

Exploring English Speaking Anxiety Among Filipino Engineering Students: Its Influence on Task Performance and Its Sources

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ABSTRACT

The need for effective English speaking skills in engineering fields compels schools to innovate curricula that shall address the language skills of a ‘global engineer.’ The impact of engineering curricular reforms trickled down among students who contend with language learning anxiety, besides anxiety from mathematics and other technical courses. In this paper, the researchers explored English speaking anxiety among 162 engineering students in an engineering University in Manila, Philippines. A mixed-method, explanatory sequential design was used. This method combines the quantitative and qualitative approaches in investigating the phenomenon under study, i.e., English speaking anxiety. In the quantitative phase, the researchers used data from the speaking component of a self-developed scale and speaking performance scores yielded from an interactive English conversation task. Analysis revealed a significant negative relationship between speaking anxiety and speaking task performance, pointing to the debilitating influence of anxiety on task performance. In the qualitative phase, semi-structured interviews among nine purposefully selected students revealed that both peers and teachers were common sources of speaking anxiety and in a variety of ways. The findings point to speaking anxiety as an important psycho- and sociolinguistic phenomenon, which is hinged on the specific roles that language teaching and learning plays in preparing engineering students as future language consumers and users in highly technical, specialized, and competitive engineering fields.

Keywords: speaking anxiety; debilitating anxiety; task performance; engineering education; explanatory sequential

INTRODUCTION

English is a global language. It is used as a tool for communication in various disciplines, i.e., academic, professional, business, among others. In fact, the importance of learning English in preparation for careers and professions is a recurring theme in the literature (Kassim & Ali, 2010; Mahu, 2012; Reddy, 2016; Riemer, 2002). Thus, it comes with no surprise that many schools in non-English speaking countries emphasize English communication skills in their curricula. Needless to say, effective command of English is a critical outcome for the prospective careers of students, alongside other skill sets necessary for their future professions.

In the highly technical and specialized field of engineering, the crucial role of effective English communication skills had been widely documented and underscored in previous studies (Arsad, Buniyamin & Manan, 2014; Khunnawut, 2011; Radzuan & Kaur, 2011; Shrestha, Pahari, & Awasthi, 2015, 2016; Spence & Liu, 2013). Aside from technical acumen, one important attribute expected of and considered necessary among engineering graduates is effective communication skills (Kassim & Ali, 2010; Sheth, 2015). Empirical

evidence point to emphasis on oral, more than the written communication skills, in engineering workplaces. Job demands requiring effective speaking skills such as teleconferencing, networking for contacts and advice, and presenting new ideas and alternative strategies, are very common in engineering fields (Spence & Liu, 2013). Also, fluency in the English language is viewed “as an opportunity in the engineering field to advance towards becoming a global engineer” (Kassim & Ali, 2010, p. 168).

In view of this, along with efforts to raise technical knowledge and skills, engineering schools place emphasis on communication across the curriculum (Dannels, 2003) and on the necessary English language skills expected of a ‘global engineer’ (Chan & Fishbein, 2009; Jesiek et al., 2013; Lantada & Márquez Sevillano, 2017; Riemer, 2002). Interestingly, given the premium placed on effective English speaking skills in engineering fields (Dannels, 2003; Riemer, 2002), the impact of efforts to raise the English language skills of engineering students trickled down among engineering students who experience pressure-induced language learning anxiety, which is meshed with other forms of learning anxieties, such as mathematics anxiety.

Mathematics anxiety among engineering students has been exhaustively investigated in several engineering education research (Alves et al., 2016; Firouzian et al., 2015; Jamil et al., 2011; Leppävirta, 2011; Vitasari et al., 2010). The preponderance of research on mathematics anxiety comes is, to an extent, expected, since engineering students generally attend more to technical subjects than with non-technical subjects (Macayan & Quinto, 2015). Nevertheless, English language learning serves a myriad of purposes among Engineering students, such as an edge in the workplace and an index of international and global status (Borlongan & Quinto, 2015; Kassim & Ali, 2010; Quinto, 2015; Quinto & Castillo, 2016; Riemer, 2002). Hence, besides the traditional focus of engineering education research on math and technical course anxiety, English speaking anxiety and its influence on engineering students as learners of English warrant empirical investigation.

Previous studies found that anxiety brings debilitating effects on speaking task performance of engineering students (Macayan et al., 2018b; Saranraj & Meenakshi, 2016; Zhang & Liu, 2013). Others posit that, in certain contexts, anxiety may facilitate language learning (Dewaele & MacIntyre, 2014). In engineering education context, the influence of speaking anxiety on engineering students’ learning in a non-technical course is largely understudied. Research on English speaking anxiety is of particular practical significance given the globalization and internationalization in both engineering education and present-day engineering professions. In this context, it is imperative that engineering students and professionals keep up with the demand for effective English communication skills to effectively use and consume technical and specialized language in the field.

The aims of the study were two-fold. First, the researchers examined the influence of speaking anxiety on engineering students’ speaking task performance, specifically whether speaking anxiety predicted students’ performance scores in an interactive English conversation task. Second, semi-structured interviews were carried out to shed light on the sources of speaking anxiety among engineering students.

LITERATURE REVIEW

The present study was anchored on Horwitz, Horwitz, and Cope’s (1986) foreign language classroom anxiety theory. Anxiety is the “subjective feeling of tension, apprehension, nervousness, and worry associated with an arousal of the autonomic nervous system” (Horwitz, 2001, p. 113). When this anxiety is limited to language learning, it falls into the category of “specific anxiety reactions” (Horwitz et al., 1986, p. 125). In their seminal work, Horwitz et al. (1986) maintain that language learning anxiety is “a distinct complex of self-

perceptions, beliefs, feelings, and behaviors related to classroom language learning arising from the uniqueness of the language learning process” (p. 128). Language researchers and theorists generally agree that language learning and anxiety are related to each other. It is widely believed that anxiety inhibits successful language learning.

In engineering education contexts, previous studies examined English speaking anxiety and its relationship on a range of academic or language learning outcomes. In many of these studies, anxiety was found to bring about debilitating or negative influence on language learning of engineering students. Previous findings posit that English language anxiety had significant negative relationship with actual English use anxiety (Saranraj & Meenakshi, 2016), language learning motivation (Liu & Huang, 2011), willingness to communicate in English (Ghonsooly, Khajavy, & Asadpour, 2012), and oral test performance (Zhang & Liu, 2013).

Another recurring theme of previous studies is on the sources of English speaking anxiety of engineering students. Several sources had been found to contribute to engineering students’ English speaking anxiety, including ‘demanding and provocative evaluation panels, limited technical knowledge and barriers in students’ English language proficiency’ (Radzuan & Kaur, 2011, p. 1436). The phenomenon had been investigated in relation to a range of factors, such as gender, experience of speaking English with foreigners, and duration of English learning (Khunnawut, 2011). It had been reported that engineering students experience somatic anxiety when learning English (Min & Rahmat, 2014). This most common form of language anxiety refers to ‘one’s perception of the physiological effects of the anxiety experience, as reflected in increase in arousal of unpleasant feelings, such as nervousness and tension’ (Cheng, 2004, p. 316).

In actual engineering workplaces, evidence point to how engineers experience English anxiety. One example in the Taiwanese context focused on the needs analysis of 39 process integration engineers (PIEs) (Spence & Liu, 2013). The PIEs who were working in high-tech industries reported feeling anxiety when communicating with foreign customers (interviews). In particular, they admitted feeling anxious when they did teleconferencing with foreign customers, particularly when the customer speaks with foreign English accent.

Although language learning anxiety is a traditional area of language learning and teaching research, the need to contextualize this phenomenon would be important for academic implementers (e.g. educators and administrators) for the design of learning interventions and programs that will aim to improve students’ English speaking skills, in this case, among engineering students (Macayan et al., 2018a). Thus, by situating the investigation in the context of engineering students as learners of English, the researchers aim to gather insights on the nature of English speaking anxiety among engineering students in courses they would not traditionally focus on (Macayan & Quinto, 2015). Continued effort is necessary in understanding English speaking anxiety of engineering students, given the premium placed upon the necessary communication skills needed in becoming ‘global engineers’ (Chan & Fishbein, 2009; Jesiek et al., 2013; Kassim & Ali, 2010; Lantada & Sevillano, 2017; Riemer, 2002).

RESEARCH PROBLEM

The study explored the phenomenon of English speaking anxiety among engineering students, focusing on its influence on task performance and its sources. Two research questions guided the present investigation:

1. Does speaking anxiety predict the performance of engineering students in an interactive English conversation task?
2. What are the sources of speaking anxiety of engineering students as learners of English?

For the first research question, the researchers hypothesized that speaking anxiety negatively predicts task performance. In this case, as the level of anxiety rises, speaking task performance scores lower. The directional hypothesis was deduced from the results and findings of previous studies (Ghonsooly et al., 2012; Liu & Huang, 2011; Saranraj & Meenakshi, 2016).

Following the themes of anxiety studies in engineering education research (Kaur & Bhangu, 2013; Radzuan & Kaur, 2011), for the second question, the researchers were interested in exploring the sources of the engineering students' speaking anxiety, and how they accounts for students' speaking task performance.

METHODS

In this study, the researchers used Creswell's (2014) mixed methods, explanatory sequential mixed design, where 'initial quantitative data results are explained further with the qualitative data' (p. 44). The purpose is 'to understand data at a more detailed level by using qualitative follow-up data to help explain a quantitative database, such as a survey' (O' Cathain, Murphy, & Nicholl, 2007 in Creswell, 2014, p. 177). Mixed methods designs are becoming a preferred methodological choice in applied linguistics research (Hashemi, 2012; Hashemi & Babaii, 2013; Quinto, 2018; Riazi, 2016). The design used in each specific phase, participants and sampling, data gathering tools and procedures, and data analyses are discussed in the succeeding sections.

QUANTITATIVE PHASE

In the initial quantitative phase, the researchers employed the predictive cross-sectional design as proposed by Johnson (2001) in his new classification of non-experimental quantitative research. This design is aimed at determining the influence of a predictor variable, i.e., English speaking anxiety, on an outcome variable, i.e., task performance.

Participants were recruited from a college setting, which is most suitable when assessing ability-related variables (Brookhart, Walsh & Zientarski, 2006). One hundred sixty two participants (male = 112; female = 50) were recruited from an engineering University in Manila, Philippines. The University is a premiere engineering University, having achieved the distinction as the first Southeast Asian University with accredited programs by the distinguished United States-based Accreditation Board for Engineering and Technology, Inc. (ABET). The participants were freshman engineering students with different majors, i.e., civil, electronics, electrical, mechanical, and chemical, enrolled in English for Academic Purposes (EAP). They were aged 16-21 at the time of data gathering and were purposefully sampled based on enrollment in the aforementioned English language course. Males outnumbering females in the sample reflects the fact that in the Philippines, like in many other countries, engineering remains a male-dominated field (Silbey, 2016).

Two types of quantitative data gathering instruments were used: a survey questionnaire for English speaking anxiety and a four-member, interactive English conversation task for speaking performance. To measure speaking anxiety, the researchers used the 14-item speaking component of a Second Language (L2) Speaking and Writing Anxiety Scale (L2SWAS), which was developed based on the Foreign Language Classroom Anxiety Scale (Horwitz et al., 1986). In itself, the FLCAS was widely used in studies which investigated speaking and writing anxiety (Baharuddin & Rashid, 2014; Gkonou, 2011; Gopang, Bughio, & Pathan, 2015). To adapt the FLCAS in the context of the study, a separate sample of 180 participants from the same University and enrolled in the same EAP

course participated in the test development phase. While FLCAS remains to be the most widely used tool for measuring language anxiety, the use of the speaking component of L2SWAS appeals to the context of the Philippines, where English is taught and learned, not as a foreign language, but as a L2. Further, while FLCAS allows a measure of three performance anxieties, namely communication apprehension, test anxiety, fear of negative evaluation (Horwitz et al., 1986, p. 127), the researchers only wanted to test the influence of a specific speaking anxiety, without going deeper into sub-factors that constitute this performance anxiety in a L2. Sample statements include '*When I speak English, I feel badly criticized by people who speak the language better,*' and '*When I speak English, I would often stutter when assessed by the teacher.*' The final version of the scale was reliable with an overall internal consistency of $\alpha = .96$. This means that, after the process of developing the scale, it was found to be valid and reliable for it measures what it intends to measure, in this case English speaking anxiety.

For speaking performance, the researchers used data from an interactive English conversation task, which was set to coincide with data gathering. All freshman students in the University take the test as an entry requirement in their EAP class. An entry-level English language test score for speaking is given to freshman students. The measure involved students participating in groups of four students participating in a conversation in English intended for them to engage in a meaningful exchange on a topic. The topic given was '*Is there a generation gap between the young and the old.*' They were given five minutes to prepare and were allowed to carry out the spontaneous group conversation for at least 15 minutes. Their scores range from 1.00 (poor speaker) to 5.00 (effective speaker) as adapted from a scoring guide that has been in use in the University (Quinto, 2014). The general scoring guide for the speaking test is appended.

Three English language teachers, whose students were participants, were recruited to participate in the research. Their task was to provide scores for the dependent variable, which is English speaking performance. Endorsements were secured from different coordinators to communicate the research to the teachers and secure their consent. To ensure consistency of speaking scores, language teachers recruited were only those who participated in the most recent language assessment calibration. During this calibration, a trained language assessor from the University's language center sat down with the teachers in actual classes to assess students as they delivered speaking tests. The goal was for the teachers to achieve an assessment that was within an acceptable range from the standard score, which, in this case, was that of the assessor. The teachers and the assessor discussed the scores they gave and shared ideas about how they assessed the performances. The idea was for the pool of language teachers to use the scoring guide with greater consistency.

Quantitative analysis followed. Analysis of variance (One-way ANOVA) was used, which 'is a special case of the general linear regression model' used to determine 'whether a particular factor has an effect on the dependent variable of interest' (Lattin, Carroll, & Green, 2003, p. 386). Using statistical software (Statistica v.10), data were analyzed by setting English Speaking Anxiety as the categorical predictor. The categorical data or label was derived by interpreting the scores obtained by the participants in the scale. The speaking task performance was used as the dependent variable. In the one-way ANOVA, the levels of anxiety were used as the categorical predictors, i.e., high, moderate, and low anxiety, and the mean scores in speaking performance were the continuous dependent variables.

QUALITATIVE PHASE

In the qualitative phase, the aim was to arrive at a more detailed understanding of the nature of English speaking anxiety among Filipino engineering students. Semi-structured interviews

were the data gathering technique. Using this technique, the researchers collected qualitative data by setting up a situation that allows a respondent the time and scope to talk about their opinions on a subject. The objective was to understand the respondents' point of view rather than make generalizations about behavior (New York University, n.d.).

The confirming case sampling technique (Cohen & Crabtree, 2006) was deemed most suitable for the selection of respondents in the follow-up qualitative phase. This sampling technique is used to lend further support, richness and depth to patterns that emerged from the quantitative analysis. The researchers recruited participants with high levels of speaking anxiety and varying performance scores (low, average, low). They went back to the raw quantitative data and identified respondents with these profiles. A similar process of seeking endorsements and consents was carried out prior the interviews. A total of nine respondents were identified and gave consent for the interviews. They were aged 16 to 17 at the time of the interviews.

Semi-structured interviews were conducted over a span of seven days. Each interview lasted for 20-30 minutes. All interviews were audio-recorded. Audio files were saved for the broad interview transcriptions that followed. The interview transcription procedure followed conventions, such as using computer support (Schmidt, 2004), achieving a required degree of accuracy (Flick, 2002 in Schmidt, 2004), and undertaking "corrective listening" (Hopf & Schmidt, 1993 in Schmidt, 2004). The output was a material that was ready for coding.

After generating the interview transcripts, the researchers proceeded with the analysis of qualitative data beginning with data coding. During data coding, the researchers were interested in interview extracts that were relevant to the qualitative research question, i.e., sources of anxiety of engineering students. These relevant parts of the transcript were highlighted on initial reading. At this point, each data item was given equal attention. However, as coding went on, some codes proved to be recurring while others appeared rarely. Only recurring codes became integral in the development of themes later on.

Coding was carried out in the tradition of thematic analysis (Braun & Clarke, 2006). In general, this analytic technique aims to "unearth the themes salient in a text" (Attride-Stirling, 2001, p. 387). The thematic analysis used defines a theme as follows: "a theme captures something important about the data in relation to the research question and represents some level of patterned response or meaning within the data set" (Braun & Clarke, 2006, p. 86).

After the last sequence of interview, transcribing, and coding, the researchers reviewed and finalized the themes to ensure that each identifies "a feature of the data that appears interesting" (Braun & Clarke, 2006, p. 94) and could be "assessed in a meaningful way regarding the phenomenon" (Boyatzis, 1998, p. 63). For example, the preponderance of codes pointing to peer judgment and teacher presence during speaking performance and their contribution to anxiety led to the theme of social comparison as a source of speaking anxiety.

To meet the ethical requirement of ensuring anonymity, the researchers shall refer to the 'Respondents' numbered 1 to 9 along with their age (e.g., Respondent 1, 16) in presenting extracts from the transcript in the results.

RESULTS

DOES SPEAKING ANXIETY PREDICT THE PERFORMANCE OF ENGINEERING STUDENTS IN AN INTERACTIVE ENGLISH CONVERSATION TASK?

In order to determine how the level of speaking anxiety accounts for the L2 learners' tasks performance, data obtained from the survey using L2SWAS were quantitatively analyzed, and the results revealed some notable differences. The reference points of differences in tasks

performance of participants with varying levels of anxiety are the mean scores (and standard deviation) as presented in Table 1.

TABLE 1. Descriptive analysis of engineering students' speaking anxiety and speaking performance scores

Levels of Speaking Anxiety	L2 Speaking Task Performance	
	\bar{x}	SD
High	2.66	0.82
Moderate	3.25	0.81
Low	4.11	0.89

Note: highest possible speaking score = 5.00; lowest = 1.00; individual score intervals = 0.50

When grouped according to varying levels of speaking anxiety, data showed that speaking performance also varied. Engineering students who had high speaking anxiety scored lowest in the performance task ($\bar{x} = 2.66$; SD = 0.82). Those with a moderate level of speaking anxiety scored average ($\bar{x} = 3.25$; SD = 0.81), while those who had low speaking anxiety garnered highest scores ($\bar{x} = 4.11$; SD = 0.89). From these descriptive data, it could be gleaned that the influence of speaking anxiety on engineering students' performance exhibited a salient pattern. These were then subjected in a one-way analysis of variance.

The analysis revealed a significant relationship between the two sets of score. Specifically, speaking anxiety significantly predicted speaking task performance of the engineering students. The analysis of variance accrued a significant result when the levels of speaking anxiety were used as categorical predictors of speaking performance scores ($F(2,162)=10.73$; $p=0.00$, $\eta_p^2=0.35$). Table 2 presents the results of the analysis of variance.

TABLE 2. Influence of Anxiety on Speaking Performance of Filipino Engineering Students

	SS	df	MS	F	p	η_p^2
Speaking Anxiety	11.14	2	5.57	10.73	*0.00	0.35
Error	84.10	162	0.53			

* $p < 0.5$; $n = 162$

After finding that there exists a significant relationship between the level of speaking anxiety and speaking performance of the engineering students, the researchers examined the nature of the influence of speaking anxiety on speaking task performance. Figure 1 reveals the nature of this quantitative relationship.

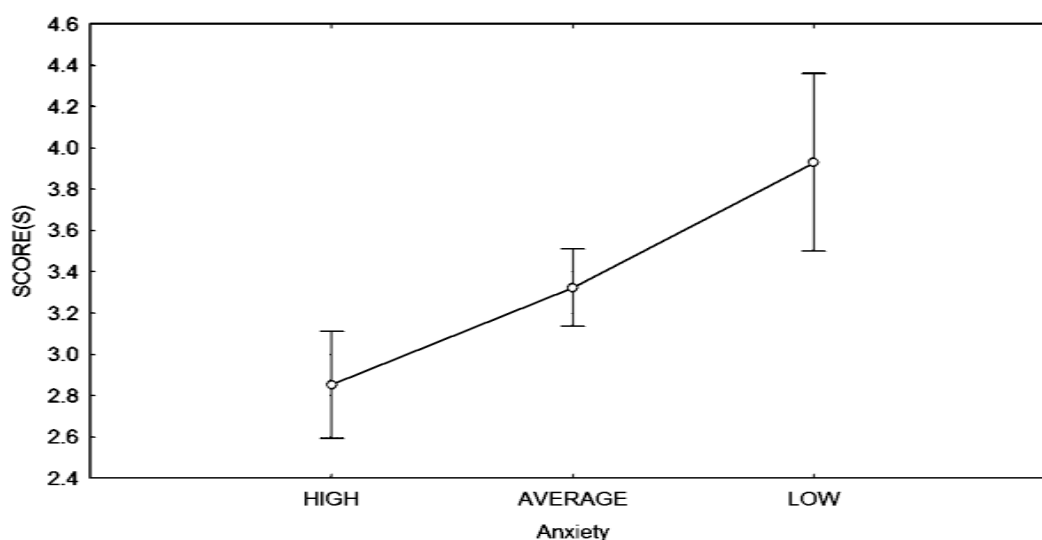


FIGURE 1. Debilitative impact of speaking anxiety

Figure 1 illustrates the influence of speaking anxiety on speaking task performance. Engineering students who were least anxious received the highest scores in the group speaking task. The line graph shows upper and lower limits of speaking scores, signified by bars, for each level of anxiety. The mean point at the center of each bar represents the average speaking score for each group of students according to their anxiety level. Based on the graph, students with high anxiety scored a mean of 2.66. When anxiety decreased, for average anxiety students, the mean speaking score was higher at 3.25. Finally, when anxiety was at the minimum, for low anxiety students, the mean speaking score was highest at 4.11. It follows that as their level of speaking anxiety increased, their performance scores decreased. This corroborates previous findings where an observed decrease in a number of affective and communicative outcomes was predicted by higher levels of language anxiety (Ghonsooly et al., 2012; Liu & Huang, 2011; Saranraj & Meenakshi, 2016). In this case, task performance as an outcome decreased as the engineering students' anxiety level increased.

After determining the influence of speaking anxiety on engineering students' speaking performance, the researchers proceeded with a qualitative analysis of semi-structured interviews with the aim of teasing out the sources of English speaking anxiety of the engineering students.

WHAT ARE THE SOURCES OF SPEAKING ANXIETY OF ENGINEERING STUDENTS AS LEARNERS OF ENGLISH?

Consistent with the purpose of a qualitative phase in an explanatory sequential design (Creswell, 2014), the researchers set up interviews with nine purposefully selected respondents from among those who took part in the initial quantitative phase.

In this phase, following the literature, the researchers focused on the sources of anxiety of engineering students as learners of English. It was the aim of the researchers to tease out context-specific experiences that provide in-depth explanation to the significant negative relationship between anxiety and task performance.

SOURCES OF ANXIETY OF FILIPINO ENGINEERING STUDENTS

Thematic analysis of semi-structured interviews revealed that the main source of anxiety in speaking is social comparison. Based on the interview responses, engineering students' awareness of **social comparison** in speaking tasks contributed to their feelings of anxiety during task performance. In the first excerpt, Respondent 1 explained how the thought of having people around them during a speaking task caused them to feel anxious.

- (1) In speech, you feel that there can always be something that the **people around you can use against you and mark you wrong.** (Respondent 1, 16)

Respondent 1's response indicates a recognition of speaking anxiety. When asked about the specific reasons why they feel anxious when speaking English, the sources of their anxiety were revealed.

- (2) For speaking, I think that **my classmates** are what causes me to feel anxious since I always put in my mind that they will make fun of me for what I might answer. (Respondent 2, 17)

Respondent 2 felt as if he was being judged by his classmates. This supports the claim that the social component in speaking triggered feelings of anxiety, particularly when students thought that their classmates would 'make fun' or would use what they said against them.

In the succeeding excerpt, Respondent 3 did not attribute the source of his anxiety to his classmates, but to his professor.

- (3) I think **the professor is what mainly causes me to feel anxious** since I always put in my mind that he will grade me for what I say. So whenever I speak I want to make sure that my professor will look at me positively. (Respondent 3, 17)

The social component in speaking involved every stakeholder in the language learning process. Respondent 4 suggested that the social component that provokes anxiety comes not from his classmates, but from his professor, and for a different reason. While others feel anxious about their classmates' judgment, this respondent felt anxious about speaking English because of the feeling that he needed to satisfy the professor for a good grade and therefore aimed for the professor would look at him and his ability to speak 'positively.'

In another excerpt, Respondent 4 seemed to support that the teacher being a source of anxiety hinges on a fear of negative evaluation. He particularly connected his being an engineering major to a fear that his teacher would evaluate him negatively compared with other non-engineering majors.

- (4) I often **feel bothered by the thought that my teacher would give me a low score in speaking**, because I know in myself that, as an engineering major, I am not as good as the other non-engineering majors and that really bothers me a lot. (Respondent 4, 17)

In this section, it was revealed that the sources of anxiety of the respondents fall under the overarching social nature of speaking. Since speaking involved engaging two persons in a verbal discourse, the engineering students pointed to both their classmates and teachers as the sources of their anxiety in speaking English. Although, they felt anxious speaking in front of their classmates and their teachers, their responses revealed that the reasons were entirely different. While they feared negative judgment and being laughed at by their classmates, they were anxious about speaking in front of their teachers because of the fear of negative evaluation, particularly recognizing that they might be evaluated poorly and given low grades.

PERCEIVED INFLUENCE OF ANXIETY ON ENGINEERING STUDENTS' SPEAKING PERFORMANCE

As the researchers focused on the sources of English speaking anxiety of the engineering students, another theme related to the perceived influence of anxiety on task performance emerged. Interview responses under this theme were instructive of the role of anxiety in deciphering language task performance of engineering students.

When asked whether speaking anxiety influences task performance in school, Respondent 5 had the following to say.

- (5) Definitely. Other people think that engineering majors are anxious only about math. As for me, I am an electronics engineering major, but **I am anxious about my English subject** because I know it is my weakness. Despite that, I know it's very important for me so I still try my best to do well. (Respondent 5, 16)

Asked whether he, too, felt anxiety beyond mathematics, Respondent 6 had a striking response.

- (6) Of course, **I fear math, but I fear English more**. Why? Because I know that to be good in math, especially math word problems, I have to be good in English too. And that is something I haven't achieved yet, effective speaking skills. (Respondent 6, 17)

In the two previous excerpts, Respondents 5 and 6 admit that they experienced not only mathematics anxiety but also language anxiety. Respondent 6's response is particularly interesting since his admission of greater fear of English than Math hinges on the role of speaking proficiency as a conduit for successful learning of other subjects in their engineering curricula. For Respondent 6, successful learning in math requires successful learning in English as well.

Another respondent provided a more direct response to the perceived influence of anxiety to task performance. In the next excerpt, Respondent 7 explained why he felt that the types of negative thoughts during speaking tasks could possibly affect his performance.

- (7) Because in my opinion, **insulting opinions of others cannot help the learning of a speaker** so once a speaker hears an insult the speaker tends to speak poorly. (Respondent 7, 17)

In this excerpt, Respondent 7 divulged that, as for him, others' opinions have a direct effect, in that it makes the speaker 'speak poorly.' This specific anxiety reaction is triggered not only by the presence of their classmates who might send out negative opinions. Others also felt anxious because they wanted to create a certain impression to their professors. Respondent 8 shared one experience he previously had speaking English in front of his professor.

- (8) **Once, speaking in front, I saw my professor change her facial reaction and I felt uneasy** because I thought I said something wrong. I was overcome by my anxiety and I wasn't able to finish my speech anymore and I failed the activity. (Respondent 8, 17)

While others could only suspect the influence of language anxiety to their performance, Respondent 8 painted a vivid picture of how the teacher's presence made him feel uneasy and how he failed to overcome his anxiety and finish his speech. These are the spill-overs of speaking anxiety in actual task performance that goes beyond merely feeling anxious, here the student illustrated a picture of performing anxiously and its negative influence on performance. The negative influence of 'performing anxiously' is further explained by Respondent 9's response:

- (9) **I must really overcome anxiety and improve my English** because, as an engineering major, I will do a lot of technical presentations in my program and I do not want to fail simply because I'm rich in knowledge but poor in communication. (Respondent 9, 16)

Respondent 9 explained the need to assist engineering students in overcoming their speaking anxiety. For him, English is necessary because engineering majors do a lot of technical presentations. He strengthens his argument for overcoming anxiety by claiming the

possibility of failure due to his richness in (technical) knowledge, but shortcoming in (English) communication.

DISCUSSION

The purpose of the study was to examine English speaking anxiety among Filipino engineering students – its influence on their task performance and its sources.

In the quantitative phase, as hypothesized, the researchers found significant, negative relationship between the anxiety the students felt in learning English and their actual speaking performance during a group speaking task. This finding corroborates findings of engineering education studies on the debilitating nature of anxiety to a range of language skills and outcomes (Ghonsooly et al., 2012; Huang, Eslami & Hu, 2010; Kaur & Bhangu, 2013; Liu & Huang, 2011; Radzuan & Kaur, 2011; Saranraj & Meenakshi, 2016; Spence & Liu, 2013). In this study, specific attention was paid into how speaking anxiety influenced speaking task performance. Higher levels of anxiety resulted in lower performance scores, while lower anxiety levels led to higher scores. The researchers found the nature of speaking anxiety on performance to be debilitating. This negative influence of speaking anxiety is especially critical given the need for effective communication skills among engineering students at the backdrop.

In the qualitative phase, analysis of semi-structured interviews pointed to the social component of speaking tasks as what primarily provokes anxiety. Both peers and teachers were found to cause feelings of anxiety, although for different reasons. The results provide further support of the various roles that both teachers and peers play in overcoming language anxiety among engineering majors (Huang et al., 2010). Engineering students experience a “subjective feeling of tension, apprehension, nervousness, and worry associated with an arousal of the autonomic nervous system” (Horwitz, 2001, p. 113). In this study, it had been largely due to the presence of their classmates who they worry would criticize or judge and laugh at them and their professors from whom they feared negative evaluation. These, in turn, contributed to poorer speaking performance.

Interestingly, a number of the engineering students recognized the importance of overcoming speaking anxiety in order to survive their engineering program. A number of them even expressed stern belief that their anxiety in language learning is worse than their anxiety in mathematics. This lends legitimacy in focusing also on anxiety towards learning in non-technical courses, whereas previous studies dealt with anxiety in traditionally engineering-related course, i.e., mathematics (Alves et al., 2016; Firouzian et al., 2015; Jamil et al., 2011; Leppävirta, 2011; Vitasari et al., 2010).

CONCLUSION

Although many studies have so far been devoted to anxiety in mathematics and design and technical courses, speaking anxiety in engineering education context appears to be an emerging and important area of interest.

Continued globalization and internationalization in the academe have had an immense influence on how teachers, educators and administrators prepare future professionals for global workplaces. The present-day technological advancement shapes future technical professions in a way that engineering professionals, in this case, cannot confine themselves within the bounds of technical acumen. Effective communication skills in English, such as technical oral presentations, are now given greater emphasis in the preparation of engineering students for global workplaces. Holistic engineering education had been repeatedly emphasized in previous engineering education research in order that these professionals

thrive in workplaces that demand competent technical acumen and strong communication skills in English.

Coming from the foregoing discussion, the efforts to prepare engineering students for global workplaces had had a significant negative influence on how they performed in English speaking task. The efforts to raise the level of engineering education, in turn, trickled down among engineering students who experience specific anxiety reactions toward English speaking tasks. In this study, English speaking anxiety among engineering students was not only indicative of the premium that engineering students place on their English language course, but also reflective of the influence that globalization and international efforts brings among engineering students as learners of English.

In this study, it was clear that English speaking anxiety is an important psycho- and sociolinguistic phenomenon hinged on the specific roles that language teaching plays in preparing engineering students as future language consumers and users in highly technical, specialized, and competitive engineering fields.

RECOMMENDATIONS

As for the implications for research, the study provided insights into the nature of English speaking anxiety among engineering students. Further methodological innovations can extend this study's contribution to understanding the phenomenon of interest.

First, the researchers recognize the need to work around reliable and valid measures of English speaking anxiety. The use of other measures of speaking anxiety may be considered for future studies. Future researchers, for example, may choose to use Zhang and Liu's (2013) Oral English Test Anxiety or develop a scale that fits the context of their investigation. It was the latter that the researchers carried out in coming up with a measure for speaking anxiety. Also, the scale had been based on Horwitz et al.'s (1986) most widely used Foreign Language Classroom Anxiety (FLCAS).

The use of standardized tests and scales to measure language abilities can strengthen the design of future studies. The use of tests such as TOEIC, which is also implemented in the University, and possibly IELTS and TOEFL, is recommended. The development of measures and rubrics specific to Engineering English language skills may improve future studies. Nonetheless, it should be noted that the researchers used a standardized English language test that have been used locally in the university. Language teachers who provided the scores of the participants for speaking had also been specifically chosen to include those who participated in the most recent assessment calibration conducted every term to ensure consistency across scores of speaking task performance.

As for the implications for pedagogy, language teachers of engineering students should concern themselves about how anxiety influences task performance and ultimately language learning of this specific group of students. While students of humanities and social sciences programs might not feel as anxious and might be more motivated or exhibit more advanced skills in English, Filipino engineering students tend to exhibit anxiety and language profiles unique to their field of study. Teachers must then find ways to assist these students to overcome their speaking anxiety. One way forward could be the use of activities and strategies, which engineering students find useful in learning in another subject, i.e., mathematics, sciences, etc. Teachers of English to students of engineering programs could utilize methods and approaches drawn from English for Specific Purposes (ESP), i.e., Engineering English, to ensure that language materials and resources are both authentic and useful for the students' later study and career in engineering fields.

Curriculum developers and language planners of Engineering programs should work hand-in-hand with language teachers of engineering students to strengthen the choice and

design of framework, approaches, methods and teaching and learning activities that minimize debilitating anxiety and, eventually, raise the motivation of engineering students in learning English.

By placing these considerations at the heart of engineering curriculum design, stakeholders could work together towards bridging the gap between theory and practice. In this case, it is clear that, amidst pressure to target language and communication proficiency goals for the ‘global engineer,’ there is a need to think of ways to achieve this outcome in a supportive, stimulating, anxiety-free, and motivating language learning environment.

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APPENDIX A

SPEAKING ANXIETY COMPONENT SECOND LANGUAGE (L2) SPEAKING AND WRITING SCALE (L2SWS)

Direction: For each statement, check the box that would indicate how much the statement is true of you: 1 = not me; 2 = a bit like me; 3 = somewhat like me; 4 = very much like me.

Whenever I speak using the second language (English) I...	1	2	3	4
1. worry because I am not confident on my accent.				
2. would often stutter whenever I am assessed.				
3. get sweaty palms after speaking the language.				
4. feel being badly criticized by people who speak the language better.				
5. feel uneasy from the sound of the second language.				
6. feel scared that someone would try to correct my pronunciation.				
7. perspire a lot when asked to speak before a group.				
8. get shaky hands when forced to speak before a group.				
9. feel uncomfortable being with people who speak the language.				
10. fail to share my ideas verbally to other people.				
11. worry me a lot if I feel my teacher or the listener is trying to judge how I talk to them.				
12. am not confident that the word that I use matches the meaning of what I would really like to say.				
13. would speak very low for people not to hear my voice.				
14. feel uneasy when I do not have anyone checking me to correct the grammar of my speeches.				

APPENDIX B

SPEAKING TASK SCORING GUIDE

Band	Descriptor	General Guide
5.00	Excellent Speaker	Excellent level of description and interaction. Student provided input beyond what was required and in the target language all the time. Answers and responses were always clear and comprehensible. Student was very easy to hear and understand. Student acted as a facilitator by helping the conversation flow and develop naturally. Sentences and grammar were always correct and suitable for English conversation conventions. Vocabulary was always appropriate for the topic and genre.
4.00	Very Good Speaker	Very good level of description and interaction. Student provided enough input to blend well in the conversation and in the target language all the time. Answers and responses were almost always clear and comprehensible. Student was easy to hear and understand. Student had attempts to facilitate the conversation and was effective in helping the conversation flow and develop naturally. Sentences and grammar were almost always correct and suitable for the task. Vocabulary was almost always appropriate for the topic and genre.
3.00	Good Speaker	Adequate description and interaction. Student provided input although some would have been better discussed in detail. Answers and responses were mostly clear and comprehensible although student did not provide volunteer these as often than it would have been enough. Student was mostly understandable although needed to repeat or rephrase statements at times. Student did not play the role of a facilitator although engaged when prompted. Sentences and grammar were often correct and suitable for the task, and errors, although noticeable, were not systematic. Vocabulary was often appropriate although very few choices seemed a mismatch for the task and genre.
2.00	Fair Speaker	Description and interaction were lacking critical components that would have made the conversation richer and engaging. Attempts to answer and respond to other students were very few and almost always lacked clarity and comprehensibility. Student was hardly understandable during the conversation. Student was passive and there was hardly any effort to help the conversation flow. Sentences and grammar were most of the time problematic and errors seemed systematic. Vocabulary was appropriate for the topic and genre only to a limited extent.
1.00	Poor Speaker	Description and interaction that other students either did not understand or did not engage with the student as much as with the rest. There was no attempt to volunteer answers and responses or were neither clear nor comprehensible if one or two were given. Student was not understandable almost always. Student obviously did not exert effort to contribute to the flow. Sentences and grammar were always problematic and errors systematic. Vocabulary was inappropriate for what would one expect about the topic and from such genre.

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