

## Developing an error analysis marking tool for ESL learners

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*Abstract:* This paper describes the first step of a research in developing an error analysis marking tool for ESL (English as a Second Language) learners at Malaysian institutions of higher learning. The writing in ESL comprises 400 essays written by 112 undergraduates. Subject-matter experts use an error classification scheme to identify the errors. Markin 3.1 software is used to speed up the process of classifying these errors. In this way, the statistical analysis of errors are made accurately. The results of the study show that common errors in these essays in decreasing order are tenses, prepositions, articles, word choice, mechanics, and verb to be. The findings from this phase of the study will lend to the next phase of the research that is developing techniques and algorithms for error analysis marking tool for ESL learners.

*Key Words:* Marking tool, error analysis, ESL writing.

### 1 Introduction

Research in computer-based essay marking has been going for more than 40 years. The first known research in this area was undertaken by Ellis Baten Page in the 1960s. Since then, a number of CBEM (Computer-Based Essay Marking) systems have been developed. These system can be divided into two categories: semi-automated and automated systems [1]. Examples of semi-automated systems are Methodical Assessment of Reports by Computer [2], Markin32 [3] and Student Essay Viewer [4]. Most of the current interest in this research focus on the development of automated essay marking systems. Examples of such systems are e-rater [5], Intelligent Essay Assessor [6], Project Essay Grader [7], Intellimetric Scholar [8], SEAR [9], and Intelligent Essay Marking System [10].

Although many of the automated systems are already available, they are not specifically developed for ESL (or L2) learners. Researches in ESL have shown that ESL learners write differently from NES (Native English Speakers). Kaplan, for example, identified five types of paragraph development for five different groups of students [11]. Essays written in English by NES display a linear development, while essays written in Semitic languages by the native speakers consists of a series of parallel coordinate clauses. Chinese, Thai and

Korean tend to use an indirect approach, while Russians exhibit some degree of digression that would seem to be quite excessive to an English writer.

An important construct that is central to L2 writing and proposed by several researchers is errors in L2 writing. Two perspectives of errors in writing arise from SLA (Second Language Acquisition) as well as learning a TL (Target Language). Based on these two perspectives, it is observed that written errors made by adult L2 learners are often quite different from those made by NES. Therefore, adult ESL learners' have different profile of errors compared to NES. Thus, a marking tool, which is specifically developed to analyze errors in ESL writing for L2 learners is very much needed.

In order to develop the marking tool, this research is divided into two phases. The first phase of the research focus on profiling errors made by the L2 learners. The second step is to develop techniques and algorithms for detecting errors in the learners' essays. After that, the error analysis marking tool will be developed and preliminary testing of the tool using training data sets will be carried out. Writing samples will then be tested using the tool and accuracy of grades will be evaluated.

This paper mainly describes the result of the first

part of the research.

## 2 L2 Writing and Errors

From the perspective of SLA, Ferris has pointed out several generalizations [12]. Firstly, it takes a significant amount of time to acquire an L2, and even more when the learner is attempting to use the language for academic purposes. Secondly, depending on learner characteristics, most notably age of first exposure to the L2, some acquirers may never attain native-like control of various aspects of the L2. Thirdly, SLA occurs in stages. Phonetics/phonology (pronunciation), syntax (the construction of sentences), morphology (the internal structure of words), lexicon (vocabulary) and discourse (the communicative use that sentences are put to) may all represent separately occurring stages of acquisition. Fourthly, as learners go through various stages of acquisition of different elements of the L2, they will make errors reflective of their SLA processes. These errors may be caused by inappropriate transference of the L1 (First Language) patterns and/or by incomplete knowledge of the L2.

Ferris also notes that, "...L2 student writers need: (a) a focus on different linguistic issues or error patterns than native speakers do; (b) feedback or error correction that is tailored to their linguistic knowledge and experience, and (c) instruction that is sensitive to their unique linguistic deficits and needs for strategy training" [12]. Common ESL writing errors that are adapted from Ferris are presented in Table 1.

Table 1: Common ESL writing errors

Morphological Errors	Verbs -Tense -Form -Subject-verb agreement	Nouns -Articles/ Determiners -Noun endings (plural/possessive)
Lexical errors	Word choice, word form, informal usage, idiom error, pronoun error	
Syntactic errors	Sentence structure, run-on, Fragments	
Mechanical Errors	Punctuation, spelling	

It follows then that, some of the practical implications for teaching writing to L2 learners from the perspective of SLA, are as follows: it is unrealistic to expect that L2 learners' production will be error-free or, even when it is, that it will 'sound' like that of native English speakers; and lecturers should not expect students' accuracy to

improve overnight.

Truscott [13] also notes that different types of errors may need varying treatment in terms of error correction. In addition, lecturers also need to understand that different students may make distinct types of errors and they should understand the need to prioritize error feedback for individual students. This could be identified by looking at global errors versus local errors, frequent errors, and structures elicited by the assignment or that have been discussed in class.

From the point of view of learning a TL, James [14] notes that the level of language a particular learner of a TL is operating falls into the following areas: substance, text and discourse. 'Substance' is related to medium, 'text' relates to usage and 'discourse' relates to use. According to James, "If the learner was operating the phonological or the graphological substance systems, that is spelling or pronouncing (or their receptive equivalents), we say he or she has produced an encoding or decoding error. If he or she was operating the lexico-grammatical systems of the target language to produce or process text, we refer to any errors on this level as composing or understanding errors. If he or she was operating on the discourse level, we label the errors occurring misformulation or misprocessing errors" [14].

The classification of levels of error for the written medium as proposed by James reflects standard views of linguistics. The levels of error for the written medium that are adapted from James are shown in Table 2.

Table 2: Levels of error for written medium

Errors in encoding in writing (Misspellings)	Substance errors
Errors in composing written text (Miswriting)	Text errors
Errors in formulating written discourse (Miscomposing)	Discourse errors
Errors in processing written discourse (Misinterpretation)	

Turning to studies on error analysis in Malaysia, it is worth noting that several studies are available. One such study was carried out by Lim [15] under the supervision of Andrew D. Cohen, Marianne Celce-Murcia and Clifford H. Prator, Jr. This study produced a classification scheme of errors that were displayed by Malaysian high school students. Thirteen major types of errors discernable in the

students' writing from the corpus that Lim analysed were tenses, articles, agreement, infinitive and gerundive constructions, pronouns, possessive and attributive structures, word order, incomplete structures, negative constructions, lexical categories, mechanics, miscellaneous unclassifiable errors and use of typical Malaysian words. According to Lim, areas that posed the greatest difficulty for these students were tenses, use of articles, agreement, prepositions and spelling. The classification scheme of major categories of common errors is further refined into sub-categories and is documented in Lim.

### 3 Analysis of Errors in Malaysian Students' Writing

In this section, the description of the analysis of errors in Malaysian students' writing will be presented.

#### 3.1 Objective of the study

The objective of this study is to analyze types of errors in essays written by Malaysian undergraduates. The following research questions guide the study:

1. What are the most common errors made by the learners?
2. What are the errors that need to be analyzed by a marking tool that is going to be useful for the learners?

#### 3.2 Methodology

Essays are written by 112 undergraduates who have enrolled in Written Communication course at the School of Language Studies and Linguistics, Faculty of Social Sciences and Humanities, Universiti Kebangsaan Malaysia. These essays are part of their assignment submitted for the course. Since all students entering Malaysian universities come from similar background, we would assume that these students can be taken as a representative of other Malaysian students.

The research adopts the error classification scheme that is originally developed by Lim consisting of 13 types of errors. The error classification scheme is adapted further based on the researchers' experience of teaching writing for more than 15 years. The final classification scheme consists of 17 types of errors which are as follows: tenses, articles, subject verb agreement, other agreement errors, infinitive, gerunds, pronouns, possessive and attributive structures, word order, incomplete structures, negative constructions, prepositions, mechanics, miscellaneous

unclassifiable errors, word choice, word form, and verb to be.

Markin 3.1 software [16] is used to speed up the process of analyzing the essays for errors. The software is used so that classification of errors and statistical analysis of errors are made accurately. The annotation buttons in the software are first customized accordingly based on the error classification scheme. Three subject-matter experts used Markin 3.1 software to classify the errors in 400 essays written by undergraduates. The subject-matter experts are language teachers that have taught English for at least ten years at institutions of higher learning in Malaysia.

#### 3.3 Results

The results of the error analysis carried out semi-automatically by subject-matter experts on 400 essays using Markin 3.1 software is as shown in Table 3. The average is calculated by dividing the number of errors with the total numbers of essays.

Table 3: Types of errors in learners' essays

Errors	No. of errors	Average
Tenses	1,595	3.99
Articles	1,204	3.01
Subject verb agreement	631	1.58
Other agreement errors	520	1.30
Infinitive	145	0.36
Gerunds	292	0.73
Pronouns	696	1.74
Possessive and attributive	232	0.58
Word order	194	0.49
Incomplete structures	253	0.63
Negative construction	56	0.14
Prepositions	1,468	3.67
Word choice	1,123	2.81
Word form	629	1.57
Mechanics	1,105	2.76
Verb to be	820	2.05
Miscellaneous unclassifiable errors	1,123	2.79

Six most common errors that are made by learners are as follows: tenses, prepositions, articles, word choice, mechanics, and verb to be.

### 4 Design and Implementation

Based on the result of the analysis in the previous section, it seems that the errors that need to be analyzed by the error analysis marking tool are tenses, prepositions, articles, word choice,

mechanics, and verb to be.

The next step in this research is the development of techniques and algorithm for detecting and analyzing these errors in learners' essays. Based on these algorithms, the error-analysis marking tool will be developed.

The completed tool can either be used on its own or can also be incorporated into other systems. For example, this tool can be included in a computer assisted language learning package. Another option is to incorporate the tool into CMS (Coursework Management System) that has already been developed at UKM [17].

## 5 Conclusion

The results of the study shows that Malaysian ESL learners display a certain profile of errors in writing that are unique to their SLA and learning a TL. An error analysis marking tool that is developed specifically for these learners will certainly benefit them to write better and more effective essays. In developing an error analysis marking tool that is going to be useful for Malaysian ESL learners, the tool must be able to detect and analyze errors in tenses, prepositions, articles, word choice, mechanics and verb to be.

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