

A Study of Relationship between Learning-Related Behavior and Language Learning Motivation of Engineering Undergraduates

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Abstract - This study aimed at investigating the relationship between engineering undergraduates' language learning motivation and their learning-related behavior, with a comparison between students of both genders. The sample included 98 engineering undergraduate students from Universiti Malaysia Perlis, attending the Foundation English course in 2013. The instruments included a set of questionnaire and two parallel versions of the Quick Placement Test (QPT) provided by University of Cambridge Local Examinations Syndicate. The collected data were analyzed by Pearson's correlation and *t*-test. The findings indicated that learners' learning-related behavior had a positive relationship with their language learning motivation, both as a whole and individually, with significant correlation at the 0.01 level. In addition, male and female students were not significantly different in their motivation to learn English.

Keywords; learning-related behavior, language learning motivation, engineering undergraduates

I. INTRODUCTION

According to Gardner (1985), language learning motivation refers to "the extent to which an individual works or strives to learn the language because of a desire to do so and the satisfaction experienced in this activity". Many previous studies prove a significant role of English in determining engineering undergraduates' success, both academic and professional (Buriro & Soomro, 2013; Joseba, 2005; Pendergrass et al., 2001; Pritchard & Nasr, 2004). Accordingly, language learning motivation of engineering undergraduate students has been extensively studied (Al-Tamimi & Shuib, 2009; Bobkina & Fernandez de Caley

Dalmau, 2012; Johnson & Johnson, 2010; Nahavandi & Mukundan, 2013; Wimolmas, 2013). It has been found students' adequate motives for learning English significantly relates to their academic achievements and improvements in English (Abdul Samad et al., 2012; Dornyei, 1990; Manakul, 2007; Su and Wang, 2009; Wang, 2008; Wimolmas, 2013). However, investigations on relationship between their language learning motivation and their learning-related behavior have been rarely found. With a test on engineering students' English proficiency, the present study thus focuses on exploration of the relationship.

1.1 Background of research setting

Universiti Malaysia Perlis (UniMAP), Malaysia's 17th public institution of higher learning approved by the Malaysian Cabinet on May 2001, was originally known as Kolej Universiti Kejuruteraan Utara Malaysia (KUKUM), or Northern Malaysia University College of Engineering, and renamed as Universiti Malaysia Perlis (UniMAP) in February 2007. At the undergraduate level, the university offers 21 programs in Engineering, one in Engineering Technology, and two in Business. All engineering programs include microelectronic engineering, electrical system engineering, industrial electronic engineering, computer network engineering, electrical energy system engineering, electronic engineering, metallurgical engineering and construction engineering. *Foundation English* is a prerequisite course for all undergraduate students' enrollment in the university's compulsory English courses. Offered by the Department of International Languages (DIL), the course is held two hours a week, with English being the instruction medium. Nevertheless, in their daily routine, students often communicate with one another using their native language.

1.2 Purpose of study

The current study aimed at investigating the relationship between engineering undergraduate students' language learning motivation and their learning-related behavior, with a comparison between the students of both genders.

1.3 Research questions

Based on the above objectives of the study, the following questions were raised:

1. What is the English proficiency level of the engineering undergraduate students at UniMAP?
2. How do male and female engineering undergraduates differ in their language learning motivation and learning-related behavior?
3. Is there any relationship between engineering undergraduates' language learning motivation and their learning-related behavior?

1.4 Scope of the study

The study was conducted with the samples of engineering undergraduate students at Universiti Malaysia Perlis, attending the Foundation English course in 2013, in order to explore their English language learning motivation and their learning-related behavior. The data collection was done through questionnaire administered to the total number of 98 students.

II. LITERATURE REVIEW

2.1 Language learning motivation

Motivation plays an important role in language learning as a main factor in the learning process, driving learners to achieve their learning goals (Pearson et al., 2001). It can be considered an indicator of language learners' success (Dornyei, 1998; Brown, 2000; Gardner, 2006). Motivation construct is classified into two types: instrumental and integrative. Hudson (2000) considers the former a concrete construct, and a latter a universal one. Instrumental motivation refers to the desire for language learning in order to reach specific practical objectives (Hudson, 2000), focusing on career advancement, grade improvement, travel, entertainment (Lucas et al., 2010; Wilkins, 1972; Saville-Troike, 2006). On the other hand, contrasts are presented in integrative motivation, which involves global aspirations in learning a foreign language. That is, learners desire to culturally integrate themselves into the society of target language (Dornyei, 2006; Gardner, 1983).

There have been several investigations on language learning motivation. Zanghar (2012) found Libyan

undergraduates were highly motivated, both instrumentally and integratively, to learn English as a foreign language. Differently, Al-Tamimi and Shuib (2009) claimed that instrumental motivation was the primary force driving the petroleum engineering undergraduates to learn English. Similarly, Wimolmas (2013) discovered a slightly higher degree of instrumental than instrumental motivation in freshmen students. On the other hand, Abdul Samad et al. (2012) reported a positive relationship between integrative motivation and students' language proficiency. The integrative motivation is also a good predictor of the learners' proficiency in an IELTS exam. Japanese engineering students were reportedly instrumentally motivated to learn English to a high extent (Johnson & Johnson, 2010).

2.2 Motivation-behavior relationship

Behavior is activated by motivation (Singh, 2011). According to Ormrod (2010), there are many effects of motivation on learning behavior: directing learners' behavior toward particular goals, leading to increased effort and energy, increasing initiation of and persistence in activities, affecting cognitive processes, determining consequences of their learning behavior, and enhancing learners' performance.

2.3 Gender differences in motivation and learning

During the 1970s and early 1980s, the motivation theory was applied for better comprehension of gender differences in learning achievement (Meece, Glienke & Burg, 2006). There have been numerous studies on differences in motivation and learning between male and female students (Kissau, 2006; Nahavandi and Mukundan, 2013; Meece, Glienke & Burg, 2006; Parker, 2007; Rusillo & Arias, 2004; Tai et al., 2013; Yau et al., 2011). Male and female students reportedly have different learning motivation based on discipline areas. Males tend to focus their learning more on mathematics, science, and sports, while females manifest more motivation to learn language arts and reading (Meece, Glienke & Burg, 2006). According to Parker (2007)'s review on gender differences in three measures of motivation: interest, competence and goal orientation, among eight studies on interest and gender relationship, one study reported higher task value possessed by middle school male students than by females, while another found college aged females' higher intrinsic values than males. Male students obtained small interest advantages in Mathematics, while females were advantaged in language/arts. Significant relationships between gender and self-efficacy in social studies were also discovered. Again, females were reported possessing higher competency than males in language arts, while males were more competent in Mathematics. Kissau (2006) additionally discovered that female students had more positive goal orientation towards language learning. Male students were, on the other hand, less interested in learning a second language due to their fear of negative societal appraisal.

Studies on integrative and instrumental motivation, however, exhibited greater variation with respect to motivational differences between the two genders in second language learning. Some reported higher integrative motivation in female students and stronger instrumental motivation in male ones (Ahmadi, 2011), while others, e.g., Nahavandi & Mukundan (2013), found the same level of instrumental motivation in both genders but difference in their integrative motivation.

III. RESEARCH METHODOLOGY

3.1 Participants

The study participants included 98 engineering undergraduate students attending the Foundation English course in the second semester of 2013. The majority of them were freshmen and the rest juniors and seniors.

3.2 Research instruments

The instruments included a questionnaire and two parallel versions of the Quick Placement Test (QPT) taken from the University of Cambridge Local Examinations Syndicate (2001). The questionnaire was partially adopted from the research project no. L1A 560297S, "Comparative study of approaches to the development of oral English communication skills adopted by universities in EFL contexts," funded by Prince of Songkla University, Hat Yai Campus, Thailand. The questionnaire consists of the following two main parts:

- Part 1: Demographic information of respondents including gender, age, field of study, first language, other spoken languages, a period of learning English, spoken-English proficiency
- Part 2: Variables of English language learning with 5-point Likert Scale statements ranging from 'Strongly Disagree (=1)' to 'Strongly Agree (=5)' covering learning motivation (items 1-10) and learning-related behavior (11-18)

3.3 Data collection

During a 120-minute period of normal class of Foundation English, all of the 98 student samples were assigned to do the Quick Placement Test (QPT) in 40 minutes. The questionnaire was distributed to all of them afterwards. Before responding to the questions in the questionnaire, the students were clearly explained the instructions and allowed to ask any questions they might have regarding the study.

3.4 Data analysis

The analysis of obtained data was conducted through the SPSS program. The data concerning the respondents' demographic background were descriptively analyzed and presented. Pearson's correlation and *t*-test were calculated to determine relationships and differences. To measure the motivational level and the learning-related behavior trend, a 5-

point Likert scale with an interval score of 0.08 was applied. The rating interpretation is as follows:

Mean range	Interpretation
3.68 – 5.00	High motivation / much learning-related behavior
2.34 – 3.67	Moderate motivation / moderate learning-related behavior
1.00 – 2.33	Low motivation / little learning-related behavior

IV. FINDINGS

The findings of the study are presented in six parts: (1) respondents' demographic data, (2) placement test results, (3) English language learning motivation, (4) learning-related behavior, (5) motivation-behavior relationship, and (6) gender differences.

4.1 Respondents' demographic data

The majority of the respondents were female (54.1%) and at the age of 19-21 years old (64.4%). Their first language was Malay (87.8%), followed by Chinese (7.1%) and Tamil (3.1). English was found the second language among the majority of them (72%). Nearly 50 percent of the students had learnt English for 13-15 years (48.9%), followed by 16-20 years (19.4%). Most of them identified their spoken English at an *average* level (70.4%), followed by *well* (14.3%) and *poor* (10.2%) ones, respectively. Only two respondents admitted that they could not speak English at all.

4.2 Placement test result

The students were asked to finish the Quick Placement Test (QPT) within 40 minutes to identify their English proficiency. The result shows that most of the students were at the lower intermediate level [B1] (51.0%, N = 50), followed by the elementary [A2] (36.7%, N = 36) and the upper intermediate [B2] (11.2%, N = 11), respectively. In comparison, female students' English proficiency was a little bit higher than male ones' (see *Table 1*).

Table 1: Engineering Undergraduates' English Proficiency

Gender	ALTE Levels				Total
	Beginner [A1]	Elementary [A2]	Lower Intermediate [B1]	Upper Intermediate [B2]	
Male	1	17	22	5	45
Female	0	19	28	6	53
Total	1	36	50	11	98

4.3 English language learning motivation

To identify all the 98 engineering undergraduate students' motivation for learning English, the students were asked to rank a list of ten reasons for their learning English by checking the corresponding scales ranging from *strongly disagree* (1), *disagree* (2), *neutral* (3), *agree* (4), and *strongly agree* (5). The survey result indicates the students' high motivation, both instrumental and integrative. The students' instrumental motivation (4.37), however, was a bit higher than the integrative motivation (4.27) (see *Table 2*).

Table 2: Levels of Engineering Students' English Language Learning Motivation

Motivational constructs	Reasons for learning English	Mean	SD	Rating of motivation	Overall mean
	<i>I want to learn English because ...</i>				
<i>Instrumental motivation</i>	1) it will help me get a better job.	4.47	.749	High	4.37
	2) it will improve my grade.	4.46	.691	High	
	3) I do not want to disappoint other people (e.g. parents)	3.90	1.050	High	
	4) that will help me when I travel abroad.	4.53	.677	High	
	5) it is a global language.	4.61	.620	High	
	6) I want to work for a foreign company at home and abroad.	4.30	.840	High	
	7) I want to be able to listen to music and watch films in English	4.32	.781	High	
<i>Integrative motivation</i>	8) I want to be able to speak to native speakers.	4.42	.731	High	4.27
	9) I will learn more about other cultures/communities.	4.34	.759	High	
	10) I find the language beautiful.	4.06	.883	High	

4.4 Learning-related behavior

Similarly to the motivational assessment, the survey of the students' learning-related behavior also required the samples to rate the 5-scale statements corresponding to their actual behavior. The learning-related behavior was categorized into two types: in-class and off-class behavior. Based on

discrete items, regular class attendance was the most agreeable behavior ($\bar{X} = 4.43$). On the other hand, doing extra off-class activities was least practiced ($\bar{X} = 3.09$). The students, as a whole, manifested more in-class than off-class learning-related behavior (see *Table 3*).

Table 3: Levels of Engineering Students' Learning-related Behavior

Behavior construct	Learning-related behavior	Mean	SD	Degree of learning-related behavior	Overall mean
In-class	1) I am interested in the content of the English communication course.	3.90	.739	Much	3.91 Much
	2) I feel comfortable communicating and working with my peers.	3.96	.759	Much	
	3) I feel free to offer an answer although my teacher does not call out my name.	3.49	.900	Moderate	
	4) I attend class regularly.	4.43	.732	Much	
	5) I participate actively in any classroom interaction.	3.77	.784	Much	
Off-class	6) I spend time with my English classmates socializing outside the classroom.	3.57	1.065	Moderate	3.49 (Moderate)
	7) I spend time with my English classmates working on class assignments outside of classroom.	3.70	.888	Much	
	8) I do required self-study English activities outside of classroom.	3.49	.815	Moderate	
	9) I do extra English activities outside the classroom.	3.09	.920	Moderate	
	10) I try to find the opportunity to speak English with native speakers outside the classroom	3.52	.899	Moderate	
	11) I take the opportunity to speak English even with speakers of other languages.	3.55	.910	Moderate	

4.5 Motivation – behavior relationship

A two-tailed Pearson’s correlation coefficient analysis was computed to explore the relationship between the engineering students’ language learning motivation and their learning-related behavior. The former was the independent variable and the latter the dependent one. The result indicates a positive relationship among all variables, with statistical significance at the 0.01 level (see *Table 4*).

Table 4: Correlations between Engineering Students’ Learning Motivation and Their Learning-related Behavior

Motivation	Learning-related behavior		
	Overall behavior	In-class behavior	Off-class behavior
Overall motivation	.44**	.83**	.91**
Instrumental motivation	.41**	.48**	.27**
Integrative motivation	.43**	.47**	.30**

** . Correlation is significant at the 0.01 level.

4.6 Gender differences

An independent *t*-test analysis was conducted to investigate difference between male and female engineering students in their learning motivation and their learning-related behavior. Both male students and female students shared similar learning motivation and learning-related behavior (see *Table 5*).

Table 5: Gender Comparison in Motivation and Learning-related Behavior

Variables	N	\bar{X}	SD	<i>t</i>	Sig	
Instrumental motivation	Male	45	29.82	4.39	1.747	.084
	Female	53	31.22	3.39		
Integrative motivation	Male	45	12.53	2.15	1.333	.186
	Female	53	13.05	1.73		
In-class behavior	Male	45	19.04	2.89	1.679	.096
	Female	53	19.96	2.51		
Off-class behavior	Male	45	20.17	3.85	1.891	.062
	Female	53	21.56	3.41		

5 DISCUSSION AND RECOMMENDATION

The research questions have been answered as follows. First, regarding English proficiency, approximately fifty percent of the engineering undergraduate students at Universiti Malaysia Perlis were at the lower intermediate level [B1]. Only approximately ten percent possessed the upper

intermediate [B2] level of proficiency. Students of both genders were only slightly different in their level of proficiency.

Second, the students were highly motivated to learn English, with a slightly greater degree of instrumental than integrative motivation. This strengthened the concept that English plays an essential role in their lives, specifically in their education and career. The present study thus supported the previous ones. Al-Tamimi & Shuib (2009) also discovered instrumental motivation as the primary motivation source of Yemeni petroleum engineering students to learn English, and Johnson & Johnson (2010) reported high instrumental motivation of Japanese engineering students.

In gender comparison, the current study found indifference in learning motivation between males and females, contrasting with Nahavandi and Mukundan (2013), which discovered differences between the two genders. Males were more instrumentally motivated, and females possessed higher integrative motivation (Ahmadi, 2011; Parker, 2007). The former was also more excelled in Mathematics, while the latter in language arts (Kissau, 2006; Meece, Glienke & Burg, 2006).

The third question was whether engineering undergraduates’ language learning motivation relates to their learning-related behavior. The result showed positive relationship between the two variables, both as a whole and individually. That is, the students were highly motivated to learn English. Consistent with Ormrod (2010), this drove them to manifest positive learning-related behavior; for example, regular class attendance, cooperation with peers and active participation in class activities. However, their interest in off-class activities was low. This is apparently due to the fact that English is not used as the primary medium of communication in their daily routine unlike their native languages such as Bahasa Malayu, Chinese, and Tamil.

Additionally, the examination of gender difference in learning-related behavior revealed similarity in male and female engineering undergraduate students. This could be because of their similar pattern of motivation, orientating towards career and academic achievements.

In conclusion, the findings of the current study showed both similarities to and differences from those reported in previous studies on engineering undergraduates’ motivation to learn English. It is therefore very interesting to further explore how learning environments affect the different results. Additionally, rather than focusing mainly on gender difference, the relationships between English proficiency and the students’ learning motivation, as well as learning-related behavior, should be explored in future studies.

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