Cognitive Learning Strategies of Non-English Department Students on Noun Structure

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Abstract: Learning English for non-English department students is not as easy as it seems. Besides, as much as it is necessary to know how successful learners learn, not less important is to know how less successful learners learn. Using think aloud method, this study aims at finding out the cognitive strategies used by the engineering department students in answering incorrectly problems on TOEFL noun structure - the grammar point in which students made the most errors. Findings uncover the students’ strategies and reasoning upon which pedagogical implications can be put forth so that more effective and fruitful instruction can be tailored.

Key words: grammar point, noun structure, learning strategies, TOEFL

The Test of English as a Foreign Language (TOEFL), developed in the early 1960s, has become an important standard of measuring English language proficiency for international students wishing to pursue further education, especially, in the United States and Canada. Gaining more and more its popularity, TOEFL has been more widely used not only by colleges and universities but also by government agencies, scholarship programs, and licensing/certification agencies to evaluate one’s language proficiency (ETS, 2002). Although the purposes of using TOEFL may then vary nowadays, there is always one common interest for the participants: to gain as high TOEFL score as possible. When the paper-pencil based test is the concern, TOEFL scores range from 310 to 677 covering those of listening, structure and reading sections. In lieu of Indonesian testees, structure sub-test is quite troublesome for
them. Some factors may be attributable to that failure of gaining high score for structure. To begin with, TOEFL is a timed-test in which the testees do not only have to find the correct answers but also to do quick analysis on average 36 seconds for each test item. Furthermore, the task becomes more complicated due to the numerous grammar points that are usually addressed in TOEFL structure sub-test. Mahnke and Duffy (1998) in Heinemann TOEFL Preparatory Program propose 30 grammar points that students have to master when they are to beat TOEFL scores. Some of them are about noun structure, prepositions, articles, two-word verbs, tenses, clauses, and phrases.

So complicated are problems on structure sub-test that Thompson (2001, p. 3) has put forward his doubt as whether students can really prepare for section 2. However, despite all the complications, not discouragement but never-ending endeavor heading toward better instructions should always be emphasized. Therefore, of particular concern that insights should be brought about, and that there are always ways as to equip the students to battle against the complicated TOEFL structure sub-test in particular and structure test in general, this study tries to uncover how students came up with the incorrect answers on noun structure. This particular grammar point is the concern of this paper since results of the pilot are indicative that noun structure was the area students made the most persistent error.

The fact is that most researches have so far been focused on the area of getting information from successful learners. However, as much as it is fruitful to know how successful learners learn, not less important is to know how less successful learners learn. It is of this paper’s interest to know the ‘route’ of the wrong answers taken by the students or what ‘tricks’ the students actually used in deriving the incorrect answers on noun structures. Findings can hopefully shed light to the teaching of structure in general and the teaching of TOEFL structure sub-test in particular so that skills and knowledge lacking can be addressed. Cautions can also be made so as students will not go through the ‘wrong paths’ anymore, and then better instruction can be tailored. Moreover, in addition to the contributions towards its pedagogical implications, this study also aims to identify the range of strategies used by the students on analyzing grammar tasks on noun structure to determine whether the strategies found compile all the existing strategies so far gathered and classified. Put together, this study aims to:
(1) identify what strategies employed by the students in deriving the answers.
(2) identify students’ ways of reasoning in doing the test.
(3) identify the pedagogical implications.

Findings will hopefully bring about insights to twofold contributions, namely both the theoretical and pedagogical implications.

TOEFL Structure Sub-test

The purpose of TOEFL is to evaluate the English proficiency of people whose native language is not English. TOEFL scores are mainly required by more than 2,400 colleges and universities in the United States and Canada. The use of TOEFL scores has increased as government agencies, scholarship programs, and licensing/certification agencies also use TOEFL scores to evaluate English proficiency (ETS, 2002).

In regard to the structure section, this sub-test measures the ability to recognize language appropriate for standard written English. In this part of the test, there are 40 numbers of test items that should be done in 25 minutes. Furthermore, when computer based test is the concern, the structure section may range between 20 and 25 questions, and the students are to do the test in 15 to 25 minutes. Roughly, testees are to do each test item in about 36 seconds at the maximum time. Thus, quick analysis of the problems is essential in this particular sub-test (Thompson, 2002).

In addition to the limited time, TOEFL structure includes many grammar points that are usually tested, and, thus, the students are to master those grammar points.

Noun Structure

Mahnke and Duffy (1996) put forwards that there are 30 grammar points that should be addressed in TOEFL instructions when the students are to perform well on TOEFL structure sub-test. One of them, which is the core of this study, is about Subject, Object and Noun Complements. As far as the writers are concerned this grammar point poses difficulties for most of TOEFL students. When this particular grammar point is the issue, TOEFL students should be aware that there are noun structure forms that can function either as a subject, object or complement. The five forms are noun (phrase), pronoun, gerund (phrase), infinitives (phrase) and noun clause. To illustrate (p. 135):
Noun (phrase) Roses are beautiful plants.

Pronoun You like roses.

Gerunds (phrases) Growing roses is your favourite hobby.

Infinitive (phrase) You like to grow roses.

Noun clause Everyone says that you grow beautiful roses

Furthermore, the position of a noun (phrase/clause) is determined by its function (Frank, 1972). A noun can basically function as a subject, subject complement (predicative noun). Also, a noun (phrase/clause) can function as a direct object, indirect object, objective complement or object after preposition when the noun comes after the object or preposition. Finally, a noun can also function as noun adjunct, appositive and noun in direct address.

<table>
<thead>
<tr>
<th>FUNCTIONS</th>
<th>POSITIONS</th>
</tr>
</thead>
<tbody>
<tr>
<td>Subject</td>
<td>The………….is wonderful</td>
</tr>
<tr>
<td>Subjective Complement</td>
<td>Bryan is a kind……………</td>
</tr>
<tr>
<td>(predicative noun)</td>
<td>I bought a………….</td>
</tr>
<tr>
<td>Direct Object</td>
<td>She gave …………………her address.</td>
</tr>
<tr>
<td>Indirect Object</td>
<td>We elected him………….</td>
</tr>
<tr>
<td>Objective Complement</td>
<td>We went to the………….</td>
</tr>
<tr>
<td>Object of Preposition</td>
<td>I bought that novel at the……..store.</td>
</tr>
<tr>
<td>Noun Adjunct</td>
<td>Mozart, the great…………, was</td>
</tr>
<tr>
<td>Appositive</td>
<td>brilliant.</td>
</tr>
<tr>
<td>Noun in Direct Address</td>
<td>…………, please open the door.</td>
</tr>
</tbody>
</table>

(Frank, 1972)

Learning Strategies

As learners have now been considered as the main focus, multiple changes and innovations have been taking place in English language teaching that results in the emergence of a great deal interest for language learning strategies for the past fifteen years (Martinez, 1993). Distinctions between content and methodology such as in traditional curriculum are no longer the focus. How and why they learn or do not learn becomes as important as what they learn (Wenden, 1991). It then leaves language
learning strategies to remain as an active area of research (Richards & Renandya, 2002). Oxford (1990) differentiates learning strategies into six categories:

- **Memory Strategies:**
  This first type of strategy deals with remembering and retrieving information such as using imagery, applying images and sounds and placing new words into context.

- **Cognitive strategies:**
  These strategies deal with the understanding and using of the language. Among others, they include recombining, practicing, reasoning and analyzing.

- **Compensation strategies:**
  These strategies are about the use of language despite knowledge gaps such as guessing, coining words and using mime and gesture.

- **Metacognitive strategies:**
  They are about learners’ ways of organizing, planning and self-evaluation are some of the examples when applying these particular strategies.

- **Affective strategies:**
  Affective strategies are used for regulating emotions such as making positive statements, taking risks wisely and rewarding one’s self.

- **Social strategies:**
  Strategies of this type are used to organize, guide, check, correct, coach, encourage, and cheer the performer. They may include cooperating with peers, developing cultural understanding and asking for clarification/verification.

Oxford further classifies these six strategies into two major classes: direct and indirect strategies. Direct strategies deal directly with the target language, namely, working the language itself in a variety of specific tasks and situations. Memory, cognitive and compensatory strategies are classified as direct strategies. The second major type, indirect strategy, is for general management of learning. Metacognitive, affective and social strategies fall into indirect strategy.

**Cognitive Strategies: Analyzing and Reasoning**

Cognitive strategies are the most popular ones with language learners. They are unified by common functions: manipulation and transformation of the target language by the learners (Oxford, 1990). Further, O’Malley
and Chamot (1990; p. 44) believe that cognitive strategies may be limited in application to the specific type of task in the learning activity. In light of strategies aiding learners to use logical thinking to understand and use the grammar rules, Oxford (1990; p.82-86) put forth that there are five strategies helping learners to use logical thinking to understand and use the grammar rules and vocabulary in the target language:

- **Reasoning deductively**
  It involves deriving hypotheses about meaning of what is heard by means of general rules the learner already knows. It is actually considered a common and very useful type of logical thinking. What should be taken into account is that this strategy sometimes results in overgeneralization errors.

- **Analyzing expressions**
  Students may also analyze certain expression as to understand/use grammar rules. They break down a new word, phrase, sentence, or even paragraph into its component parts.

- **Analyzing contrastively**
  It occurs when analyzing elements (sounds, words, and syntax) is done to determine likeness and differences in comparison with one’s own native language. This strategy is very common for early language learners.

- **Translation**
  It is when translation is used as the basis to allow the students understand what they read or hear in the target language. Yet, since there is no verbatim translation, this strategy may fall for its own perils when not properly addressed.

- **Transferring**
  It happens when learners directly apply previous knowledge to facilitate knowledge in the target language. Transferring may involve applying linguistic knowledge, either from learners’ own language, one aspect of the new language to another aspect, or conceptual knowledge from one field to another. However, when transferring done in unparallel language elements or concepts, which most of the time occurs, inaccuracy may take place. Therefore, just like translating, transferring has its own drawback inasmuch as concepts across two languages will always be the same.

In addition to those aforementioned analyzing and reasoning strategies, language learners often apply guessing intelligently strategies as one of their compensation strategies when encountering limitations in knowledge.
as to make up for an inadequate repertoire of grammar and vocabulary. Guessing intelligently take into account either the use of linguistic clues or other clues. The former is the knowledge on language serving as the bedrock of many correct guesses, and the latter refers to clues from other sources that may go beyond or apart from the knowledge of language. To illustrate, nonverbal behaviours, visuals or general background knowledge (culture, topics under discussion, etc.) are all beneficial.

METHODOLOGY

This study is descriptive in nature in which a description on how the students obtained certain answers is made. Prior to this study, a pre and post-tests were administered to find out what grammar point seemed to be the most persistently troublesome for the students. To have a better view on how the research has been done, discussions on the samples, test format, data collection procedures and data analysis procedures are reviewed as follows:

The samples

There were eight TOEFL classes altogether. However since it was quite impossible to work with all the classes, two of the classes were chosen in random as the sample of this study. The students were those of the Engineering department who were taking a 180 hour-TOEFL programs for one semester, from February to July 2004.

The test items

Since this study focuses only on noun structure, only test problems on that particular grammar point were taken as samples in this study as to collect the data from the students. Out of the 40 number of test items for structure sub-test, 4 of them were about noun structure. They are test items numbers 6, 10, 12 and 13. The test items are as follows (Mahnke & Duffy, 1996).

Problem no 6:

The national medal of science is the....given by the United States government.

a. highest science award
b. highest award for scientific

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c. award that is the highest scientific
d. highest, and awarding scientists

Problem no.10:
\[\text{at music store was one of Lil Amstrong's first professional job as a young pianist when she came to Chicago in 1917.}\]
a. Demonstration tunes
b. Demonstrating tunes
c. Demonstrate tunes
d. Tunes that demonstrated

Problem no. 12:
\[\text{The Alaska blackfish exhibits to both extreme cold and low concentrations of oxygen under the ice.}\]
a. remarkable, and resistance
b. remarkable, resistant
c. remarkable resistant
d. remarkable resistance

Problem 13:
\[\text{Penicillin acts both} \]
a. killing bacteria and their growth being inhibited
b. and to kill bacteria and to inhibit their growth
c. by killing bacteria and by inhibiting their growth
d. kills bacteria and inhibits their growth

The data collection procedures

Students’ answers on a post test were analyzed to determine the persistent error. Results show that majority of the students did not perform well on grammar point of Subject, Object and Noun Complements (henceforth called noun structure). Therefore, this study then focused on this particular grammar point instead, since working in depth with all the grammar points in a single study would be quite impossible.

From the results of the tests, names of students having wrong answers of this grammar point on both the pre and post tests were noted down to be invited for an interview, a week after the post test. A week time span was in favour, for the students were assumed to still have fresh memory on how they derived their answers.

[Footer information]
In gathering the data, a delayed retrospective data collection was done through interview sessions. This particular type of data collection was chosen as students were to reconstruct the types of strategies employed with the language tasks (namely the test), after the tasks have been performed (O’Malley & Chamot, 1990).

**The data analysis procedures**

In order to be able to answer the research question, think aloud interview sessions were conducted to get the data of this study. These think aloud data collection procedures were employed due to the fact that these procedures are believed to be able to delimit the task and the context but leave open the natures of strategies that were reported (O’Malley & Chamot, 1990).

Two interview sessions were carried out as not all of the students could come on the same day. The second interview was conducted a week after the first interview, or about two weeks after the test. Totally there were 15 students invited for the interview sessions.

As for procedures of both sessions, first of all, they were given back their marked answer sheets. Previously, their answer sheets had been retyped so that they only contained the test items under study, namely about noun structure. In overall, there were five out of forty numbers of test items about this particular grammar point. Then in about 30 minutes the students were sit in a class and asked to recall what made them choose those particular wrong answers. To follow, they were asked to wait outside and were called one by one for the interview session. They had to tell why they had chosen a particular wrong answer. Some questions were given for elicitation when more detailed explanation was required. All their explanation and answers were then recorded so as not only to make the data available for later retrieval for analysis but also to ascertain the accuracy of the data.

**FINDINGS AND DISCUSSION**

The table below shows the strategies used by students in coping with test problems and their reasoning why they chose a particular answer. In addition, comments are given in the last column indicating what the students missed in their answer to the problems.
<table>
<thead>
<tr>
<th>Problem No</th>
<th>Strategies</th>
<th>Students' Reasoning</th>
<th>Students' Ignorance</th>
</tr>
</thead>
</table>
| 6          | - **Reasoning deductively:**  
  'highest award for scientific'  
- **Translation:**  
  'highest award for scientific'  
- **Analyzing parts of sentence:**  
  'award that is the highest scientific'  
- **Transferring** | 'highest' followed by 'the' as in superlative.  
'the' was followed by an object which was also followed by its noun 'award'. 'for' indicated purpose.  
'highest award for scientific' where 'for' was translated as 'untuk...' to indicate purpose  
Verbs had to be followed by an object. 'Is' was a full verb followed by an object-'the highest scientific'.  
English expressions were usually short and concise. | Preposition is followed by a noun while 'scientific' is not a noun.  
Preposition is followed by a noun. 'scientific' is not a noun.  
The highest scientific is not a noun and can't function as an object.  
There is a false concept between the copula 'be' and actions verbs where copula cannot be followed by an object.  
Focusing only on the length of the answer choices cannot justify a correct answer. |
| 10         | - **Reasoning deductively:**  
  A subject is missing.  
| The sentence needed a subject, and a subject was a noun-'demonstration'. | A subject can be in a form of gerund, and 'tunes' is the object of 'demonstrating' showing an action referring to the subject complement 'job'. |
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| Translation: | Tunes that demonstrated' and Demonstration tunes' | 'Tunes that demonstrate' was translated as ‘Suara yang didemonstrasiakan’. The sentence is an active sentence that cannot be translated as ‘didemonstrasikan’. It is not about the kind of demonstration, but ‘demonstrating what?’. |
| - Analyzing expression: | A subject-which is a noun- is missing. A subject needed a noun. The derivative form '-ion' was considered as a noun. | A word that can be a subject is not always a noun derivation. |
| - Transferring: | Demonstration tunes' | Head Modifier (HM) in Indonesian pattern was applicable. What is needed is a present participle phrase functioning as a subject. Thus it should be ‘Demonstrating….’ Instead of ‘Demonstration…’ |
| - Guessing: | The students felt that they ever heard that expression ‘tunes’ in the beginning of a sentence. | |
| 12 - Reasoning deductively: | There was a word ‘both’ requiring two things separated with a conjunction ‘and’ to make ‘remarkable and resistance’ correct. | The use of comma is inappropriate. The paired expression is ‘both…and’ and not the other way around. NP is needed. “resistant…” as a |

'Tunes that demonstrated' and Demonstration tunes' was to answer the question ‘Demonstrasi apa?’.

A subject-which is a noun- is missing. A subject needed a noun. The derivative form '-ion' was considered as a noun.

Head Modifier (HM) in Indonesian pattern was applicable.

The students felt that they ever heard that expression ‘tunes’ in the beginning of a sentence.

There was a word ‘both’ requiring two things separated with a conjunction ‘and’ to make ‘remarkable and resistance’ correct.

“resistant…” as a

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| - **Translating:** | ‘remarkable, and resistance’ | ‘remarkable’ as ‘resistant to both…’ was thought to modify the word ‘remarkable’ which was assumed as noun, the object of the verb ‘exhibits’. | modifier cannot modify the adjective ‘remarkable’. |
| - **Transferring:** | ‘remarkable, and resistance’ | ‘exhibits’ was translated as *mempunyai kelebihan* (having advantages) | Still, the two forms are not parallel. What is needed is a noun while ‘remarkable’ is not a noun. Besides, there is a comma. |
| - **Guessing** | ‘remarkably resistant’ | ‘remarkably’ was translated as *sangat* (very). * ‘resistant’ was thought as an adjective. | Adverb can modify an adjective. |
| - **Reasoning deductively:** | ‘acts both…kills…and inhibits…’ | The form of NPs before and after the coordinating ‘and’ must be parallel in form. | 13 |

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### Translating:

*...acts both killing... and their growth...*

The sentence was translated as ‘kegunaan penicilin’ (the use of penicillin). Therefore, ‘-ing’ form was used.

The sentence was translated into ‘cara kerja dari penicilin’ (the way penicillin works). Thus, ‘-ing’ form was considered correct.

| by phrase’ is used to show manner-how something works. |

### Analyzing expression:

*...acts both kills and inhibits*  

They assumed that the parallel verbs did not indicate activities in progress. Therefore, ‘-ing’ form was considered incorrect, and simple present form was the correct one.

| ‘acts’ is the main verb. When ‘kills and inhibits’ are put, the sentence has more than one finite verb. |

### Transferring:

*...acts both kills and inhibits*  

‘acts’ was considered as noun, and thus, the sentence needed a verb.

They assumed that the parallel verbs did not indicate activities in progress. Therefore, ‘-ing’ form was considered incorrect, and simple present form was the correct one.

| ‘-ing’ forms have other uses beside those verbs in present progressive. A ‘by phrase’ also requires V-ing’. |

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The findings showed that the students under study used four types of strategies in order to answer the problems. Those are 1) reasoning deductively 2) translating 3) analyzing parts of sentence, and 4) transferring.

In the deductive reasoning, the students used their English knowledge concerning prepositions, subject nouns and coordinating conjunctions. For example, in problem number 6 the students knew that the preposition ‘for’ indicated a purpose. Therefore, they chose ‘the highest award for scientific’, in which they were unaware that ‘scientific’ was not a noun and that a noun was needed after a preposition. In problem number 10 the students were aware that a noun was needed to fill in the subject position. Therefore, they chose ‘demonstration’ instead of ‘demonstrating’ which was a gerund. A gerund can fill in the position of a subject as it is a noun.
In problem number 12, the students knew that ‘both’ required a conjunction ‘and’, and the slots before and after the conjunction ‘and’ must be filled with the parallel forms, such as nouns, verbs or adverbs. The fact is that ‘remarkable’ is an adjective while ‘resistance’ is a noun, and therefore they are not parallel. However, parallel forms were found in the students’ answer to problem number 13. In this problem, they seemed to correctly use the parallel form ‘kills…’ and ‘inhibits…’, both of which are verbs. But they misunderstood ‘acts’ for a subject noun instead of a verb.

In the translating strategy, the students might translate the problems correctly, but still the choice was wrong, or inappropriately used so that the strategy used led to a wrong choice of the answer. To illustrate, in problem no.6, the students correctly translated ‘for’ as ‘untuk’ (indicating a purpose) which then needed a noun. However, ‘scientific’ was not a noun. In addition, in problem numbers 10, 12 and 13 the students mistranslated ‘tunes that demonstrated’, ‘exhibits’, and ‘acts’ as respectively ‘tunes which are demonstrated’, ‘have advantages’ and ‘use of penicillin’.

In the analyzing parts of a sentence, the students could not differentiate a verb and a copula well so that in problem number 6 they thought ‘is’ to be a verb and it had to be followed by the object ‘the highest scientific’. Similarly, in problem number 10, ‘demonstration’ was considered to be the correct answer as it was a noun. In addition, in problem number 13, the students chose ‘kills...and inhibits…’ as both forms indicated a fact in the present time. A progressive form was not needed as the act of the medicine in healing patients was not necessarily happening at the moment of speaking.

In transferring strategy, the students assumed that English expressions were short and concise and that the head (H) and modifier (M) pattern system in Indonesian was applied in problem number 10. As a result, the students chose either the answer choices having the shortest form or the one having HM in the noun phrase.

All in all, among those five strategies, four of them were selectively used by the students in doing the test. Reasoning deductively and transferring strategies were used the most while guessing was the least. Translation and analyzing parts of the sentence strategies were moderately employed. However, analyzing contrastively strategy was never done by the students. Therefore, in majority, when doing the test, the students tended to either consciously generate general rules known or apply previously acquired knowledge for a new task. In addition, they also tried
to break down the sentences as to make it easier for them to analyze such as by determining the functions of missing words as being a particular part of speech of a sentence in order to look for the correct answer choice. They were geared to find the option having the same function/part of speech.

CONCLUSION AND SUGGESTIONS

Although the students may have chosen various strategies in finding the answers, they still chose wrong answers. The problem then lies on the fact that in leading them to choose the correct answer, competence in grammar pays its more significant role in gearing the students to do the correct analysis on the test problems rather than having the whatsoever appropriate strategies. It implies that grammar knowledge itself is still of paramount importance when retrieving correct answers is the concern. Learning strategies may somehow help the students to analyze the test problem, but still they are in vain when proper comprehension on grammar points, namely noun structure, is not at hand. It then confirms what is stated by Rutherford and Smith (1988) that in spite of the disclaimer about the effect of strategies on language learning process, there is an interwoven relationship between strategy use or ability and language proficiency.

Furthermore, what is needed to be addressed when students are to master noun structure well is better comprehension on noun structures, including their positions whether as the modifiers, that come first, or as the heads, that come after the modifiers. To follow, students are to master parts of speech that includes word functions and formations. What happened was that the students could successfully identify what was needed in a sentence of the test item by correctly analyzing what was missing; however, they still failed to come up with the correct answer. Thus, they are to be well-familiar with derivational forms and functions of each part of speech. For instance, a noun can be constructed by putting certain suffixes such as ‘-ing’, ‘-age’, ‘-ance’, ‘-ment’, ‘-al’, ‘-tion’ or ‘-sion’. Besides, a noun can function as a subject, object or complement in a sentence, and an adjective, not an adverb, is to function as a noun modifier.

Finally, when it came to a complex phrase/clause, the students failed to identify head word. Therefore, better skills of pinpointing a head word in a (long) phrase should be well taught for better mastery of a noun structure.
REFERENCES


