Abstract

This study determined the model that most likely predicts English Proficiency among freshmen. Through secondary data analysis with 277 out of 554 freshmen who were randomly selected, majority were found to be on the below average level, both verbal and non-verbal reasoning attributes. Linear Regression and General Linear Models show the independent variables that most likely predict English Proficiency are verbal comprehension, verbal reasoning, figural reasoning, sex and course enrolled specifically engineering courses. Thus, this study supports James (1950), Freud (1953) and Donges (2001) who pointed out making connections on the importance of reasoning attributes towards mathematics skills of students. This is where the dual process and filtering observation theories are substantiated relative to predicting English Proficiency.

Keywords: predictions, accuracy, predictaccurate

1.0 Introduction

This study claims that verbal and non-verbal reasoning attributes contributes to students’ capability to be proficient in English. James (1950) and Freud (1953) stress that reasoning attributes enable a person to express oneself having in rational thought. To be in the tertiary level of education, English Proficiency is necessary for understanding the different competencies laid for each subject. According to Donges (2001), speaking and writing are necessary to exhibit verbal reasoning. As one of the four basic cognitive reasoning skills, it covers almost all learning tasks of a formal education. Mathematics skill is considered nonverbal, however, it requires some verbal reasoning being delivered and taught using oral and written instruction. When most people discuss learning, they are talking about the ability to use verbal reasoning skills. Hence, this study includes both verbal and non-verbal reasoning as possible predictors of English Proficiency. In addition, the crucial transitory period from high school to college is
necessary to be provided with bridging interventions on English Proficiency based on the students’ verbal and non-verbal reasoning qualities.

2.0 Conceptual/Theoretical Framework

The Dual Process of reasoning takes the form of two different modes of thought. James (1950) points out that experiential associative type of thinking as well as separate analytical modes contribute to reasoning capability. These experiences are accumulated from the time a person starts to interact with others. Meanwhile, Freud (1953) presents a dual theory of information processing that distinguishes between a primary and secondary system in which the former is associative and unconscious while the latter is conscious and capable of rational thought. For a person to express oneself, he/she must use the rational thought. The process of filtering observation states that “what we take in with our senses will be subjected to mental processing and results to the official observations.” This suggests that experiences contribute to the verbal and non-verbal reasoning attributes of a person.

To further explore the idea of dual process theory, Evans and Frankish (2009) explained the two different systems of human reasoning. Similar to what Freud (1953) and Kahan (2012) pointed out, the first system includes the processes that are held to be distinctive using investigative approach in solving specific adaptive problems. Meanwhile, the second encompasses the processes taken to be learned that can be adjusted and open to rational standards. Regardless of the attractive issues that these theories have, the dual process theorists do not have a common view about it. Thus, the substantial bodies of work on dual processes in cognitive psychology

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**Figure 1. The conceptual framework**

- **Dual Process Theory**
- **Filtering Observation Theory**
- **Importance of Reasoning Attributes towards the expression of rational thought** (James, 1950 & Freud, 1953)

- **Verbal Reasoning Attributes**
  - Verbal Comprehension
  - Verbal Reasoning

- **Non-Verbal Reasoning Attributes**
  - Figural Reasoning
  - Quantitative Reasoning
  - Sex Course

- **English Proficiency**
and social psychology remain isolated from each other. In this study, both cognitive and social domains are combined taking into consideration how these factors contribute to English Proficiency of the students.

Emotional state works over intellectual aspect of reasoning when a person is not good in numbers. This will lead to unsystematic engagement of the situation and produce unconscious affective response. This further leads to the realization about something passed into the network of conscious thought which will prompt the course of action that the person will do. Kahan (2012) further expressed those emotional processes make reasoning uses integrative and mutually supportive conceptualization associate with prior experiences.

In this study, the understanding how prior knowledge influences memory of the students taking verbal and non-verbal skills as predictors of English Proficiency in Southern Leyte State University, Sogod Campus may have an effect to the result of the English Proficiency Test. Students’ remembering ability of an event and experiences including lessons learned from high school may be considered in looking into the result of the test.

### 3.0 Research Design and Methods

This is a descriptive study which is an explanatory design using multilevel models with a focus on predictive accuracy of the reasoning attributes as reflected in the created models, utilizing secondary data. Only 20% (277) of the total population was considered using simple random sampling technique. Data from the Office of Student Affairs and Services on the results of the Otis Lennon School Ability Test (OLSAT), which include Verbal Comprehension, Verbal Reasoning, Figural Reasoning and Quantitative Reasoning, were used. In addition, English Proficiency of the same respondents was taken from grades in English 101. Regression analyses were used to find the best linear model in predicting English Proficiency based on verbal and non-verbal reasoning attributes with consideration of sex and course of respondents.

### 4.0 Results and Discussions

#### Verbal and Non-verbal Reasoning Attributes

Table 1 clearly shows that there are more males than female respondents mostly belong to below average level of both verbal and non-verbal reasoning attributes. In addition, none of the engineering freshmen is on below average level. The data further manifest that admission requirement of the university for the engineering courses considers higher verbal and non-verbal attributes of applicants. For education and industrial/
information technology programs, admission policies can be raised, more importantly to Industrial Education since it has a Licensure Examination for Teachers (LET).

Table 1. Distribution of level of verbal and non-verbal reasoning attributes by sex and course.

<table>
<thead>
<tr>
<th>Reasoning Attributes</th>
<th>Sex</th>
<th>Course</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Male</td>
<td>Female</td>
</tr>
<tr>
<td><strong>Verbal Reasoning Attributes</strong></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Above Average</td>
<td>29</td>
<td>9</td>
</tr>
<tr>
<td>Average</td>
<td>3</td>
<td>2</td>
</tr>
<tr>
<td>Below Average</td>
<td>182</td>
<td>52</td>
</tr>
<tr>
<td>Total</td>
<td>214</td>
<td>63</td>
</tr>
<tr>
<td><strong>Non-Verbal Reasoning Attributes</strong></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Above Average</td>
<td>14</td>
<td>8</td>
</tr>
<tr>
<td>Average</td>
<td>24</td>
<td>6</td>
</tr>
<tr>
<td>Below Average</td>
<td>176</td>
<td>49</td>
</tr>
<tr>
<td>Total</td>
<td>214</td>
<td>63</td>
</tr>
</tbody>
</table>

Models on Prediction

A model that has the best likelihood to predict English Proficiency vis-à-vis verbal and non-verbal reasoning attributes of college freshmen was determined. Sex was included as additional independent variable being found out that female were seen to have high possibility to increase English skills by working with the same sex but the reverse is true for males (Mahmud, 2010). In addition, in some schools like Harvard Summer School, English Proficiency (EP) is a requirement for enrolment since English is the language of instruction for the course (summer.harvard.edu, 2014). This means that EP is more or less has relation with courses enrolled by students.

In this study linear regression model and general linear model are used since some analyses are done with numerical independent variables while others are with categorical variables.

The first model (EP1) reveals that verbal reasoning attributes (VRA), sex (S) and courses C(1) for BS Electrical Engineering, C(2) for BS Civil Engineering and C(3) for BS Mechanical Engineering, are highly significant predictors of EP1 beyond 1% level of significance (p=0.000) accounting for 40.1% of the variance in EP. Notice that among the five courses considered in this study, only the three engineering
courses are included in the model. This means that these courses are likely to affect the variation of EP in fact there is a significant positive relationship between EP and the three courses beyond 1% level of significance (rc1= 0.130; rc2 = 0.407; rc3 = 0.207).

\[ EP_1 = 73.6 + 0.404 \text{ VRA} + 3.64 \text{ S} + 4.23 \text{ C(1)} + 4.75 \text{ C(2)} + 5.73 \text{ C(3)} \]

EP1 further suggests that ME, CE and EE courses account for 5.73%, 4.75% and 4.23% increase in EP1, respectively, for every unit increase in each of these factors. Note that ME course has the highest contribution. These mean that students who enroll ME and the other two engineering courses have higher EPs than those who enroll in the other courses. In addition, sex of students also accounts 3.64% increase of EP in which males dominate the distribution (31 out of 42 or 73.81%). Results further imply that being a male engineering student has a bigger likelihood of having better EP which already has 73.6 constant value.

Closer view of model 1 suggests that there is 59.9% of the variance attributed to other factors. Hence other possible models are considered. Model 2 considers the non-verbal reasoning attributes (NVRA) with S and courses C(1), C(2) and (C3) which were found to be highly significant predictors of EP2, all beyond 1% (p=0.000). Nevertheless in this model, 38.6% of the variance of EP is due to NVRA, S, C(1), C(2) and C(3), which is lower than the prediction accuracy of model 1. Besides, NVRA has lower prediction attributes compared to VRA by 0.188 (C(1) and C(3) follows the same trend) although S is higher by 0.19 and C(2) by 0.117 in model 2 than in model 1.

Specifically in model 2, CE has the highest coefficient which means that among the independent variables, CE accounts for 5.59% increase in EP for every unit increase in CE variable. Next is ME (4.94%), S (3.83%), EE (2.88%) and NVRA (0.216%) that all have positive contributions to EP. When all these variables are zero, EP is 73.9% that is below the 75% passing based on the university’s marking system.

The researchers noted that although engineering courses such as EE, CE and ME are more on numerical and analytical inclinations, verbal reasoning attributes go with courses in predicting EP.

\[ EP_2 = 73.9 + 0.216 \text{ NVRA} + 3.83 \text{ S} + 2.88 \text{ C(1)} + 5.59 \text{ C(2)} + 4.94 \text{ C(3)} \]
With the aim of obtaining a better prediction model, combining both VRA and NVRA with S and C was done (EP3), in which VRA, NVRA, S, EE, CE and ME were found to have direct bearing with EP, all beyond 1% level of significance. In this model, 41.8% of the variance in EP is accounted for by VRA, NVRA, S and Cs. This is higher than the R2 values of both models 1 and 2. This likely suggests that model 3 has better prediction accuracy than either model 1 or model 2. However, ME is the highest contributory factor unlike in model 2 which is CE. However, note that VRA contributes 0.304% only compared to model 1 which is 0.404%, nevertheless, still higher than NVRA, that is only 0.134 in model3 and 0.216 in model2. Results imply that combining both VRA and NVRA with the other variable lowers the prediction power and decreases the constant to 72.7%.

$$EP3 = 72.7 + 0.304 \text{VRA} + 0.134 \text{NVRA} + 3.68 \text{S} + 3.25 \text{C}(1) + 4.07 \text{C}(2) + 4.58 \text{C}(3)$$

Since both VRA and NVRA have components, these are considered as independent variables combined and not combined with S and C. Results are considered as model 4 and model 5, respectively. In model 4, only Verbal Comprehension (VC), Verbal Reasoning (VR) and Figural Reasoning (FR) are highly significant predictors of EP beyond 5% level of significance while Quantitative Reasoning (QR) is not significant (p=0.117). It is also observed that only 28.8% of the variance of EP is due to these mentioned factors. Notice that the numerical coefficients of the mentioned variables are all lesser than 1 (VC=0.444; VR=0.432; FR=0.239) which are smaller compared to those of the first three models.

$$EP4 = 72.1 + 0.444 \text{VC} + 0.432 \text{VR} + 0.239 \text{FR}$$

In model 5, all independent variables are found to have significant contributions in predicting EP beyond 5% level of significance which excludes QR (p=0.545). Similar trend effect of C on the model as likened with model 3 is revealed. As observed, 42.0% of variation in EP is accounted for in the VC, VR, FR, S and C. As compared with the rest of the models, independent variables in model 5 have the highest prediction power of EP.

A more detailed gaze into model 5 reveals that for every one unit increase of ME accounts for 4.57% increase in EP and similar trend in CE (4.15%); S (3.69%); EE (3.36%); VC (0.356%); VR (0.272%); and FR (0.211%). These results suggest that a verbal comprehension, verbal reasoning and figural reasoning contribute to increasing EP across the different engineering courses, preferably male students.
\[
EP5 = 72.7 + 0.356 \text{ VC} + 0.272 \text{ VR} + 0.211 \text{ FR} + 3.69 \text{ S} + 3.36 \text{ C}(1) + 4.15 \text{ C}(2) + 4.57 \text{ C}(3)
\]

Comparing the prediction capability of all the tested models, model 5 has the biggest likelihood of predicting EP. In this case, faculty handling English 101 may consider intervention activities on VC, VR, FR, S and C of students. These activities will take into account suitability on the sex and course enrolled. This somehow supports the claims that verbal and non-verbal reasoning attributes are likely to predict English Proficiency. Quantitative reasoning as part of non-verbal reasoning attributes does not significantly contribute in predicting EP. In this case, the teachers of Engineering students can devise teaching strategies that will maximize the potentials of students in verbal comprehension, verbal and figural reasoning attributes.

5.0 Conclusions

Therefore, the study supports the dual process and filtering observation theories since verbal and non-verbal reasoning in combination with sex and courses, particularly on EE, CE and ME, predicts English Proficiency. In addition, this also sustains James (1950), Freud (1953) and Donges’ (2001) connections on the importance of reasoning attributes towards mathematics skills of students. English Proficiency among engineering students is somehow pushed up by their reasoning attributes. In this case, verbal comprehension, verbal reasoning and figural reasoning are predictors of EP. Hence, students who are low in these attributes need enrichment interventions for them to cope up with the demand of a better EP. Note that English is a universal language giving students better edge in an open economic competition.

6.0 References Cited


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