

PERCEIVED SELF-EFFICACY OF MALAYSIAN ESL ENGINEERING AND TECHNOLOGY STUDENTS ON THEIR SPEAKING ABILITY AND ITS PEDAGOGICAL IMPLICATIONS

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ABSTRACT

This study looks into the self-efficacy of Malaysian ESL students (n=338) from a private university in their ability to speak in English. These students are majoring in engineering and technology. A questionnaire, designed by Idrus and Sivapalan (2007), adapted from Bandura (1990) and Mikulecky et al. (1996), was used to assess the perceived self-efficacy of the students on the three dimensions of ability, aspiration and activity perception. The findings indicate that, in general, the students had high self-efficacy beliefs in their speaking ability on all the three dimensions. The study also compared the students' self-efficacy levels in relation to year of study, gender and ethnicity. This paper discusses the findings and the pedagogical implications for the teaching and learning of speaking skills among English language learners.

Introduction

A major goal of formal education is to equip students with intellectual tools, self-beliefs, and self-regulatory capabilities to educate themselves throughout life. University students need to commit themselves to goals that give them purpose and a sense of accomplishment. Without personal commitment to something worth doing, they tend to be unmotivated, or pessimistic. A vision of a desired future helps to organize their lives, provides meaning to their activities, motivates them, and enables them to tolerate the hassles of getting there (Bandura, 2006).

Perceived self-efficacy, which refers to “*a judgment of one's ability to organize and execute given types of performances*” (Bandura, 1997:21), plays a significant role in predicting human performance in several areas of human effort (Mikulecky et. al, 1996). Bandura (1993), for example, states that strong personal efficacy beliefs enhance motivation and performance. Conversely, low efficacy beliefs are characterized by low aspiration and weak commitment to goals. These individuals

are more likely to become frustrated when they encounter difficult challenges, and see these challenges as personal threats to be avoided rather than challenges to be mastered.

Self-efficacy is explained in the theoretical framework of social cognitive theory by Bandura (1986, 1997). Social-cognitive theory is based on the principle that people are not entirely self-directed, nor do environmental forces primarily control them; rather there is a reciprocal relationship between person, environment and behavior (Bandura, 1986, 1993). How a person acts is determined by a combination of interacting factors such as previous experiences with similar behaviors which are either vicarious or first hand, environmental conditions and reflective thought processes.

The last two decades have marked a period in which a series of reports from the government, industry, and academia has questioned the state of engineering and technology education in the country and shifted the focus to include soft skills as part of the learning outcomes. This is because they see the importance of soft skills to engineering and technology students. The Accreditation Board for Engineering and Technology (ABET) in North America also has agreed that engineering and technology programs must assess student competencies not only in technical skills, but also in professional skills such as effective oral communication (Ford, 2006). Rapidly changing technology, particularly information technology, corporate downsizing, outsourcing, and globalization, have made soft skills even more critical today (Shuman, 2005). Soft skills include effective communication, presentation skills, analytical thinking, diplomacy, change management, problem solving, team building, and listening. Hence, good oral communication skills enhance soft skills.

The importance of oral communication skills in mastering a second language is emphasized by Ellis (1985) when he points out that second and foreign language acquisition involves the ability to use the sound and grammar systems to communicate meaning. Oral communication means communicating orally in a manner which is clear, fluent, and to the point, and which holds the audience's attention, both in groups and one-to-one situations. In second language learning, one of the biggest difficulties for the learners to improve is the lack of self-confidence in using the target language. They tend to be very reticent when it comes to communicating or expressing their thoughts and ideas in the target language (Beebe, 1983; Katz, 1996; Lucas, 1984). This study focuses on engineering and technology students only. Oral communication skills are essential for engineers and technologists who aspire to carry out professional practice in the global arena. Communication skills

basically constitute several core elements such as fluency in the English language and the fundamentals of visual communication (Riemer, 2002).

The inability to communicate well in English has been named as one of the causes of unemployment among university graduates. In August 2004, a leading Malaysian newspaper reported the Government's concern about the increasing number of unemployed graduates, many of whom lacked communication skills (Sibet, 2005). Sibet also points out that a survey by JobStreet, a Malaysian employment agency, found a weak command of English to be the most prominent factor (56%) for graduates' unemployment in Malaysia. Another leading Malaysian newspaper stated that a government survey has revealed that many of the nearly 60,000 unemployed graduates could not get jobs largely, due to poor English and communication skills.

A similar scenario was found among ESL/EFL students in Australia. A study by Monash University showed that more than one-third of foreign students graduating from Australian universities had very poor English skills ('Overseas graduates lack soft skills too', Feb. 4th 2007). According to the study, all graduates tested had enough command of the language to cope in most situations but were still not capable of conducting sophisticated discourse at a professional level. For engineering and technology graduates, there is ample evidence that these graduates lack the required standard of oral communication skills, particularly when compared to the needs of the industry internationally (Riemer, 2002).

English has been widely accepted as the most widespread language in the world (Kitao & Kitao, 1996). As a second language, it is also very widespread. English is the prime means for communication, and can often serve as the language between two people from two different cultures, where English is not the native tongue. It is therefore very important for university students to learn English and be able to master the language as it could help them greatly in securing and keeping a job, especially with multinational companies. These companies utilize English as the medium of communication among the workers. Consequently, if students would like to be a part of globalization, they must be able to communicate well in English.

Thus, the aim of this study is to compare ESL engineering and technology students' self-efficacy level in relation to year of study, gender and ethnicity. This paper discusses the findings and the pedagogical implications for the teaching and learning of speaking skills.

Self-efficacy in the Academic Setting

Several studies have been conducted especially in Asia on the concept of self-efficacy in the academic setting. A study by Lau et al. (1999) assessed Hong Kong students' perceptions on listening, speaking, reading and writing in English as their second language. The study focused on the overall feelings of competence, adequacy, and affective reactions regarding the skills. Chan and Abdullah (2004) found self-efficacy to be one of the elements that could shape a writer's behavior in writing effectively. In another study conducted in Malaysia, Wong (2005) found that high self-efficacy pre-service teachers adopted more language learning strategies than did low self-efficacy pre-service teachers.

Studies have also been conducted on ESL learners' self-efficacy and its relationship to English language achievement, and found that the subjects' achievements corresponded to their perceptions of their own ability (Mahyuddin et al., 2006; Huang and Chang, 1996). In analyzing several research studies on writing self-efficacy beliefs of young adolescents, Klassen (2002) found that in the majority of the studies, self-efficacy was found to play a primary role in predicting students' writing behavior.

In reviewing the literature, it seems that although many studies have been done on self-efficacy in second and foreign language learning settings, research on self-efficacy with regard to speaking ability in second language learning, especially in Malaysia is still lacking. Idrus and Sivapalan (2007) have filled this gap with their study on the self-efficacy of pre-university ESL students at a private university in Malaysia and found that the students had a high self-efficacy level on their ability to speak in English. Much, however, needs to be researched to further understand self-efficacy with regard to the students' speaking ability. In order to enhance students' self-efficacy, we need to first understand their self-efficacy level. This led the researchers to conduct this study in order to look further into the area. This study specifically looks into the perceived self-efficacy of engineering and technology students, which has never been investigated before.

Objectives of the Study

Based on the theoretical explanations on self-efficacy and the findings of previous studies, it is the aim of this study to look into the self-efficacy of ESL students from a private university in their ability to speak in English. Specifically, the objectives of this study are:

1. To find out the differences in self-efficacy in speaking English between pre-university and final year students.
2. To find out the differences in self-efficacy in speaking English between male and female students.
3. To find out the differences in self-efficacy in speaking English between students from different ethnic groups.

Methodology

A 24-item survey questionnaire, designed by Idrus and Sivapalan (2007), adapted from Bandura (1990) and Mikulecky et al (1996), on self efficacy was used in this study. The first dimension contains 11 items that primarily address students' perceived ability to speak English. This dimension is labelled *ability* and measures traits such as ability to participate in discussions conducted fully in English, ability to communicate with lecturers and international students and ability to speak in English with peers. The second dimension contains 7 items that address students' perception on activities that require them to speak in English. Labelled as *activity perception*, this dimension measures traits like students' perceptions on activities like drama, debates, oral presentations and in-class discussion. Finally, the third dimension was created with loadings from 6 items. These items measure traits such as students' *aspiration* with respect to speaking in English.

The participants for this study were 338 students from a private university in Malaysia. The medium of instruction in this university is English. In Malaysia, English is a second language but it is a very important language especially for students at the tertiary level. These students were enrolled in various engineering and technology programmes offered by the university. They were selected based on the results of the *Sijil Pelajaran Malaysia (SPM)* Examination, a standardized examination for all high school students taken at the end of their high school years (Year 11). The university provides opportunities to both Malaysian and international students to pursue their studies in engineering and technology programmes.

The respondents completed the survey questionnaires in class voluntarily. They were asked to indicate the extent to which they felt that each item/statement described their own perception of their speaking ability, and were reminded that there was no right or wrong answer to any of the items listed.

The composition of the sample was 56% male and 44% female. This proportion of gender grouping in the sample was as expected as it is quite common for male students to do engineering and technology based courses. The majority of

the respondents were Malays (87%), the largest ethnic group in Malaysia. Other ethnic groups included other minority ethnic groups in Malaysia, namely, Chinese (6%), and Indians (2%). The proportion of ethnic representation in the sample was consistent with the distribution of the university's population. About half of the respondents were pre-university students (n=170) and the other half were final year students (n=168).

Self-Efficacy Level In Relation to Year of Study

This study compares the level of self-efficacy of pre-university students and final year students. The reason why this comparison was done was to see whether the length of exposure to English as a medium of instruction has an influence on the students' speaking confidence. As indicated in Table 1, the mean scores for both groups ranging from 1.91 to 2.69, indicate that in general, both groups have a high self-efficacy level. Both had a high self-efficacy level in their ability to speak in English even though their length of exposure to English as the medium of instruction was different. This finding did not confirm the hypothesis of the researchers who expected a significant difference between the self-efficacy levels of the two groups. An earlier study conducted by Idrus and Sivapalan (2007) on pre-university students found that they did have a high level of self-efficacy in their speaking ability, but when compared to final year students, it was expected that there should be a significant difference. However, this was not the case for these two groups of respondents. This may be due to different success criteria for the two groups. The pre-university students recently graduated from high school with good results and received distinctions for the English language subject and during the selection process, they were interviewed in English; thus, they had high confidence in their ability. The final year students had high self-efficacy in their speaking ability due to longer exposure to the language. They had been taking all the courses in English and had taken part in numerous discussions and presentations in English for at least 4 years. Having survived throughout those years, they felt confident with their speaking ability. As indicated by Pajares et al. (2007), "...they interpret the results of their effort, use the interpretations to develop beliefs about their capability to engage in subsequent tasks, and act in concert with the beliefs created" (p. 106). The efforts interpreted as successful raise self-efficacy, while efforts interpreted as failure lower it. In the case of these final year students, they interpreted their effort as successful, thus leading to high self-efficacy.

Table 1: Mean scores, standard deviations and t-values for pre-university and final year students in English language speaking self-efficacy

Dimension	Pre-university		Final year		T	T-test df	p
	mean	SD	mean	SD			
<i>Ability</i>	2.69	0.66	2.20	0.63	7.00**	336	0.00
<i>Activity perception</i>	2.55	0.71	2.39	0.73	2.04*	336	0.04
<i>Aspiration</i>	1.98	0.69	1.91	0.67	0.88ns	336	0.38

Note: Scale: 1-5, ranging from (1) strongly agree to (5) strongly disagree

The higher the score, the lower the self efficacy level.

*p < 0.05, ** p<0.01, ns - not significant

In comparing the dimensions between the two groups, t-test results indicate that the self efficacy level of the pre-university students were significantly lower than the final year students in terms of *ability* ($t=7.0$, $df=336$, $p<0.01$) and *activity perception* ($t=2.04$, $df=336$, $p<0.05$). For the final year students, this may be due to the longer duration of having English as the medium of instruction at this university. In addition, the majority of these final year students had undergone industrial internship training for 8 months. During the internship, they had the opportunity to observe the more experienced workers perform tasks through oral communication and also they themselves had the experience in communicating in English. Since they had limited experience and were still not fully confident of their own abilities, they were inclined to use others with more experience to become their model. Observing models according to Pajares, Johnson and Usher (2007), can powerfully influence the students' self-efficacy beliefs.

However, the difference between the two groups was not statistically significant in terms of *aspiration* ($t=0.88$, $df=336$, ns). A possible explanation for this is that English was a second language for most of them. It is true that most of them were good at speaking in English, albeit they thought that there was still room for improvement. From the researchers' vast experiences in teaching in English at the tertiary level, regardless of the students' level of studies, they always express their wish to be better speakers of English. In Malaysia, most people see English language as having "higher social status" (Renganathan & Chong, 2007:13) for the reason that being proficient in English especially in speaking makes others respect them. Hence, they all had the aspiration to become proficient English speakers.

Self-Efficacy Level In Relation to Gender

This study also made a comparison on perceived self-efficacy between male students and female students. Engineering and technology fields are dominated by males students, as such it would be interesting to know whether there is a difference in terms of their speaking confidence between them. As shown in Table 2, t-test results indicated that the self-efficacy level of female students was significantly higher than that of male students in terms of *ability* ($t=4.32$, $df=336$, $p<0.01$) and *aspiration* ($t=3.27$, $df=336$, $p<0.00$). These findings on gender differences are similar to several previous studies on the relationship between gender and self-efficacy. Pajares (1996), for example, found that female students exhibited higher self-efficacy in areas related to language. This notion is also consistent with a study by Yaakob et al. (1993) on the psychological factors in English language learning that concluded females have a higher positive attitude towards the language and a liking for it. This finding shows that even though engineering and technology fields are dominated by male students, when it comes to speaking ability in English, the female students are more confident than the male students.

The findings, however, interestingly indicated that the difference between the two groups were not statistically significant in terms of *activity perception* ($t=1.59$, $df=336$, ns). One possible reason may be due to the fact that the activities conducted were either part of their class assignments or extra curricular activities. Therefore, the students found the activities significant because these activities carried some weight in their grades and in improving their social skills.

Table 2: Mean scores, standard deviations and t-values for male and female students in English language speaking self-efficacy

Dimension	Male		Female		T	T-test df	p
	mean	SD	mean	SD			
<i>Ability</i>	2.59	0.72	2.27	0.64	4.31**	336	0.00
<i>Activity perception</i>	2.52	0.74	2.40	0.71	1.59ns	336	0.11
<i>Aspiration</i>	2.06	0.71	1.81	0.63	3.27**	336	0.00

Note: Scale: 1-5, ranging from (1) strongly agree to (5) strongly disagree

The higher the score, the lower the self efficacy level.

* $p < 0.05$, ** $p < 0.01$, ns - not significant

Self-Efficacy Level In Relation to Ethnicity

As previously stated, Malaysia is a multi-ethnic country with three main ethnic groups: Malays, Chinese and Indians. In terms of ethnicity, as shown in Table 3,

ANOVA results indicate that the self-efficacy levels were significantly different among the ethnic groups in all dimensions.

The results shown in Table 3 indicate that Indian students have the highest level of self-efficacy in their ability to speak in English, followed by the Chinese and Malay students. This finding is consistent with the study conducted by Mahyuddin et al. (2006) which found Indian students as having a higher self-efficacy level than the Malays and Chinese. This, as suggested by Renganathan and Chong (2007), may be due to the fact that the Indian students see English language as having a higher status than their own mother tongue. Being proficient in English, as put forward by Renganathan and Chong, is seen as a good investment to the Indian students. Mahyuddin et al's study on self-efficacy and its relationship to English language achievement, found that the Malay students have higher self-efficacy than the Chinese students. However, this study shows that in terms of speaking ability, the Chinese have a higher self-efficacy level than the Malays. This may be due to the fact that the Chinese in Malaysia are more likely to use English more frequently in their daily conversation. Thus they are more confident in using the language.

Table 3: Mean scores, standard deviations and F-values for different ethnic groups (Malay, Chinese, Indian, Others) in English language speaking self-efficacy

Dimension	Ethnic group	Mean	SD	F-value	df	Sig.
<i>Ability</i>	Malay	2.50	0.68	6.31**	337	0.00
	Chinese	2.11	0.66			
	Indian	1.58	0.52			
	Others	2.27	0.76			
<i>Activity perception</i>	Malay	2.51	0.72	3.64*	337	0.01
	Chinese	2.33	0.74			
	Indian	1.78	0.47			
	Others	2.18	0.64			
<i>Aspiration</i>	Malay	1.93	0.66	3.06*	337	0.03
	Chinese	1.93	0.64			
	Indian	2.71	1.20			
	Others	1.90	1.90			

Note: Scale: 1-5, ranging from (1) strongly agree to (5) strongly disagree
The higher the score, the lower the *self efficacy* level.
* $p < 0.05$, ** $p < 0.01$, ns - not significant

The Malays however, feel more comfortable using their mother tongue, the Malay language, which is also the official medium of communication and instruction in Malaysia. Thus, they do not find it necessary to acquire another language. As highlighted by Omar (1992:17), “Although English is officially a second language, to most of them (the Malays) it just means that it is compulsory as a subject, and it is not something that one should acquire as an added asset”.

Pedagogical Implications

From the findings of this study, two pedagogical implications have been suggested. They are (1) highlight communication strategies in teaching, and (2) in group work, put students of different ethnic backgrounds and gender together.

Highlight Communication Strategies in Teaching

As found in this study, the self-efficacy levels of the respondents are high but this does not mean that they will always remain high. It is very important that this high level is maintained. In order to ensure this, teachers should always encourage students to maintain their level and/or further enhance their confidence level since the level of self-efficacy depends on the difficulty level of a particular task. The higher the level of study they are in, the more difficult and challenging their tasks will be. They will have to do more oral presentations to defend their ideas, thus they have to be more critical and analytical in thinking. In order to express their opinion critically, they need to be more apt in speaking English and knowing the right way to keep the conversation going will enable them to speak fluently.

Some researchers believe that language teachers should raise students' awareness of achievement strategies, which form part of communication strategies, to foster acquisition in oral communication. In the interaction the learner decides to keep the original communicative goal and attempts to compensate for insufficient means for achieving it. The strategies are approximation (for example, ‘story book’ is substituted for ‘novel’), paraphrase (for example, ‘it can be used to cut fruits’ is substituted for ‘knife’), word coinage (for example, substituting ‘house of the king’ for ‘palace’), conscious transfer, the deliberate use of the L1 (for example, by literally translating an L1 expression), appeal for assistance and mime.

Achievement strategies are not new to students; in fact most of them probably use the strategies frequently but highlighting these to the students will make them more aware of the purpose of employing the strategies. In most English classes, even at the tertiary level the students have to do oral presentations. Teachers could video tape the presentations and when giving feedback to the students on their presentations, the teacher could show the video and highlight the achievement

strategies that the students have employed while delivering their presentation. For instance, if the student use the word 'house of the king' instead of 'palace', the teacher may explain to the students that he/she has used an achievement strategy called word coinage. Then the teacher could ask the student or the rest of the class to find other examples of the use of this particular strategy. Other achievement strategies mentioned above may also be explained through the video.

According to Bandura (2006), strategies can be thought of as purposive personal processes and actions directed at acquiring knowledge or skills. They represent the necessary tools with which individuals learn and improve their performance and level of skills. Learners who believe they are learning a useful strategy feel effective and motivated to apply the strategy, which sharpens their skills (Schunk, 1989) and could make them proficient speakers. Communication strategies taught at the early stage of their studies would enable learners to use strategies to enhance their self-efficacy and achievement (Schunk, 1995).

Form Mixed Ethnic and Gender Groups

Learners acquire self-efficacy information from a knowledge of the performances of others through social comparisons (Schunk & Meece, 2006). Students who observe peers learning a task may also believe that they can learn it. As such students should work in groups which consist of both males and females as well as members from different ethnic backgrounds. This is especially so for small groups where they can learn better from each other. As shown in this study, Indian and Chinese students have higher self-efficacy levels in their ability to speak in English and female students have higher self-efficacy levels than males. Therefore, the teachers should group the Malay students with the Indian and/or Chinese students. The group should also be made up of males and females. The Malay students may then observe and learn from the students of other races. This experience of observing others perform tasks, known as vicarious experience, may influence the students' self-efficacy beliefs.

The university where this study was undertaken has a majority of engineering students. As the engineering profession continues to be dominated by males, the percentage of male students is also higher than female students. However, mixing the students with the opposite gender should not be a problem.

Limitations of the Study and Future Research

Several limitations of the study deserve discussion. Firstly, it should be noted that this research did not empirically examine the relationships between self-efficacy and students' grades in communication skills courses. Previous studies, for example,

have documented self-efficacy as important predictors of the academic performance of college students (e.g. Mahyuddin et al., 2006; Zimmerman & Bandura, 1994). A systematic investigation of the relationships between self efficacy and students' grades in communication skills courses would be valuable to better clarify the findings. Secondly, this study adopted a quantitative approach to gauge feedback from a large number of respondents. It would be desirable for future research to conduct a combination of quantitative and qualitative approaches to get a more in-depth perspective on the topic.

Despite these limitations, the present study has made considerable progress in achieving the main aim of this research stated earlier. The findings could assist in providing the beginning of empirical work on self-efficacy issues in the Malaysian context. What is important is that the weaknesses were recognized and acknowledged. Further research to fill the gaps left here would be a useful way forward.

Conclusion

Good communication ability is a skill that must be acquired by every student especially engineering and technology students at the tertiary level. With this ability they will have a better future in their careers and lives, as it is also considered an important survival skill in this era of globalization. Self-efficacy has been hypothesized to affect individual's task choices, effort, persistence and achievement (Bandura, 1997; Schunk, 1995). Compared with learners who doubt their capabilities, those who feel self-efficacious about learning or performing a task competently are apt to participate more readily, work harder, persist longer when they encounter difficulties, and eventually, achieve a higher level of self-efficacy.

As language educators, we must be cognizant of what factors contribute to the perceived speaking ability of these students and the reasons behind them so that they can be helped should they face any problems in the future. Enhancing students' self-efficacy beliefs may help them achieve more in the English language learning process. It is hoped that the findings of this study will provide the educators with a better way to understand students, especially engineering and technology students, in order to guide them to be better speakers of English.

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