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**RESEARCH ARTICLE**

# INDICATORS OF ENGLISH COMMUNICATIVE COMPETENCE FOR EFL LEARNERS IN TAIWAN-A FUZZY DELPHI METHOD

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**ABSTRACT**

This study is designed to establish an indicator of English communicative competence for high school students whose L1 is Chinese. Fuzzy Delphi Method is the primary methodology employed by this research. Twenty experts were invited as the participants. Delphi Method has been considered a powerful approach to apprehend experts' collective opinions on the targeted issues. In this study, the Fuzzy Linguistic Scale replaced the traditional Likert scale for its subjectivity related to human beings' decision-making. In terms of the instrumentation, indicators were constructed utilizing Bachman's Model of Communicative Language Ability (CLA). In this study, two rounds of Delphi were administered and experts' opinions were converged with some questions being deleted from the model. Results of this study indicate that vocabulary is considered as the most important part for EFL learners of Chinese to improve their communicative competence in English followed by the ability to interpret the contents and context of conversation.



## INTRODUCTION

Globalization has assured the status of English as the international language (EIL). Acquiring a proficient communicative competence in English is no longer a privilege but a basic requirement to succeed in the business world. In Taiwan, a high school student's level of proficiency in English has been an important criterion for being accepted by a post-secondary educational institute. However, there is no specific indicator or guideline in terms of communicative competence for EFL learners; thus, admission committee members could be confused by various standards of how an individual candidate is evaluated. However, according to Chang (2004), competence of commanding English at the college level in Taiwan serves as a foundation toward all aspects of education. Without a consistent evaluation indicator, a fair assessment on an applicants' level of proficiency in English is very difficult and consequently the establishment of good English training programs for prospective students becomes problematic. Of the four skills (listening, speaking, reading and writing) of English proficiency, assessment of speaking ability is the one significantly influenced by evaluator's subjectivity; thus, examinations on communicative competence have been considered as the most challenging ones to prepare, administer and score (Madsen, 1986). Bachman's (1990) communicative language ability (CLA) model is regarded as a comprehensive one up-to-date, which can be applied and adopted as a diagnostic tool to judge a person's communicative competence in the target language.

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However, such a prominent model has not been utilized and examined in Taiwan. The importance of the present study lies on the fact as the first one to establish a system of indicators based upon Bachman's CLA model to diagnose EFL learners' communicative competence in Taiwan.

### Purpose of this Research

Due to the difficulty in the evaluation of EFL learners' communicative ability in English, this research aims to establish a sound system to assess individual's communicative competence through the application of Fuzzy Delphi Method. The purpose of this research is to:

1. Redefine English communicative competence of Chinese EFL learners in Taiwan through literature review and stakeholders' opinions.
2. Establish diagnostic indicators to measure Chinese students' communicative competence in English for test designers and administrators.
3. Based upon the results of diagnostic indicators, English instructors or course designers at secondary and college levels are able to use it as a reference to develop the curriculum.

## LITERATURE REVIEW

### The Definition of Competence

In early research, professional competence refers to the student' s knowledge, skills, attitude, and personal values to

successfully meet employment standards in various fields (Knowles, 1970). In recent research, Stasz (2000) coins this term as a comprehensive capability of complicated and dynamic interaction of knowledge, skills, and motivation. Language competence is often confused with the term "performance" since Chomsky' s first discussion in the 1960s. Language competence refers to the knowledge of the target language a learner has attained or acquired whilst language performance indicates the outputs the learner produces at during a specific time frame. In the past, most test designers tended to focus more on assessing performance rather than the competence side of language ability, particularly communicative ability. Littlemore and Low (2006) further elaborated Bachman's definition on competence (1990) and redefined the term as "the ability to deal with knowledge-based components of language that have been isolated as theoretical areas, such as syntax or cohesion (p. 274)."

**Assessment of English Communicative Competence**

Spolsky (1977) divided the development of language assessment into three phases, namely, Pre-Scientific, Structuralism, and Sociolinguistic. However, language assessment had not become a subject until the maturity of Structuralism. Meanwhile, linguistics also started to shed light on the research of language assessment because of the influence of Structuralism. With the inspiration of Structuralism, "what aspects of the target language should be tested" was an issue of popularity among scholars. As mentioned above, communicative competence in the target language is the most challenging skill to assess. Pertinent studies specifically focusing on language proficiency and communicative competence can be traced back to the 1960s. Lado (1961) and Carroll (1961) proposed two variables on the measurement of language proficiency and communicative competence: skills and components. The focus on these two variables led to discrete-point testing for language assessment. Globally, TOEFL is the most widely used among this category of tests. Despite the important status of TOEFL in the field of language testing, this skills/components model of tests fails to describe the relationship between skills and knowledge (Bachman, 1990). The main problem for skills/components models or discrete-point tests relates to psychometrics, due to validity issues in these tests. Therefore, linguists, such as Oller (1979) and Spolsky (1978), propose the Unitary Competence Hypothesis (UCH) to address issues of invalidity associated with the skills/components models (Zhang, 2006). Inevitably, UCH also received some criticisms from fellow scholars. For example, Hughes (1989) points out that to evaluate an examinee' s oral proficiency in the target language through his/her performance in writing is almost impossible. Furthermore, the results of empirical studies of UCH seemed to ignore individual differences (Hughes, 1989).

Taking into consideration the pros and cons of both these two schools, sociolinguist Hymes (1964) came up with a concept of communicative competence, which synthesized linguist and cultural traits of a language. This particular concept was supported by researches and studies conducted by many applied linguistics such as Halliday (1976), van Dijk (1977), Savignon (1983), Canale and Swain (1980, 1985). However, communicative competence models remained static until the advent of Bachman's Communicative Language Ability (CLA) model (Zhang, 2006). Bachman (1990) emphasized that a learner's CLA includes three components of competence (language, strategic, and psychophysiological mechanism) and the implementation of these competencies. The advantage of Bachman' s CLA is taking non-language factors into consideration for making judgments on test-takers output during the test represented as sensitivity to the target culture in the model. Learner's language competence also includes two major facets "organizational competence" and "pragmatic competence". Organizational competence specifically indicates the learner' s ability in manipulating the structures of the target language in a grammatical fashion whereas pragmatic competence focuses on the learner's control over the sociolinguistic side of the target language (Bachman, 1990). Within this framework, organizational competence comprises "grammatical competence" and "textual competence" while pragmatic competence covers "illocutionary competence" and "sociolinguistic competence."

The CLA model has made a tremendous contribution towards language assessment due to its underpinning role (Zang, 2006). Furthermore, quite a few newly designed language tests are based upon CLA model. McDowell develops a proficiency test for teachers who are nonnative speakers of English in Australia while McKay establishes an evaluation system of English proficiency for learners of elementary and secondary levels (Conaim and Falvey, 2004). Bachman's model is still the most comprehensive one up to date in terms of measuring examinee's communicative language ability (Xu, 2000). Even though many studies have been designed to examine and discuss the feasibility of Bachman's CLA model (McNamara, 1990; Douglas, 2000; Purpura, 2004), no pertinent research has been conducted to evaluate Taiwanese students' communicative competence in English through the spectrum of Bachman's model. What remains to be seen is recognizing this need, this study attempts to establish a system of indicator to diagnose Taiwanese high school students' English communicative competence on the basis of Bachman' s CLA through the application of Fuzzy Delphi Method.

**Delphi Method**

The Delphi method has been considered a practical research technique due to its advantage of being flexible, effective and efficient in acquiring collective opinion of a group of experts (Skulmoski, Hartman and Krahn, 2007). The Delphi method originated from a military project designed by the RAND Corporation in the 1950s. It was developed to estimate the number of armory owned by rivalry countries through eliciting professional opinions from experts (Dalkey and Helmer, 1963). According to Dai (2006), the key characteristic of the Delphi Method is the collective fashion of decision-making based upon experts' professional viewpoints. Because of this feature, the Delphi Method is usually employed to acquire a consensus from a group of experts on a specific topic and has been used in various disciplines such as health care, business, education, information system, and engineering. However, a major downside of applying the Delphi Method occurs when experts' standpoints are too diverse to be converged. In order to address this issue, the rounds of Delphi survey will increase on the compensation of budget expenditure and efforts. Additionally, the Delphi Method uses mean scores to select

the standard of assessments; thus, some distorted results may be induced statistically because of the influence of extreme values. In other words, some experts' opinions may not be interpreted appropriately due to such a disadvantage (Dai, 2006).

**Conceptualization of Fuzzy Logic**

The advent of Fuzzy logic in the research cycle comes from Bellman and Zadahs' Decision-Making in a Fuzzy Environment published in 1970. Hence, many advanced decision-making methodologies have been developed on the basis of fuzzy logic (Lien, 2002). Fuzzy logic conceptualization has received a lot of attention from researchers and scholars due to subjectivity in terms of human beings' decision-making. Such subjectivity always leads to complicated and uncertain consequences in the decision-making process. Wang and Wu (2008) propose that the same person may come up with different decisions toward the same problem under various circumstances. The rationale behind their statement is based on the premise there are two types of thinking in the logic system, namely, the formal thinking and fuzzy thinking. Formal thinking refers to the logical and the ordinal manner of thinking while fuzzy thinking focuses on holistic and comprehensive ways of thinking. Of these two types of thinking, formal thinking is considered the inability to completely reflect the multidimensional complexity of thinking behaviors of individuals due to binary characteristics (Wang and Wu, 2008). The binary sets and systems, which are also acknowledged as "Boolean Algebra", divide everything or viewpoints into two categories, positive and negative. One of the biggest downsides of such logic is that human beings' thinking is not always that simple, especially when the decision is made using personal subjectivity. For example, when an EFL learner's communicative competence needs to be evaluated, it will be too arbitrary to jump to conclusions by saying an individuals English is good or bad. For this reason, Fuzzy Theory as proposed by Zadeh in 1965 has gained popularity in the various disciplines of academia.

The mathematical paradigm of fuzzy logic goes beyond traditional crisp sets and the characteristic function of crisp sets can be represented as:

$$I_{\mu}(\chi) = \begin{cases} 1, \chi \in A \\ 0, \chi \notin A \end{cases}$$

From this function, it is not difficult to understand that the definition of variable $\chi$ is binary, which indicates that it can either belong to the set (characteristic function is 1) or not belong to the set (characteristic function equals to 0). Fuzzy sets can be viewed as an evolution of crisp sets because they include all possible functions within the universal discourse. The mathematical manner of presenting it is:

$\mu_A: U \rightarrow [0, 1]$
$u \mid\rightarrow \mu_A(u) \in [0, 1]$

The membership function of a fuzzy set $\mu_A$ and the defining membership function is the essential step to initiate the application of fuzzy theory toward a research project (Chen, 2009). As to the computation of fuzzy sets, the basic concepts are identical to crisp sets and thus are processed through the characteristic functions.

**Fuzzy Delphi Technique**

Fuzzy Delphi Technique is a comparatively innovative research approach that modifies Delphi Method with the fuzzy concept. Fuzzy Delphi Technique was developed by Murray who took factors such as uncertainty and linguistic variables into consideration to renovate the drawbacks of conventional Delphi Method (Chen, 2004). Over the past twenty years, many scholars have written several research papers on the application of Fuzzy Delphi in various disciplines with consensus that this technique is the most appropriate instrument in terms of expressing fuzzy thinking procedures of mankind in a logical manner (Hsu, 1998). Ishikawa (1993) further points out some advantages of employing Fuzzy Delphi to academic research projects. The fuzziness of the Delhi Method cannot be entirely avoided; therefore, the application of Fuzzy Theory to the Delphi Method can reduce the frequencies of surveys and the meaning of target items can be precisely interpreted through the use of Fuzzy Delphi.

# METHODOLOGY

**Fuzzy Linguistic Scale (FLS)**

There have been numerous studies administered to solve specific problems that are difficult to quantify through Fuzzy Theory for decision-making. Quantifying fuzzy concepts for statistical analysis have been the challenging issues for researchers. Therefore, Chen and Hwang (1992) and Hsu *et al*. (1999) designed and proposed the Fuzzy Linguistic Scale (FLS), which serves as a component of Fuzzy Multiple Attributes Decision-Making (FMADM) analysis. The FMADM analysis process begins with a hypothesis, which means a question can simultaneously include fuzzy linguistics and explicit data.

The current study aims to combine a Likert 5-point scale and the FLS to quantify participants' inner thoughts and abstract feelings. Based upon this idea and the research conducted by Hsu *et al.* in 2001, a fuzzy number on individual interviewee' s can be calculated through defining individual i' s linguistic variable k on the FLS of 10 points (0 to 10). In mathematical terms, the triangular fuzzy number $p_{ik} = (l_{ik}, m_{ik}, u_{ik})$ is able to set up the value range of linguistic variable objectively and the operational definition of membership function of can be presented as:

$$U_{pik}(X) = \begin{cases} (X - l_{ik}) / (m_{ik} - l_{ik}), \; l_k \leqq X \leqq m_{ki} \\ (X - u_{ik}) / (m_{ik} - u_{ik}), \; l_k \leqq X \leqq u_{ki} \\ 0, \text{ otherwise} \end{cases}$$

After $p_{ik}$ has been deduced, a follow-up of integration is conducted for dissimilarities existing among examinees in terms of personal cognition and experience. The mean score calculated from $p_{ik}$ of each item is employed by this study and the mathematical expression is:

$$l_{ik} = \frac{\sum_{i=1}^{n} l_{ik}}{n},$$

$$m_{ik} = \frac{\sum_{i=1}^{n} m_{ik}}{n},$$

$$u_{k} = \frac{\sum_{i=1}^{n} u_{ik}}{n}$$

The next step is to transform fuzzy numbers into crisp numbers, or what is referred to as the process of "defuzzication". Defuzzication may be carried out through many different approaches and this study adopts Ishikawa' s Max-Min Fuzzy Delphi (1993) to perform this task. According to Hsu *et al* (2001), the details on this Max-Min Approach starts with defining a Maximizing Set and Minimizing Set. They are represented as follows:

$$\mu_{max}(x) = \begin{cases} x, 0 \leqq X \leqq 1 \\ 0, \text{otherwise} \end{cases}$$

$$\mu_{min}(x) = \begin{cases} 1\text{-}x, 0 \leqq X \leqq 1 \\ 0, \text{otherwise} \end{cases}$$

Based upon this mathematical concept, the left score of a fuzzy score M can be calculated as:

$$\mu_L(M) = \sup[\mu_M(X) \wedge \mu_{\min}(X)]$$

By the same token, the right score of the fuzzy score can be obtained through the following formula:

$$\mu_R(M) = \sup[\mu_R(X) \wedge \mu_{\max}(X)]$$

Literally speaking, both the left and right scores are transformed as sole and crisp numbers. Furthermore, the total value of M is:

$$\mu_T(M) = [\mu_R(M) + 1 - \mu_L(M)]/2$$

Through the steps discussed above, the fuzzy numbers are to be transformed into crisp numbers and based on these numbers a transformed linguistic scale can be established. According to previous research, fuzzy linguistic scales result in better reliability and validity than the traditional interval measurements (Kao, 2005).

### *α-Cut*

$\alpha$-Cut, which is also named as $\alpha$-level set, is an instrument used to transform fuzzy sets to crisp sets (Li, Wang and Su, 2008). The definition of $\alpha$-cut is that to a fuzzy set A, when a real number $\alpha$, $\alpha \in (0,1]$ is given, a crisp set $A_\alpha = \{x | \mu_A(x) \geq \alpha\}$ is formed to the $\alpha$-cut of fuzzy set A. The interval range of this set is $[A_l^\alpha, A_u^\alpha]$. $\alpha$ has also been deemed as "Confidence Level" or "Threshold Value" when the level set is to be decided. When the value of $\alpha$ is bigger, the confidence level or threshold value is higher while the interval value decreases (Cheng, 2001). In the present study, the α-cut is set at 60.

### Participants

The experts invited to participate in the current study include fourteen English teachers of vocational high schools, three English professors from technical universities in Taiwan and one professor of TESOL from a university in the United States. Three participants from the industry were also invited to participate to provide viewpoints from a practical perspective. These participants were invited to be involved in the Delphi Survey and the questions of Delphi Survey were designed to investigate Taiwanese high school students' communicative competence in English; the locus of these questions included: (1) the current level of English proficiency of high school students; (2) communicative competence of English a Taiwanese high school student is supposed to attain; (3) dimensions or details of communicative competence in English for those learners. Results of the Delphi Survey were analyzed on the basis of utilizing Fuzzy technique.

### Research Instrument

Based upon the literature review, this study systematically constructed the indicators of Taiwanese high school students' communicative competence in English. Bachman's model of CLA (1990) was the major source of reference to establish these indicators. There were 14 facets on communicative competence enclosed in this model being considered and investigated. After the indicators were established, the questionnaires utilizing the fuzzy linguistic scale were distributed to participants from April to May 2009. Per the research design of this study, three rounds of Delphi surveys for participants and the results of these surveys were analyzed utilizing the Fuzzy technique. Indicators were coined out after three rounds of the Delphi surveys were completed. The analyses of the three Delphi surveys are presented in the following section.

### Procedure

The procedure of this research project was composed of two phases, which included reviews of the pertinent literature and the Delphi Method through a series of questionnaires in the format of the Fuzzy Linguistic Scale (FLS) to refine the indicators. According to the research design of *Hsu et al.* (2001), the design of FLS contains two stages and the first stage is to decide the linguistic discourse of universe, X= {x1, x2,…,xm}. In this study, the discourse of universe is—strongly agree, agree, neutral, disagree, strongly disagree, and the number of linguistic discourse of this study, m, is 5. The second stage of designing FLS is to decide the types of linguistic combination. The number of variation in terms of such linguistic combination can be acquired through the

application of $\frac{(m-1)m}{2}$ and in this study, the number of variation is 10 with m=5. Some combinations will be deleted for never being formed. After the unrealistic ones are partialed out, FLS Qv = (p1, p2, …, pk) with various types of responses is ready as the research instrument of this study. The sample structure of linguistic scales obtained from participated experts are analyzed. After the linguistic scale had been established, the membership function can be defined as well as crisp value of fuzzy items. After all these procedures are accomplished, the indicators can be established with converged viewpoints of stakeholders and experts.

## RESULTS

### The First Round Delphi Method

The first Delphi survey was initiated in April 2009 and 25 questionnaires were distributed to the participants. Out of these 25 questionnaires, 20 were effective. The questionnaires were deleted for their unrealizable attributes. There were eight different combinations of linguistic scales proposed by the present study and the analytical figures of these eight types of fuzzy linguistic scales were presented as followings. Once the number of valid questionnaires had been ascertained, the first round of Delphi surveys was analyzed. In this study, we set the criterion value for each variable as 60; in other words, any variable with a value lower than 60 were deleted from this research. The "double triangular fuzzy integration" was applied to incorporate opinions from experts and thus the "grey zone examination" was used to test whether experts' opinions could be converged (Li, 2008). Cheng (2001) and Chen (2001) suggest the following steps to examine the convergence of experts' opinions:

*Step 1:* Based upon the results of the fuzzy linguistic scale, individual expert' s response toward each item can be presented as the triangular fuzzy number $p_{ik} = (l_{ik}, m_{ik}, u_{ik})$, the biggest number can be the most conservative value of cognition while the biggest number is the most optimistic value of cognition.

*Step 2:* Initiated item analysis on the most conservative value of cognition and the most optimistic value of cognition toward item "i" and eliminate any extreme values which fall outside two standard deviations. Six values can therefore be derived; namely, the minimum value $C_L^i$ , the geometric mean $C_M^i$ , and the maximum value $C_U^i$ of the most conservative value, as well as, the minimum value $O_L^i$ , the geometric mean $O_M^i$ and the maximum value $O_U^i$ of the most optimistic value of cognition.

*Step 3:* The double triangular fuzzy integration can be formed through the establishment of $C^i = (C_L^i, C_M^i, C_U^i)$ and $O^i = (O_L^i, O_M^i, O_U^i)$.

*Step 4*: The convergence of expert's opinions can be finalized through testing the existence of grey zone. If there is no grey zone, which means $C_U^i \le C_L^i$, this situation indicates the fact that all experts have concurred on the item *i* and the value $G^i = (C_M^i + O_M^i)/2$ can be applied. The second situation is the existence of grey zone but the grey zone $Z^i = C_U^i - O_L^i$ is smaller than the interval of "geometric mean of optimistic cognition" and "geometric mean of conservative cognition" $M^i = O_M^i - C_M^i$. In this case, the convergence value $G^i$ is the fuzzy set $F^i(x_i)$ of interaction of two triangular fuzzy and the mathematical equation is presented as:

$$F^i(x_j) = \left\{ \int_x \{\min [C^i(x_j), O^i(x_j)]\} dx \right\}$$

$$G^i = \{x_j \mid \max \mu_{F^i}(x_j)\}$$

However, when the grey zone was greater than the interval and no convergence had taken place. The geometric mean of those items shall be provided to the experts and the second round of Delphi Method conducted until all items converged. The results of the first round Delphi Method were presented as follows (see Table 3). The results of first Delphi showed the fact that convergence could be established on three items (item #5, 31 and 32 respectively) while another three were deleted for their low value (#30, 31, 32). Furthermore, among these 41 variables, 21 of them could not be converged and needed to have gone through the 2nd round Delphi Method.

### The Second Round Delphi Method

The second round of Delphi Method was administrated in June 2009. The same group of experts was invited to answer the same questionnaire again; however, they were provided with the results of previous survey. They were instructed to answer questions marked "2nd Delphi" and ignore the "Taken" and "Deleted" items. Participants responded to each question on the Fuzzy Linguistic Scale as in the first round. The same process of "defuzzication" was conducted to comprehend the exact value of each question. The results of the 2nd round of Delphi Method showed only one variable (variable # 29) shall be deleted after this round of analysis. The rest of variables were above the criteria and therefore were selected by this research. The value a variable received represented the importance these experts thought of toward Taiwanese EFL learners in terms of their communicative competence in English.

## DISCUSSION

In order to establish the scale of indicator to diagnose Taiwanese EFL learners' communicative competence in English, the Fuzzy Delphi Method was applied by the present research. With the 14 facets of CLA (Communicative Language Ability) model proposed by Bachman (1990), we developed 41 variables, which hypothetically concerned their communicative competence in English. After the examination of 41 variables through two rounds of the Delphi Method, some variables were removed from this study because of experts' collective opinions and the values of these variables were under 60. Five variables selected by experts as "extremely important" are those scored over 90 points, which

were "Vocabulary competence—Nouns," "Ability to interpret the contents of conversation," "Ability to comprehend the meaning of vocabulary," and "Ability to use vocabulary appropriately." The "important" competences include "Vocabulary competence—Verbs," "Vocabulary competence—Adjectives," "Understand the setting of conversation," "Ability to predict the contents of conversation," "Ability of trying to use vocabulary appropriately," and "Ability to imagine the setting of applying vocabulary." The rest of the variables were considered as "somewhat important" or "sufficiently important but not necessary" competences that Taiwanese EFL learners are supposed to have for their successful communication in English. The results of this study reflect a phenomenon, which is that most experts of English education in Taiwan believe for high school students, expanding capacity of vocabulary remains to be the prerequisite for their successful communication in English. The implication of such observable fact is twofold: learners' lack of vocabulary capacity and traditional mindset on English instruction and learning in Taiwan. However, it is fair to make a statement that vocabulary does play a crucial role in Taiwanese EFL learners' communicative competence in English. Compared to learners' knowledge on the target contents of communication, their knowledge on English was valued higher. Such results concur with the argument made by Iwashita *et al.* (2008) on the assessment of second language speaking proficiency. Based upon their research, they propose the main factors to distinguish examinees' various levels of speaking proficiency were found to be vocabulary and grammar. In other words, while a learner achieve certain level of proficiency in English, capacity of vocabulary and knowledge on grammatical structures are the major threshold for them to move on to the next level.

### Limitations of the Present Study

Despite the efforts we have dedicated to make this research project as all-inclusive as it is supposed to be; inevitably, there still are some limitations for this study. The first limitation is the methodological design, which refers to the selection of experts for Delphi Method. Participated experts included high school English teachers, professors from colleges in Taiwan and the United States and professionals from the industry. Even though participants are the key players and stakeholders of the topic of present study, their opinion is next to impossible to represent all members in the realm of English as a foreign language (EFL) education and tourism industry. Secondly, this current study only examines the language competence of Bachman's CLA Model. Issues on learners' cultural and strategic competence are not tackled by this study due to the restriction of time and finance. Therefore, caution is advised in interpreting the results of this study, particularly while learners' competence in the target culture and how they adjust themselves linguistically and non-linguistically to progress the communication.

### Suggestions for the Future Research

Due to the limitations this study unavoidably bears with, fellow scholars may retrieve some suggestions for their future study. The first suggestion is mainly about reliability and validity of this proposed system, which are beyond the scope of this research. This present research employed Fuzzy Delphi Method to obtain collective viewpoints of professional from academia and the industry. Future studies may use this system as a research instrument and then conduct reliability and validity tests on various groups of examinees, particularly the construct validity. The construct validity of an assessment system reflects its power to evaluate latent variables which can be communicative competence in English (Yi, 2008). Cronbach α is the appropriate tool to examine the reliability whereas Confirmatory Factor Analysis (CFA) or Structural Equation Model (SEM) is of great assistance to be used to test the validity. Furthermore, results of this study indicate a learner's capacity of vocabulary and how properly he/she uses these vocabularies are the most important criterions to assess Taiwanese high school students' communicative ability in English. Interests on causal relationship between a learner's master in vocabulary and communicative competence may arise from the results of this study.

## CONCLUSION

The present study was designed to diagnose Taiwanese high school students' communicative language ability in English, which was based on Bachman's CLA Model with specification on language competence. The proposed indicators were examined by means of Fuzzy Delphi Method. Experts' opinions were converged after two rounds of Delphi Method were conducted and orchestrated. Results of this study aligned with the statements derived from previous studies such as Iwashita *et al.* (2008), which indicated that vocabulary should be the foremost concern for Taiwanese English learners to develop communicative language ability. The results of this study also have strong implications for admission committee members/professors of colleges in Taiwan. While considering an applicant's qualification in communicative ability in English, they may consult these indicators to lay their decision on a systematic standard. For English teachers in high school, helping students to expand students' capacity of vocabulary and appropriate use of these vocabularies seem to be their foremost job to cultivate students' communicative competence in English. In terms of the contribution the present study may dedicate, the application of Fuzzy Delphi Technique provides an innovative perspective to examine the appropriateness of Bachman's CLA Model in Taiwan. Two rounds of Delphi elicited a system of indicators and these indicators imply the importance of ability vocational high school students should possess to improve their English communicative competence. The results conclude variables with the most important attribute (above 90 points) to Taiwanese EFL learner's communicative competence in English, which include:

1. Vocabulary competence—Nouns
2. Ability to interpret the contents of conversation
3. Ability to comprehend the meaning of vocabulary
4. Ability to use vocabulary appropriately

Variables thought to be important (80~89) are:

1. Vocabulary competence—Verbs
2. Vocabulary competence—Adjectives
3. Understand the context of conversation
4. Ability to predict the contents of conversation
5. Ability of trying to use vocabulary appropriately

6. Ability to imagine the context to apply vocabulary

Variable reviewed as somewhat important (70~79) indicators are:

1. Vocabulary competence— Adverbs
2. Vocabulary competence— Conjunction
3. Ability to comprehend phrases
4. Ability to use phrases appropriately
5. Ability of trying to use newly-learned grammar appropriately
6. Ability of trying to use newly-learned phrases appropriately
7. Ability of trying to apply phonics to pronounce unfamiliar vocabulary
8. Ability of imagining the application of grammatical use in various settings
9. Ability of imagining the application of phrases in various settings
10. Ability of imagining the application of conversational skills in various settings.
11. Being able to use different registers in various settings

Variables considered being sufficiently important but not necessary (60~69):

1. Vocabulary competence— Prepositions
2. Morphology—meaning of roots
3. Morphology—meaning of prefixes
4. Morphology—meaning of suffixes
5. Ability to comprehend grammatical structures
6. Ability to comprehend skills in pronunciation
7. Ability to use grammatical structures appropriately
8. Ability to use pronunciation skills appropriately
9. Being able to understand different registers immediately
10. Being able to differentiate the definitions of various registers
11. Being able to make a judgment if the other party is a native speaker of English through his/her pronunciation
12. Being able to make a judgment if the other party is a native speaker of English through his/her grammar
13. Being able to check his/her fluency in English
14. Being able to interpret the use of language from cultural perspective
15. Being able to understand the other party's cultural background though conversation
16. Be able to adjust the use of language in accordance with the other party's cultural background.

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