SRI RAMAKRISHNA ENGINEERING COLLEGE

Autonomous Institution, ISO 9001:2008 Certified.
Approved by AICTE and Affiliated to Anna University, Chennai
(All Eligible Courses Accredited by NBA)
Vattamalaipalayam, NGGO Colony Post

COIMBATORE-641022, Tamilnadu, India
www.srec.ac.in

11th International Congress on English Grammar (ICEG 2014)
In association with Systemic Functional Linguistics

Grammar and Grammar Teaching: Changing Perspectives

Editor
Dr. Vathana Fenn

===

Exploring through Errors: An Error Analysis of Chemical Engineering Students' Technical Project Reports

Reeja Riyaz

---

1. Introduction – Error Analysis to Improve Writing Technical Reports

Technical writing is very essential in engineering study as well as in its professional arena. Technical writing can be defined as a term used for communicating technical information to a specific audience for a specific purpose which occurs in specific work place situation (McMurrey 2002). So, a technical writing mainly focuses its content, audience and the purpose of writing. The document may vary in types such as reports, proposals, manuals, resumes, memos or business letters. Knowing the writing principles and basic structural fame work of these documents will make positive impact in the study areas and work places.

Most languages are characterized by certain components such as phonetics (production of sounds) phonology (study of sounds) morphology (study of forms- creating words), syntax (from words to sentence) and its semantics (meaning). It indicates that no language can exist without these components which are part of grammar. However, grammar has not always been defined in these terms. But linguistic accuracy is important especially for written communication and it relates to the presence of the above mentioned elements.

Understanding the difficulty of engineering students in structuring an effective report, an error analysis would be a feasible approach to benefit teachers as well students to know more about the errors and needs of students in their written discourse which may focus either syntax or semantics.

2. Error Analysis in Teaching and Learning

Error Analysis (EA) has taken its role as one of the major aspects in the area of teaching and learning especially in language learning in order to reflect learners' understanding on specific areas of study. Selinker (1992, p. 150) has given vital role for errors because making errors can be regarded as "a device the learner uses in order to learn". Corder (1974) mentions the importance of studying error as a part of investigation of the process of language learning. He stresses that the errors denote the linguistic development of a leaner and the learning process (p.125). EA is a technique to identify, classify the unacceptable forms produced by a learner which also can be systematically interpret using the principles and procedures based on linguistics advises. The difference between "error" and "mistakes" needs to be clearly differentiated. Learners commit errors as part of learning which is considered as a limitation of their performance which could be corrected. Learners do not realize that they are wrong and they repeat systematically. Mistakes are non-systematic which could be because of a slip of the tongue or pen. (Crystal, 1980)

Analysis of errors needs to be done with utmost care because there are errors which may come under the category of either one or the other type. Researchers point out that there may

Language in India www.languageinindia.com **ISSN 1930-2940 14:1 March 2014**
Dr. Vathana Fenn (Ed.) *Grammar and Grammar Teaching: Changing Perspectives*
Reeja Riyaz
Exploring through Errors: An Error Analysis of Chemical Engineering Students' Technical
Project Reports   71

have difficulty in assigning the errors into or the other which they call it as "ambiguous goofs" (Dulay & Burt 1974b, p.115).

1.1. Interlingual and Intralingual Errors

Corder (1971) defines interlingual errors as the errors which occur when L1 patterns, system or rules effect or prevent the learner from acquiring a new or second language. According to Richards (1974) Intralingual errors are due to the partial exposure to the target language which encourage learners to generalize not only that no structure of mother tongue is involved. The learner, in this case, tries to "derive the rules behind the data to which he/she has been exposed, and may develop hypotheses that correspond neither to the mother tongue nor to the target language" (Richards, 1974, p. 6).

2. Research Questions

1. What are the main errors Omani chemical engineering students make in their project reports ?
2. What teaching strategies could be implemented to help students overcome these problems?
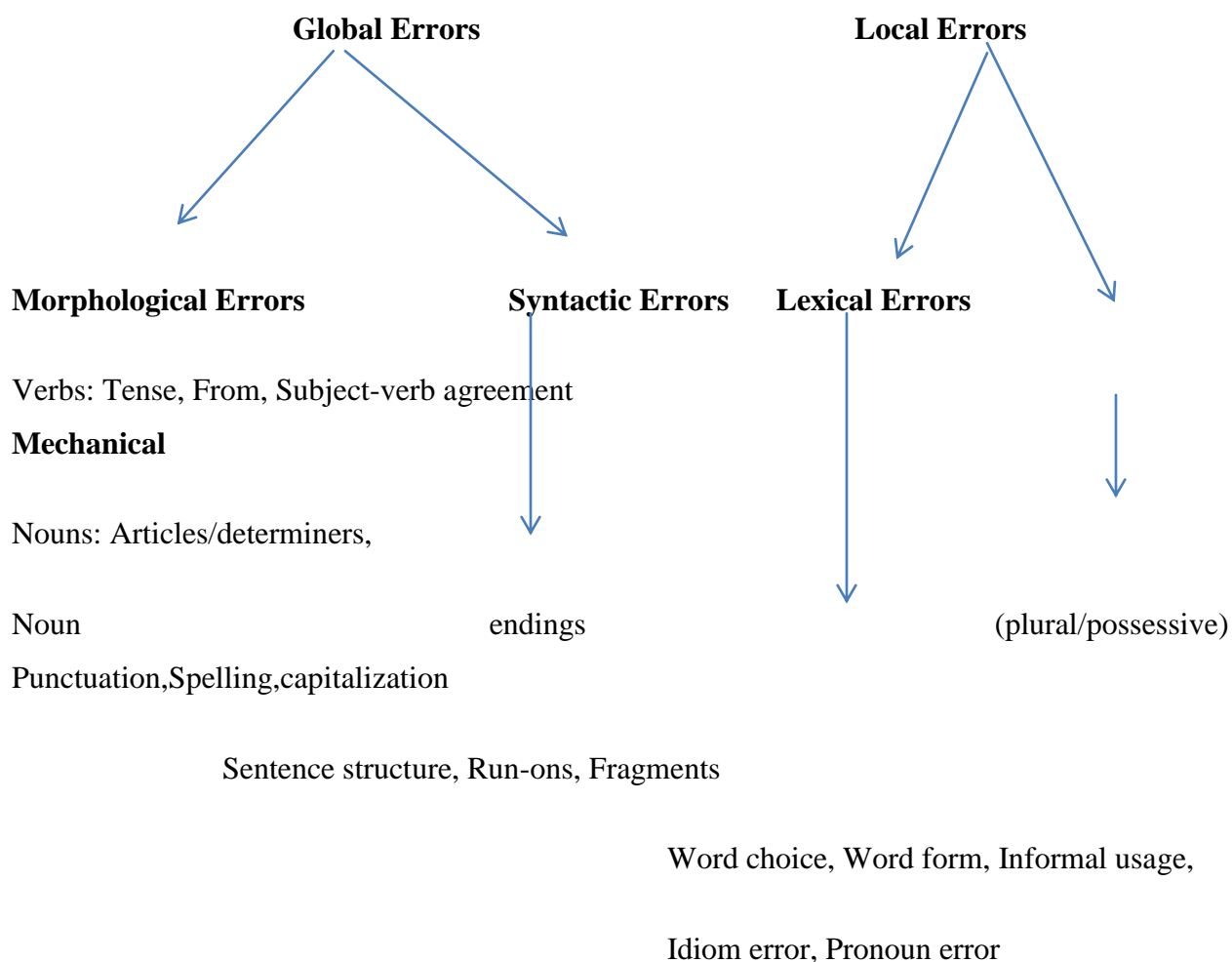
3. Error Identification and Analysis

A qualitative approach was applied to analyse 12 students' project report. The four steps included selection, identifying, classifying and defining the errors. Brown (1994, pp. 207-211) and Ellis (1995, pp. 51-52) elaborated on this model. Ellis (1997, pp. 15-20) and Hubbard et al. (1996, pp. 135-141) explained how to **identify and analyze** learners' errors in this model. First step is **Selection of** effected language area which is followed by the **identification** proecess. Then the errors are **classified**. After grammatical analysis of each error, an **explanation** of different types of errors will be given.

Language in India www.languageinindia.com **ISSN 1930-2940 14:1 March 2014**
Dr. Vathana Fenn (Ed.) *Grammar and Grammar Teaching: Changing Perspectives*
Reeja Riyaz
Exploring through Errors: An Error Analysis of Chemical Engineering Students' Technical
Project Reports   72

To analyse students' errors, Level 4 (4th year) 10 chemical engineering students' project reports were taken. Because of the word count of each report (around 10000 words), only the introduction, discussion and analysis and conclusion sections were considered for analysis.

First the errors - the word, phrase or clause - were highlighted to show exactly where the problem lies in. Then the problems were defined and classified into different sections in order to specify the types of errors. The errors were identified and classified as for example: error type is verb, classification of error type is wrong combination of subject and verb. The errors were identified as follows: Lexical Errors, Errors in the use of nouns, Concord Errors, Errors in the use of prepositions, Errors with verbs and tenses, Errors with voice, sentence structure, missing of vital elements of genre, cohesion and coherence to name few.

For a detailed analysis and thorough identification, the errors were categorized by following Ferris' (2005) model. The categorization can be explained below in fig: 1.

Language in India www.languageinindia.com **ISSN 1930-2940 14:1 March 2014**
Dr. Vathana Fenn (Ed.) *Grammar and Grammar Teaching: Changing Perspectives*
Reeja Riyaz
Exploring through Errors: An Error Analysis of Chemical Engineering Students' Technical
Project Reports   73

Fig : 1

Global Errors   **Local Errors**

Morphological Errors   **Syntactic Errors**   **Lexical Errors**

Verbs: Tense, From, Subject-verb agreement

Mechanical

Nouns: Articles/determiners,

Noun   endings   (plural/possessive)

Punctuation,Spelling,capitalization

Sentence structure, Run-ons, Fragments

Word choice, Word form, Informal usage,

Idiom error, Pronoun error

Sentence structure mainly deals with sentence construction such as incomplete or fragmented sentences. The problems in report structuring aims at each section of the report for example, forming thesis statement in introduction, or judgment and critical analysis in literature

Language in India www.languageinindia.com **ISSN 1930-2940 14:1 March 2014**
Dr. Vathana Fenn (Ed.) *Grammar and Grammar Teaching: Changing Perspectives*
Reeja Riyaz
Exploring through Errors: An Error Analysis of Chemical Engineering Students' Technical
Project Reports   74

review.   The identified errors were segregated mainly under syntax, semantic and paragraph level that is cohesion and coherence of a text.

4. Findings: Samples of Errors

Table 1 presents the examples of how the four elements of classifying errors based on studies (Duskova, 1979; Zughoul, 1991; Shalaby *et al*, 2007; Zimmermann and Schmitt, 2002; Llach, 2005; Hemchua and Schmitt, 2006) were used in illustrating various errors. Broad terms such as word choice, spelling errors, subject/verb agreement, omission, over generalization etc. were used to separate the type of errors depending on the nature. Such identification would help to examine the errors more closely which also prompts students in examining their own errors.

Table 1: Error Analysis

Identification of Error	Error categories	Classification of error	Explanation of errors	No. of errors
It is **widespread used** for gas industry.	Global error/ Morphological	Word order	Word order	250
The project experiment in the labs **were** carried out to find the unsteady state…	Global error/Morphological	SVA	Subject singular but verb plural	816
These aromatic **gasolines** may cause damage to elastomers.	Global error/ Morphological	Plural	Unnecessary insertion of plural markers	55
The fuel suitable for vehicles **were** coal tar distillates.	Global error/ Morphological	Uncountable	Plural/singular	98
It is **clears** that no system ever	Global error/ Morphological	Verb	Inappropriate verb construction	280

75

Collection is by direct temperature measurement using thermocouples and thorough analysis of interferograms of the flow	Global error /morphological	Noun/omission	Omission of direct subject	180
A flow that occurs by an external force such as pump for liquid and compressor for gas when fluid moves on a macroscopic scale in the form of the circuit currents then it the heat transfer caused by convection.	Global error/ syntactic	Sentence structure	Fragmented clause	985
When **young** refining process specifically designed to provide hydrocarbons components.	Local errors/ Lexical	Word	Wrong word choice	47
The relation between **the** viscosity of **the** gasoline and **the** heat transfer	Global errors/ morphological	Article/	Omission/addi tion	84
It **causing** the water to circulate and rise as the density decreasing.	Global errors/ morphological	Verb	Wrong tense	385
He said **we** have a micro-fabricated device. The gasoline is like other alkanes **sounded a bit** heavy in the vapor phase	Local errors/lexical errors	Informal usage	Contractions, informal vocabulary	29

Language in India www.languageinindia.com **ISSN 1930-2940 14:1 March 2014**
Dr. Vathana Fenn (Ed.) *Grammar and Grammar Teaching: Changing Perspectives*
Reeja Riyaz
Exploring through Errors: An Error Analysis of Chemical Engineering Students' Technical
Project Reports   76

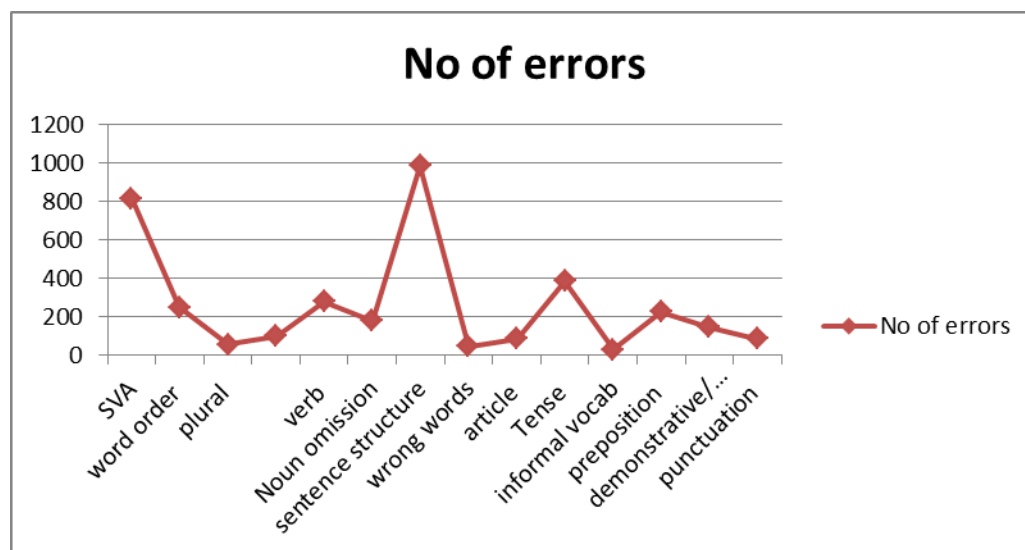| The result is equivalent **with** the earlier reading.	Global errors/morphological	Preposition	Wrong preposition	227
The office has five rooms **in it**	Global /morphological	Reference error	wrong pronoun/ demonstrative determiners to use	145
And the compressor had removed for the further test.	Local error/mechanical	Punctuation	Use of comas, starting with conjunctions,	84

Graph 1: No. of errors

Language in India www.languageinindia.com **ISSN 1930-2940 14:1 March 2014**
Dr. Vathana Fenn (Ed.) *Grammar and Grammar Teaching: Changing Perspectives*
Reeja Riyaz
Exploring through Errors: An Error Analysis of Chemical Engineering Students' Technical
Project Reports 77

Table 2: The percentage of errors

Type of errors	No of errors	percentage
SVA	816	22
word order	250	7
plural	55	2
countable/uncountable	98	3
verb	280	8
Noun omission	180	5
sentence structure	985	27
wrong words	47	1
article	84	2
Tense	385	11
informal vocab	29	1
preposition	227	6
demonstrative/ determiners	145	4
punctuation	84	2
Total	1248	

5. Discussion and Analysis

Language in India www.languageinindia.com **ISSN 1930-2940 14:1 March 2014**
Dr. Vathana Fenn (Ed.) *Grammar and Grammar Teaching: Changing Perspectives*
Reeja Riyaz
Exploring through Errors: An Error Analysis of Chemical Engineering Students' Technical
Project Reports   78

The data for this study were drawn from the project report which students submitted at the end of the semester in level 4. The project in level 4 (4th year) is a module running for a year. Students fix their project proposal and do their major research work in their first semester from which they produce Introduction and Literature review of the report. The second semester they devote their time in experiments, gathering result and completing their writing the report.

As shown in Table 1 and 2, the errors marked high are sentence structure (985), omission of subject (180), Subject verb agreement (816) word order (250) and wrong tense (385). Except wrong tense, the major problem suffered in the area of structuring meaningful sentences. The errors committed in subject verb agreement, word order, sentence structuring/fragmented sentences and omission of subject which hinder students from making meaningful complex sentences especially where the concise writing is very much in need. Diab, (1996) observed that arabic students make syntactic errors because "in English, items in series are separated by commas and the conjunction 'and' is used just before the last word. In contrary to English, in Arabic, each item in a series is preceded by the conjunction". Constant contact with students and experience from writing classes, it is also observed that most of the students depend on google translator which translates word by word. The word order difference in Arabic and English causes SVA pattern change in translated sentences which also lead to fragmented form. Sometimes the translator fails to figure out the contextual meaning as well.

It is worth noticing that, few categories such as plural, wrong words, informal vocabulary, punctuation, articles are in a less scored category. It may be because level 4 students might have benefited with their research methodology module in their subject area which more or less deals with the structure of the report and research. The report is fully technical based and it is not timed essay. Project report is a final report of an engineering student which must be thoughtfully prepared in two semesters. Still students' work shows that they still struggle to frame complex and compound sentences in a concise manner. Inconsistencies in maintaining the tense and wrong use of preposition were the other categories where students faced problems. They add 'is' with other main verb as well as they confuse between simple past tense and perfect tense. For example, **it was been plotted by using the Math lab**. Preposition always have posed

Language in India www.languageinindia.com **ISSN 1930-2940 14:1 March 2014**
Dr. Vathana Fenn (Ed.) *Grammar and Grammar Teaching: Changing Perspectives*
Reeja Riyaz
Exploring through Errors: An Error Analysis of Chemical Engineering Students' Technical Project Reports   79

difficulty to Arab students because various English prepositions have the same function. Scott and Tucker (1974) mentioned that while translating an Arabic preposition can be referred to other matching several English prepositions and the other way around. To my point of view, in other hand , depending to the results are few examples from students writing which shows their confusion.   Looking at these errors category no one can argue that Arabic language influence hinder the mastery of English. Researchers like Duskova, 1979; Zughoul, 1991; Shalaby *et al*, 2007; Zimmermann and Schmitt, 2002; Llach, 2005; Hemchua and Schmitt, 2006 claim that these forms of errors are L2 based not L1. These errors are called developmental errors which caused by lack of exposure to the target language and sufficient knowledge to distinguish between form and use.

Conclusion

This study attempted to identify, categorise and describe the errors committed by level 4 students in chemical engineering stream. After having analysed the data gathered, the study concludes that out of 3665 errors, 2231errors related with sentence structuring which alarms that students faced serious problems in applying the grammatical rules in organizing and expressing their ideas in written form. In order to achieve the competency in writing, considerable measures to be taken to attain language proficiency. English support classes from Level 1- 4 (1st year to 4th year) must be entertained. The syllabus designers need to look into the needs of students which could focus more on different kinds of report writing with complex structure of sentence construction. The subject teachers also need to work hand in hand with language teachers to provide more English exposure. As Corder (1967) says "we cannot really teach language, we can only create conditions in which it will develop spontaneously in the mind in its own way".

The organizational part of the technical reports were not included in the analysis which may help to analyse other important aspects such as coherence, different elements of report, tone and style of report-writing.

==

Language in India www.languageinindia.com **ISSN 1930-2940 14:1 March 2014**
Dr. Vathana Fenn (Ed.) *Grammar and Grammar Teaching: Changing Perspectives*
Reeja Riyaz
Exploring through Errors: An Error Analysis of Chemical Engineering Students' Technical
Project Reports   80

References

    i.   Brown, D. B. (1994). *Principles of language learning and teaching.* 3rd ed.

New Jersey:

    ii.   Corder, S.P. (1967). *The significance of learners' errors*. Reprinted in J.C.Richards (ed.) (1974, 1984) Error Analysis: Perspectives on Second Language Acquisition. London: Longman, pp. 19 - 27 (Originally in International Review of Applied Linguistics, 5 (4)).

    iii.   Corder, S.P. (1971). *Idiosyncratic errors and Error Analysis*. IRAL, 9, 2, 147-159. Reprinted in Richards (1974)

    iv.   Corder, S. P. (1974). Error Analysis. In J. P. B. Allen and S. Pit Corder (eds.) Techniques in Applied Linguistics (The Edinburgh Course in Applied Linguistics:3), London: Oxford University Press (Language and Language Learning), pp. 122-154.

    v.   Crystal, D 1980. *A First Dictionary of Linguistics arid Phonetics.* London Andre Deutsch.

    vi.   Diab, N. (1996). *The transfer of Arabic in the English writings of Lebanese students.* Retrieved January 5, 2003 from http://lael.pucsp.br/especialist/181diab.ps.pdf

    vii.   Dulay, H. & Burt, M. (1974). *You can't learn without goofing*. In *Error analysis*. ed. J. C. Richards. London: Longman

    viii.   Duskova, L. (1979). On Sources of Errors in Foreign Language Learning. *IRAL*, *7*(1), 11-36.

    ix.   Ellis, R. (1995). *Understanding Second Language Acquisition*. Oxford: Oxford University Press.

    x.   Ellis, R. (1997). *SLA Research and Language Teaching*. Oxford: Oxford University Press.

    xi.   Hubbard, P., Jones, H., Thornton, B. and Wheeler, R. (1996). *A Training*

Language in India www.languageinindia.com **ISSN 1930-2940 14:1 March 2014**
Dr. Vathana Fenn (Ed.) *Grammar and Grammar Teaching: Changing Perspectives*
Reeja Riyaz
Exploring through Errors: An Error Analysis of Chemical Engineering Students' Technical
Project Reports   81

Course for TEFL. Oxford: Oxford University Press.

xii.   Ferris DR, Hedgcock JS (2005). Teaching ESL Composition Purpose, Process and Practice. (2nd Eds.) Lawrence Erlbaum Associates, Inc.

xiii.   Hemchua, S., & Schmitt, N. (2006). An Analysis of Lexical Errors in the English Compositions of Thai Learners. *Prospect*, *21*(3), 2–24

xiv.   Llach, M. P. (2005). The Relationship of Lexical Error and their Types to the Quality of ESL Compositions: An Empirical Study. *PortaLinguarum*, *3*, 45-57.

xv.   McMurrey,D., 2002, Power Tools for technical Communication, Thomson Wadsworth.

xvi.   Richards, J.C. (ed.) (1974). *Error Analysis. Perspectives on second language acquisition.* London: Longman

xvii.   Schmitt, N., & Zimmerman, C. (2002). Derivative Word Forms: What Do Learners Know?. *TESOL Quarterly*,*36*, 145–171. http://dx.doi.org/10.2307/3588328

xviii.   Scott, M. & Tucker R. (1974). Error analysis and English language strategies of Arab students. *Language Learning, 24*: 69-97.

xix.   Shalaby, N., Yahia, N., & El-Komi, M. (2007). Analysis of Lexical Errors in Saudi College Learners'Compositions. King Saud University. *Journal of Applied Linguistics*, *21*, 17-32

xx.   Zimmermann, R. (1986). Semantics and Lexical Error Analysis. *EnglischAmerikanischeStudien*, *2*(86), 294-305.

xxi.   Zughoul, M. (1991). Lexical Choice: Towards Writing Problematic Word Lists. *IRAL*, *29*(1), 45-60

===

Reeja Riyaz, MA Applied Linguistics & TESOL, CELTA, B Ed.
Senior Lecturer
Caledonian College of Engineering
P O Box 2322
CPO Seeb 111
Sultanate of Oman
reejariyaz@yahoo.co.in
Language in India www.languageinindia.com **ISSN 1930-2940 14:1 March 2014**
Dr. Vathana Fenn (Ed.) *Grammar and Grammar Teaching: Changing Perspectives*
Reeja Riyaz
Exploring through Errors: An Error Analysis of Chemical Engineering Students' Technical
Project Reports   82