statistics Used for Analyzing the Data

The collected data was analyzed using a computer program. The statistics used for analyzing the data were frequency, percentage, mean, standard deviation, t-test, f-test, and content analysis.

Results

Results of Data Analysis

Phase 1 The results of demographic variable of TNI undergraduate students

The analysis of the data from the students' questionnaire reported by TNI undergraduate students in the 2015 academic year is presented in the first section deals with the demographic variables from the students' responses to Part 1 of the questionnaire: genders, academic years and faculties as following table.

Table 1
Table of the results of demographic data of respondents

Demographic data of respondents	n=306	Percentage
1. Genders		
1.1 Male	153	50.00
1.2 Female	153	50.00
Total	306	100
2. Academic Years		
1st Year	86	28.10
2nd Year	96	31.40
3rd Year	79	25.80
4th Year	45	14.70
Total	306	100
3. Faculties		
Engineering	106	34.60
Information Technology	86	28.10
Business Administration	114	37.30
Total	306	100

Table showed that percentages of TNI undergraduate respondents in genders ranged from 50.0% for male and 50.0% for female; in academic years ranged from 28.10% for 1st year, 31.40% for 2nd year, 25.80% for 3rd year and 14.70% for 4th year; in faculties ranged from 34.60% for Engineering, 28.10% for Information Technology, 37.30% for Business Administration.

Phase 2 Instructional Needs on Japanese for Engineering Perceived by Thai-Nichi Institute of Technology Students in total and in each aspects

Table 2
Table of mean and standard deviation of Instructional Needs on Japanese for Engineering in total and in each aspects

Components	$\bar{x}$	S.D.	Level
Contents	4.06	0.63	high
Teaching Materials	4.08	0.57	high
Japanese Language Skills	4.26	0.61	high
Teaching-Learning Process	4.17	0.63	high
Teaching Activities	4.09	4.60	high
Teaching Approach	4.14	0.64	high
Instructor	4.28	0.67	high
Total	4.15	0.54	high

The table above indicated that TNI students had a high level of instructional needs on Japanese for engineering in overall ($\bar{x}$ =4.15). When considered in each aspect, it was found that the students had high levels of instructional needs on Japanese for engineering in all aspects.

Phase 3 The results of the comparison of instructional needs on Japanese for engineering according to genders, academic years, and faculties

Table 3
Table of mean and standard deviation of instructional needs on Japanese for engineering according to genders

Components	Male (M) n=169		Female (F) n=122		t	p
	$\bar{x}$	S.D.	$\bar{x}$	S.D.		
Contents	3.94	0.70	4.19	0.52	-3.40	0.001
Teaching Materials	3.97	0.63	4.18	0.47	-3.19	0.002
Japanese Language Skills	4.12	0.68	4.40	0.50	-4.07	0.000
Teaching-Learning Process	4.07	0.70	4.27	0.53	-2.78	0.006
Teaching Activities	4.04	0.65	4.14	0.55	-1.53	0.126
Teaching Approach	4.06	0.70	4.23	0.56	-2.36	0.019
Instructor	4.14	0.73	4.42	0.56	-3.67	0.000
Total	4.05	0.60	4.26	0.44	-3.495	0.001

The table showed that students with different genders had statistically significant differences at 0.05 level in total. When considered in each aspect, it was found out that there was statistically significant differences at 0.05 level in contents, teaching materials, Japanese language skills, teaching-learning process, teaching approach and instructor. However, the rest aspects had no differences.

Table 4
Table of comparison of instructional needs on Japanese for engineering according to academic years

Components		SS	df	MS	F	p	Sheffe'
Contents							
	Between groups	5.363	3	1.788	4.607	.004	
	Within groups	117.190	302	.388			2nd-3rd
	Total	122.553	305				
Teaching materials							
	Between groups	2.322	3	.774	2.402	.068	
	Within groups	97.316	302	.322			
	Total	99.638	305				
Japanese language skills							
	Between groups	5.091	3	1.697	4.643	.003	1st-3rd,
	Within groups	110.398	302	.366			2nd-3rd
	Total	115.489	305				
Teaching-learning process,							
	Between groups	5.765	3	1.922	4.980	.002	1st-3rd,
	Within groups	116.531	302	.386			2nd-3rd
	Total	122.296	305				
Teaching activities							
	Between groups	3.604	3	1.201	3.325	.020	2nd-3rd

		SS	df	MS	F	p	Sheffe'*
	Within groups	109.119	302	.361			
	Total	112.723	305				
Teaching approach							
	Between groups	5.957	3	1.986	5.006	.002	
	Within groups	119.773	302	.397			2nd-3rd
	Total	125.729	305				
Instructor							
	Between groups	4.338	3	1.446	3.291	.021	
	Within groups	132.716	302	.439			
	Total	137.054	305				
Total							
	Between groups	4.220	3	1.407	4.993	.002	1st-3rd,
	Within groups	85.086	302	.282			2nd-3rd
	Total	89.306	305				

* Statistical significance at 0.05 level

The table showed that students with different academic years had statistically significant differences at 0.05 level in total. When considered in each aspects, it was found out that there were statistically significant differences at 0.05 level in contents, Japanese language skills, teaching-learning process, teaching activities, teaching approach and instructor. For the rest area, there were not significant differences.

Table 5
Table of comparison of instructional needs on Japanese for engineering according to faculties

Components		SS	df	MS	F	p	Sheffe'*
Contents							
	Between groups	19.145	2	9.573	28.049	.000	BA-EN,
	Within groups	103.408	303	.341			BA-IT,
	Total	122.553	305				EN-IT
Teaching materials							
	Between groups	4.791	2	2.395	7.652	.001	
	Within groups	94.848	303	.313			BA-IT,
	Total	99.638	305				EN-IT
Japanese language skills							
	Between groups	6.080	2	3.040	8.419	.000	
	Within groups	109.409	303	.361			BA-IT,
	Total	115.489	305				EN-IT
Teaching-learning process,							
	Between groups	5.240	2	2.620	6.782	.001	
	Within groups	117.056	303	.386			EN-BA,
	Total	122.296	305				EN-IT
Teaching activities							
	Between groups	6.186	2	3.093	8.798	.000	
	Within groups	106.536	303	.352			BA-IT,
	Total	112.723	305				EN-IT
Teaching approach							
	Between groups	7.570	2	3.785	9.705	.000	BA-IT,

						EN-IT
Within groups	118.160	303	.390			
Total	125.729	305				
Instructor						
Between groups	10.409	2	5.205	12.452	.000	BA-IT, EN-IT
Within groups	126.645	303	.418			
Total	137.054	305				
Total						
Between groups	7.831	2	3.915	14.561	.000	BA-IT, EN-IT
Within groups	81.475	303	.269			
Total	89.306	305				

* Statistical significance at 0.05 level

The table showed that students with different faculties had statistically significant differences at 0.05 level in total. When considered in each aspects, it was found that there were statistically significant differences at 0.05 level in contents, teaching materials, Japanese language skills, teaching-learning process, teaching activities, teaching approach and instructor.

Phase 4 The results of opinions and suggestions strategies of Thai-Nichi Institute of Technology students towards instructional needs on Japanese for engineering

       TNI students had supplemental suggestions as following:

1. TNI should provide teaching activities by taking students on a field trip in a factory to observe real production process
2. Simulation activity should be created in classroom to enhance the authentic situation in the workplace.

Conclusions

       According to the study and data analysis, the results of this study were concluded as follows:

Phase 1: The results of demographic variable of TNI undergraduate students

       Percentages of TNI undergraduate respondents in genders ranged from 50.0% for male and 50.0% for female; in academic years ranged from 28.10% for 1st year, 31.40% for 2nd year, 25.80% for 3rd year and 14.70% for 4th year; in faculties ranged from 34.60% for Engineering, 28.10% for Information Technology, 37.30% for Business Administration.

Phase 2: Instructional needs on Japanese for engineering perceived by Thai-Nichi Institute of Technology students

       TNI students had a high level of instructional needs on Japanese for engineering in overall (=4.15). When considered in each aspect, it was found that the students had high levels of instructional needs on Japanese for engineering in all aspects.

Phase 3: The results of the comparison of instructional needs on Japanese for engineering according to genders, academic years, and faculties

       1. Students with different genders had statistically significant differences at 0.05 level in total. When considered in each aspect, it was found out that there was statistically significant differences at 0.05 level in contents, teaching materials, Japanese language skills, teaching-learning process, teaching approach and instructor. However, the rest aspects had no differences.

2. Students with different academic years had statistically significant differences at 0.05 level in total. When considered in each aspect, it was found out that there were statistically significant differences at 0.05 level in contents, Japanese language skills, teaching-learning process, teaching activities, teaching approach and instructor. For the rest area, there were not significant differences.

3. Students with different faculties had statistically significant differences at 0.05 level in total. When considered in each aspects, it was found that there were statistically significant differences at 0.05 level in contents, teaching materials, Japanese language skills, teaching-learning process, teaching activities, teaching approach and instructor.

Phase 4: The results of opinions and suggestions strategies of Thai-Nichi Institute of Technology students towards instructional needs on Japanese for engineering as following:

1. TNI should provide teaching activities by taking students on a field trip in a factory to observe real production process
2. Simulation activity should be created in classroom to enhance the authentic situation in the workplace.

Discussion

According to the study and data analysis, the results of this study can be discussed as follows:

Instructional needs on Japanese for Engineering of TNI students were at high level in overall. This might be because the students had to learn Japanese skills with working competency for preparing themselves to industrial organizations. Therefore, teaching materials, teaching learning process, instructors and teaching approach are significant related to the view of Anuyahong (2013) who advocates that TNI students had satisfaction in teaching materials at high level due to Japanese department had updated teaching materials for all students regularly, then the various multimedia materials provided for TNI students were according to the real situations focusing on practicing for work preparation in industrial organizations. Moreover, the students were taught with the teaching approaches happily (Rost, 1994: 146).

Furthermore, needs of TNI students were at high level. It could be due to all Japanese courses employ learner-centred approach. This is related to the research of Anuyahong (2011) who advocates that TNI students had satisfaction with teaching-learning process, curriculum, and contents at high level because contents of language teaching cover all skills and support students in learning about language focus, sociolinguistics, syntax, and communicative strategies (Canale and Swain, 1980:1). Moreover, contents of Japanese course are important to learners' interests and needs. Consequently, an effective learning process of individuals was dependant on two significant factors: learning environment and learning situation. Besides, learner-centered approach demands active learning environment, guides learners to learn how to learn, recognizes differences in each learner, and creates different learning styles to meet the needs of each learner (Brooks & Brooks, 2001).

Acknowledgements

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