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Making Sense of Errors Made by Analytical Chemistry Students in Their Writing

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***Abstract*—This paper investigates the influence of the writing errors made by first year Chemistry students at CPUT. The aim is to determine their pedagogic implications. Effectively, students writing in a second language at university exhibits linguistic errors which when properly defined and corrected can promote epistemological access to and mastery of disciplinary knowledge. Error Analysis provided theoretical and analytical framework for this study. Unlike classical Contrastive Analysis (CA), Error Analysis (EA) analyses all sources of errors (Sanal, 2008). EA suggests that the learners' learning strategies are the main causes of errors. These errors are: 'transfer', 'overgeneralisation', 'simplification', 'avoidance' and 'overproduction' (Zhuang, 2011). This qualitative study examined and analysed a corpus of Chemistry 1 students' essays. It was found that mother tongue interference, syntactic and morphological errors, misapplication of essay construction rules, punctuation and spelling errors compromise the quality, meaning and rhetoricality. Essentially, the results provided feedback to the lecturers regarding the nature of students' writing errors and how have the students progressed toward the acquisition of academic language. Therefore, the study establishes the need for a tailored academic literacy intervention to promote academic language proficiency in the Chemistry discipline.**

***Index Terms*—error analysis, academic language proficiency, academic writing, disciplinary literacy, writing errors**

I. Introduction

The level of language competency exhibited by many students writing English as second language in South African universities present a window of opportunity to both the content lecturers and academic literacy lecturers to reflect and interrogate their pedagogic practices. There is greater demand for the development of students' academic language proficiency which will serve as a practical response to the generally held belief that the students who get enrolled in higher education institutions are not adequately prepared (cognitively and linguistically) to receive and appreciate tertiary education. This belief emanates from the fact that university students encounter some difficulty in learning and processing academic language.

The ability to process academic language, according to Lankshear and Knobel (2003), requires students to demonstrate the following skills and competences: (i) *operational* (competence with procedures), (ii) *cultural* (competence with the meaning system of social practices), and (iii) *critical* (social practices – values, rules, purposes). In relation to writing, operational literacy denotes writing in clear sentences, checking spelling and use punctuation correctly; cultural literacy symbolises the incorporation of ideas from other authors, the structuring of an essay, writing introductions and conclusions in an appropriate style, and referencing; critical literacy is underscored by being able to analyse an assignment question, reading academic text and reflecting critically on ideas and experiences (Green, 1999).

Krashen and Brown (2007) propose Academic Proficiency (AP) as that which could serve to make input more comprehensible and thereby help in the acquisition of academic language, and the learning of new concepts and facts. They categorise AP (knowledge and skill) in terms of two central components: knowledge of academic language and knowledge of specialised subject matter. Knowledge of academic language refers to the knowledge of the special language used in education and the professional fields whereas knowledge of specialised subject matter consists of knowledge of math, science, history and other academic subjects.

Chemistry discipline expects students to study and function with complex concepts, to memorise facts and to write lab reports explaining the experiments conducted and procedures followed when doing practicals. Wilson and Spink

(2005) believe science teaching in schools should introduce the learner to one form of social language of science (school science) and that the teacher has a key role to play in mediating the language used by scientists for the learners. However, Chemistry teachers lack adequate expertise required to teach and evaluate language (Klein & Aller, 2008; Kelly, 2010), and this makes it difficult for them to address language problems which hinder the students' academic progress. In the context of CPUT, where many students are second or third language speakers of English, students are immersed in the medium of English, which exacerbates their lack of epistemological access to disciplinary knowledge.

This paper investigates the writing errors made by the Chemistry 1 students at Cape Peninsula University of Technology (CPUT). The aim is to determine the pedagogic implications of the errors exhibited.

A. Literature Review

The critical issues explored in the literature reviewed are: the importance of academic language proficiency and disciplinary literacy and the significance of Error Analysis. Academic language proficiency is crucial for students to acquire a number of requisite skills that reinforce the knowledge gained in the classroom, and yet the acquisition of academic proficiency proves to be a daunting task to some students.

For Becher (1994) disciplines are the lifeblood of higher education and the basis of its organisation. Becher argues that universities are composed of different (disciplinary) tribes that only in some senses share a common culture. Each tribe has its own territory, a distinct language or at least a distinct "dialect". In other words, disciplines have their own specialised vocabulary and "register" that present challenges for students that are new to the discipline (Green, 2009). According to Turner (2011) faculties should not only teach their own discipline specific language, but there are basic, generalisable linguistic, textual and rhetorical rules for the entire academic community to which students must be exposed.

Kovac and Sherwood (1999) suggest, "since chemistry is content-rich, it is easy to cover the material but neglect the development of such intellectual process skills as reading, critical thinking, and problem solving". As content and process are synergistic both must be developed systematically if students are to become independent learners (Reif *et al*., 1976; Kovac & Sherwood, 1999). Snow (2010) puts forward an interesting argument that science teachers are not generally well prepared to help their students penetrate the linguistic puzzles that science texts present. These teachers recognise the value of teaching vocabulary, but they typically focus on the science vocabulary. Furthermore, Snow maintains that efforts to help the students understand science should not be ignored as well their need to understand the words used to write and talk about science (the all-purpose academic words as well as the discipline-specific ones).

Purser, Skillen, Deane, Donohue and Peake (2008) reckon while students need to develop high level communication skills, in genres often quite specific to higher education, in order that their learning can be assessed, teaching them academic writing during the course of their disciplinary studies raises a number of pedagogical and philosophical questions. Reporting on collaborative work done by a group of academics in different geographic and institutional locations, who share a dream of improving student learning through curriculum-integrated teaching of writing they put forward the following argument:

Perhaps the need for explicit instruction in academic literacy is most frequently and acutely felt by specialists in the teaching of academic language and the general development of learning in universities, as their work, and institutional positioning, often affords unique insights into the relationships between learning, teaching and assessment, curriculum development, educational policy and institutional governance.

Shin *et al*. (2009) emphasise the point made by Purser *et al*. (2008) when they argue that critical language and literacy skills are essential elements in acquiring scientific content knowledge i.e. the understanding of "technical vocabulary and concepts, writing and following procedures, reviewing information, summarising data, constructing logical arguments, responding to critical analysis of peers or teachers, and communicating results for a variety of different audiences with a specific focus on the expository genres associated with science".

Everybody makes mistakes in both native and second language situations. Normally native speakers are able to recognise and correct such mistakes, which are not the result of a deficiency in competence, but they are the result of imperfection in the process of producing speech (Brown, 1987). Hussain, Hanif, Asif and Abaid Ur Rehman (2013) contend that all learners make mistakes irrespective of the language they are learning, but the nature of errors in L1 is quite different from those of L2. They further state that the nature of errors changes as the learner move from one stage to another. This means that errors are a useful strategy in acquiring both mother tongue and learning a target language.

Robinson (1998) error making is a natural phenomenon in learning, and it has pedagogical implications. Errors are significant to the teacher because they indicate how far the learner has progressed and, consequently, what remains to be learnt. They are indispensable to the learner because they can be regarded as a device the learner uses in order to learn a target language. Since writing at university is one of the important mediums to measure the conceptual, linguistic and academic productive capacity of each student, it is vital to "make sure that the errors existing in their work are identified and corrected" (Mutema & Mariko, 2012).

Richards and Schmidt (2002, p.184) put forward three reasons why Error Analysis must be carried out, namely: (i) to identify strategies which learners use in language learning, (ii) to identify the causes of learner errors, and (iii) to obtain information on common difficulties in language learning as an aid to teaching or in preparation of teaching material. Corder (1967) cited in Abeywickrama (2010) classifies errors as diagnostic and prognostic. They are diagnostic because they can present teachers with the learner's state of the language at a given point during the learning process. They are

prognostic because they can inform course organisers to reorient language learning materials on the basis of the learners' current problems.

Since Chemistry students have to write reports and essays in English (target language) they are prone to make grammatical and conceptual mistakes. These students experience both linguistic and conceptual challenges upon entering into technical disciplines such Chemistry. The teaching of academic language coupled with disciplinary literacy cannot be totally ignored. Therefore, strategies to help the chemistry lecturers and students must be devised and investigated to thwart linguistic and conceptual challenge faced by the students learning Chemistry in a second or third language.

B. Theoretical Framework

Error Analysis is a theoretical framework used in this study. This theory was conceptualised out of dissatisfaction with Contrastive Analysis (CA). The process involved in CA is the comparison of learners' mother tongue and the target language (Heydari & Bagheri, 2012) while Error Analysis analyses all sources of errors (Sanal, 2008). Unlike classical CA, Error Analysis suggests that the learners' learning strategies are the main causes of errors, namely: 'transfer', 'overgeneralisation', 'simplification', 'avoidance', and 'overproduction' (Zhuang, 2011).

Richards (1971) cited in Heydari & Bagheri 2012 categorised into:

- Interference errors: errors resulting from the use of elements from one language while speaking/writing another,
- Intralingual errors: errors reflecting general characteristics of the rule learning such as faulty generalization, incomplete application of rules and failure to learn conditions under which rules apply, and
- Developmental errors: errors occurring when learners attempt to build up hypothesis about the target language on the basis of limited experiences.

Corder (1967) who is a forerunner of the Error Analysis Theory states, "errors provide to the researcher evidence of how language is learned or acquired, what strategies or procedures the learner is employing in the discovery of the language" (Corder, 1967, p.167). James (1998) defines Error Analysis as "the process of determining the incidence, nature, causes and consequences of unsuccessful language" (p.1). Falih (2010) maintains that errors have proved to be inevitable to the development of language learning and have come to be taken as 'a healthy sign of learnability'.

Huan (2011) concurs with Falih (2010), but extends this argument by stating that Error Analysis is one of the ways to study the second/foreign language, and the aim of which is to know the learners' learning strategies and reasons for causing errors. Error Analysis is not only about identifying and detecting errors but actually trying to explain why they are made (Taher 2011; Ellis & Barkhuizen, 2005). Error Analysis can be considered as a fundamental tool in language teaching in order to reorganise teacher's point of view and readdress his/her methodology for fixing and fulfilling the students' gaps (Heydari & Bagheri, 2012).

Error Analysis Hypothesis does not pin down error causes on L1 interference but regards error making as 'an inevitable and positive part of language learning as the learner gets creative in the construction process' (Mutema and Mariko, 2012; Hedge 2000). Though their study is meant to benefit the L2 teacher, from high school right up to tertiary level, they also believe that learners should be exposed to more practice in academic writing in the L2 and making sure that the errors existing in their work are identified, corrected and then, the learner takes note of them and tries to improve on them (Mutema and Mariko, 2012).

II. Methodology

The study was designed to help elucidate the important phenomenon of social reality in Applied Sciences by analysing the errors Chemistry students show evidence of in their writing. The idea was both to determine the impact of the central concept or phenomenon (writing errors) has in the context (learning of chemistry) with the goal (aim for the future) of informing teaching and learning strategies.

Qualitative research approach was used to analyse the Chemistry 1 students' written assignments. This study is phenomenological and since it is based on social reality it is explorative and interpretivist in nature (Merriam, 2002; Denzil & Lincoln, 2003, 2011; Flick, 2011; Moriarty, 2011; Joubish, Khurram, Ahmed, Fatima & Haider, 2011). The study analysed errors exhibited by Chemistry 1 students at CPUT with the aim of establishing the influence these errors have in their academic performance and the role played by language to access disciplinary knowledge.

Qualitative researchers deploy a wide range of interpretive practices to get a better understanding of the subject matter (Denzin & Lincoln, 2011:4). When conducting an *Error Analysis* there are some steps that are included in the process (Ellis & Barkhuizen, 2005). These steps are: (i) the collection of a sample of learner language, (ii) identification of errors, (iii) description of errors, (iv) explanation of errors, and (v) the evaluation of errors. To mark the quality of students' writing the following constructs were designed: (i) student's performance above 65%, (ii) performance between 50 and 65%, and (iii) performance below 50%. See table 1 below:

TABLE 1:
LEVEL DESCRIPTION AND MARK ALLOCATION

Performance Indicator	Description of Category
Students performance above 65%	Complex Vocabulary and Rhetoricality: Using complex jargon, limited grammatical and spelling errors and persuasive argument.
Students performance between 50 and 65%	Persuasive Writing: Using persuasive argument, not adequately sophisticated jargon, and exhibit some grammatical and spelling errors.
Students performance below 50%	Ambiguous Argument: Showing too many grammatical and spelling errors, and less sophisticated use of jargon.

The above three categories were determined in terms of mark allocated by the Chemistry lecturers who evaluated the students' assignments. Basically, two samples of text from each category were chosen (Complex Vocabulary and Rhetoricality, Persuasive Writing and Ambiguous Argument) to determine the types of errors made.

III. RESULTS

A. Presentation of Findings

The study is confined to the identification, categorisation, classification and analysis of the impact of errors in the Chemistry 1 students' writing/essay. Effectively, the study will use Richards' (1971) model by identifying the three broad categories such interference, intralingual and developmental errors. **Interference errors** entail the use of elements from one language while speaking or writing another. **Intralingual errors** reflect general characteristics of the rule learning such as faulty generalisation, incomplete application of rules and failure to learn conditions under which rules apply. **Developmental errors** occur when a learner attempts to build up a hypothesis about the target language on the basis of limited experience.

To provide a holistic classification of errors the following categories were identified: meaning, tense and verb-related, grammatical and spelling errors. Transitive and intransitive were considered to be syntactic errors; tense errors tend to interfere with the meaning of the whole sentence. Common errors found can be attributed to the following:

- Colloquialism (pronouns, register, oral vs. written genre)
- Syntax (short, incomplete and long sentences)
- Referencing (inconsistency, plagiarism and bibliography)
- Misapplication of essay construction rules
- Introduction (thesis statement and plan of development)
- Paragraph formation (argumentation)
- Subject-verb agreement

B. Data Analysis

The analysis of errors is presented in three groups (Category 3 Errors, Category 2 Errors and Category 1 Errors). These categories are determined by the Performance Indicator and Description of Category reflected in table 1. Data analysed is presented in Fig 1 to 6. Effectively, data analysis begins with Category 3, Category 2 and Category 1 Errors respectively.

Category 3 Errors

Fig 1 and Fig 2 fall into the Category 3 (Ambiguous Argument). The respondents in this category demonstrate too many grammatical and spelling errors, punctuation and syntactic errors, faulty argumentation and the absence of the writers' voice. Interference, Intralingual and Developmental errors are prevalent. However, intralingual and developmental errors are dominant.

Fig 1 exhibits two categories of errors such as intralingual and developmental errors. Although the respondent shows awareness of structure and layout of the essay, there are a number of errors exhibited. The respondent does not include all the important features or elements of a well-formed introduction. For example, there is no thesis statement, no indication of the scope of argument and no plan of development. The background information and definition of the key concept (pharmaceutical industry) has been provided, but the reader is left wanton in terms of the overview and point of departure.

The introductory paragraph presents an example of material copied and pasted without being properly integrated into the appropriate narrative of the introduction. There is a gap between the introductory paragraph and the body of the essay. This shows that the student is trying to build up an argument, but has limited experience in essay writing. As much as this is a developmental error this writing shows elements of intralingual errors – reflecting general characteristics of the rule learning such as faulty generalisation, incomplete application of rules and failure to learn conditions under which rules apply.

Common errors identified in Fig 1 in respect of the introductory paragraph are the following: (i) ambiguity, (ii) colloquialism, (iii) referencing, and (iv) syntax. Ambiguity and colloquialism are demonstrated by use of phrases and words such as "but there are hundreds more", which finishes the second sentence and "here", at the end of the sentence. The word "here" in the third sentence is misleading in terms of locality. In other words, such mistakes indicate that the

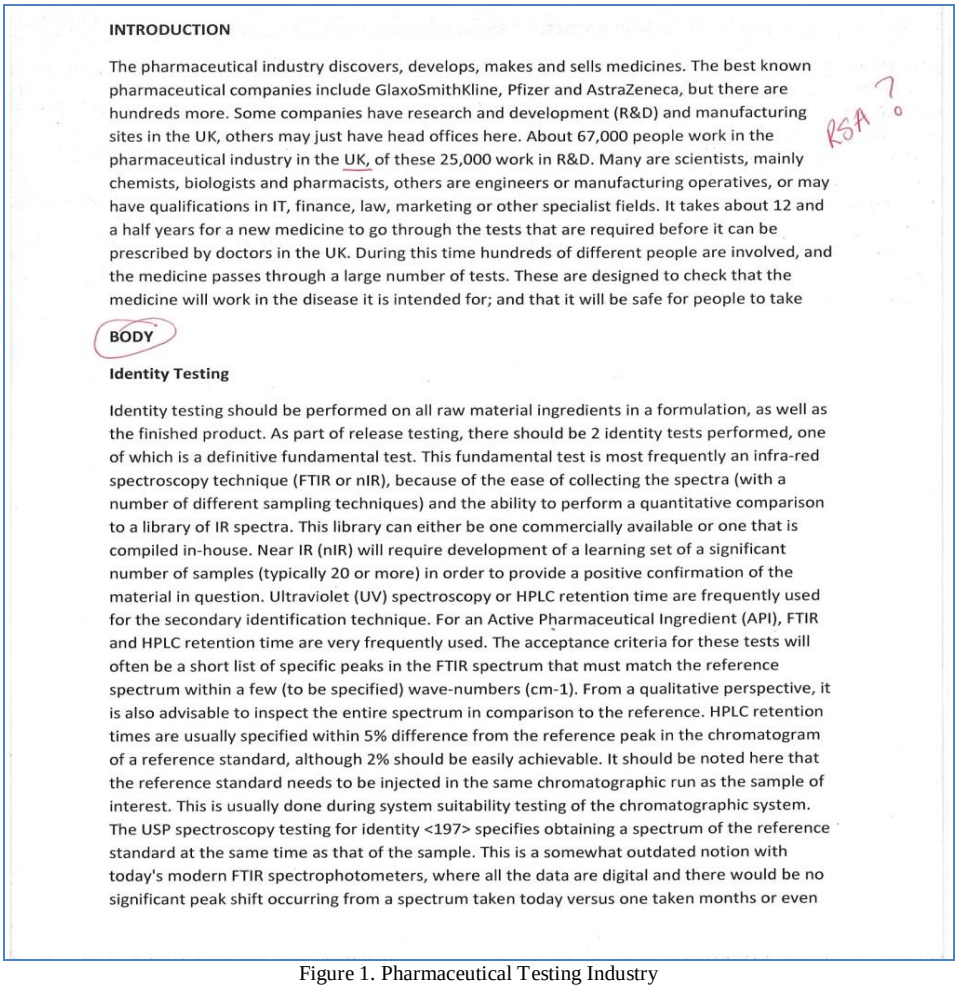
material presented has been copied and pasted without acknowledging the source. This is antithetic to proper application of essay construction rules.

The incorporation of statistics without reference points to the direction of plagiarism in the fourth sentence. Moreover, the embedded clause, "of these 25,000 work in R&D" makes it difficult for the reader to identify the subject refer to. The abbreviation "UK" increases confusion hence in academic writing all abbreviations should be preceded by an explanation every time they are introduced in a new context.

Other errors can be identified in respect of layout and paragraphing. The writer understands the structural pattern of the essay that it must have an introduction, body and conclusion. However, the word "body" needs not be reflected. The subheading "identity testing" should be used instead. Even so, the body section has little connection with the introductory paragraph. Furthermore, the writer has one big paragraph representing the discussion (in the body section of the essay). The writer should have broken the argument into different paragraphs with themes.

Faulty syntax is indicated by the use of many conjunctions in fifth sentence, which reads, "many are scientists….. or other specialists in the field". The reader would end up losing the overall meaning. The sentence becomes too long. Another example in the second last sentence of the introductory paragraph is indicated by the phrase "during this time". The reader could get confused about the actual reference indicated by the phrase. The parallelism employed regarding the subjects of the two clauses 'different people are involved' and 'the medicine passes' is problematic as it can cause confusion. In addition, the use of the pronoun "these" is unclear as to whether it refers to the 'tests' or 'a large number of tests'. These types of syntactic errors render the writer's argumentation fragmented and ambiguous.

The errors identified in Fig 1 can be associated with developmental errors because the writer is trying to build up a hypothesis about the target language (academic essay writing genre) on the basis of limited experience. Effectively, the entire essay represents an example of material copied and pasted without the writer's voice or interpretation thereof. In proper academic writing, secondary material or experts' views need to be tactfully integrated into the writer's narrative. As much as the errors identified are developmental there are elements of intralingual errors – reflecting general characteristics of the rule learning such as faulty generalisation, incomplete application of rules and failure to learn conditions under which rules apply. See Fig 1 below.



INTRODUCTION

The pharmaceutical industry discovers, develops, makes and sells medicines. The best known pharmaceutical companies include GlaxoSmithKline, Pfizer and AstraZeneca, but there are hundreds more. Some companies have research and development (R&D) and manufacturing sites in the UK, others may just have head offices here. About 67,000 people work in the pharmaceutical industry in the UK, of these 25,000 work in R&D. Many are scientists, mainly chemists, biologists and pharmacists, others are engineers or manufacturing operatives, or may have qualifications in IT, finance, law, marketing or other specialist fields. It takes about 12 and a half years for a new medicine to go through the tests that are required before it can be prescribed by doctors in the UK. During this time hundreds of different people are involved, and the medicine passes through a large number of tests. These are designed to check that the medicine will work in the disease it is intended for; and that it will be safe for people to take

BODY

Identity Testing

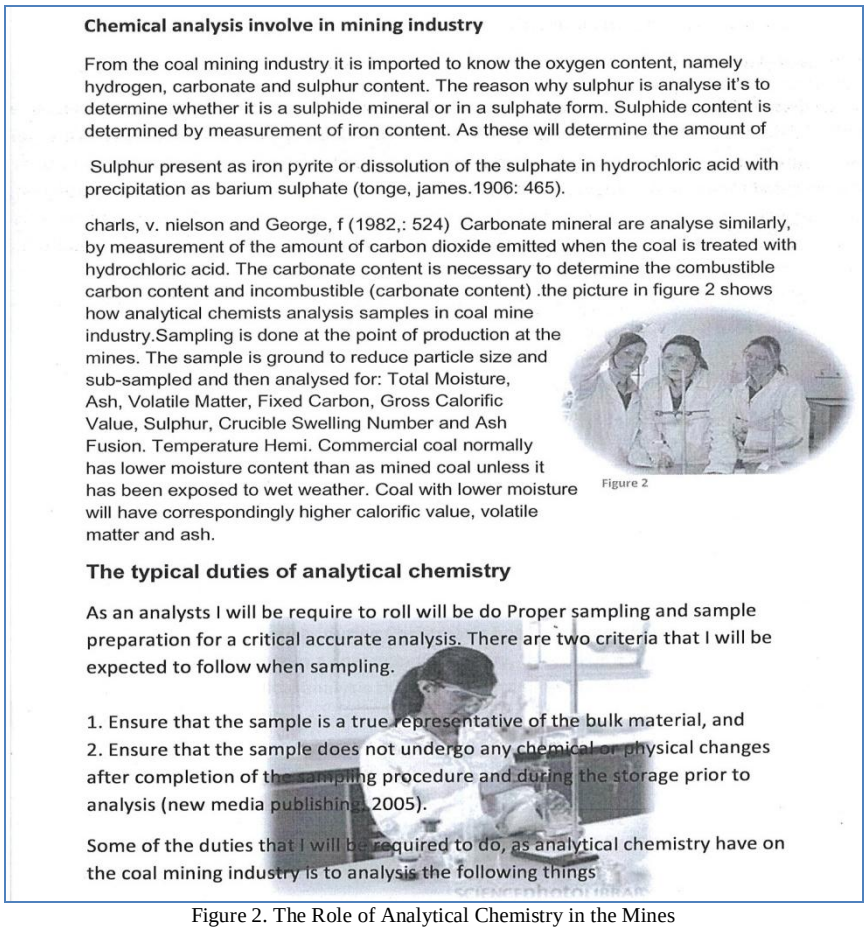
Identity testing should be performed on all raw material ingredients in a formulation, as well as the finished product. As part of release testing, there should be 2 identity tests performed, one of which is a definitive fundamental test. This fundamental test is most frequently an infra-red spectroscopy technique (FTIR or nIR), because of the ease of collecting the spectra (with a number of different sampling techniques) and the ability to perform a quantitative comparison to a library of IR spectra. This library can either be one commercially available or one that is compiled in-house. Near IR (nIR) will require development of a learning set of a significant number of samples (typically 20 or more) in order to provide a positive confirmation of the material in question. Ultraviolet (UV) spectroscopy or HPLC retention time are frequently used for the secondary identification technique. For an Active Pharmaceutical Ingredient (API), FTIR and HPLC retention time are very frequently used. The acceptance criteria for these tests will often be a short list of specific peaks in the FTIR spectrum that must match the reference spectrum within a few (to be specified) wave-numbers (cm-1). From a qualitative perspective, it is also advisable to inspect the entire spectrum in comparison to the reference. HPLC retention times are usually specified within 5% difference from the reference peak in the chromatogram of a reference standard, although 2% should be easily achievable. It should be noted here that the reference standard needs to be injected in the same chromatographic run as the sample of interest. This is usually done during system suitability testing of the chromatographic system. The USP spectroscopy testing for identity <197> specifies obtaining a spectrum of the reference standard at the same time as that of the sample. This is a somewhat outdated notion with today's modern FTIR spectrophotometers, where all the data are digital and there would be no significant peak shift occurring from a spectrum taken today versus one taken months or even

Figure 1. Pharmaceutical Testing Industry

In Fig 2 three main errors such as interference, intralingual and development error albeit the last two being dominant. The writer's voice is prevalent, which is a good sign of authority. Different sections are marked by means of sub-

headings. However, there is neither introduction nor identification of themes. The writer starts off by delving straight into the discussion. Generally, errors identified are: paragraph formation, referencing, spelling, syntax, punctuation, tense, verb choice and misapplication of rules.

In the opening sentence, "From the coal mining industry it is imported to know the oxygen content, namely hydrogen, carbonate and sulphur content" verb-related error is identified. The verb "imported" is confusing. Coal is imported, but not the coal mining industry. It is either the writer spelt the word "important" incorrectly or does not understand the meaning of the word "imported". Another error is identified at a syntactic level: beginning a sentence with a preposition, "from" as if it is a predicate. Furthermore, colon should precede the listing of items, but in the opening sentence it is absent. Therefore, the meaning of the sentence is impaired. See Fig 2 below.



Chemical analysis involve in mining industry

From the coal mining industry it is imported to know the oxygen content, namely hydrogen, carbonate and sulphur content. The reason why sulphur is analyse it's to determine whether it is a sulphide mineral or in a sulphate form. Sulphide content is determined by measurement of iron content. As these will determine the amount of

Sulphur present as iron pyrite or dissolution of the sulphate in hydrochloric acid with precipitation as barium sulphate (tonge, james.1906: 465).

charls, v. nielson and George, f (1982,: 524) Carbonate mineral are analyse similarly, by measurement of the amount of carbon dioxide emitted when the coal is treated with hydrochloric acid. The carbonate content is necessary to determine the combustible carbon content and incombustible (carbonate content) .the picture in figure 2 shows how analytical chemists analysis samples in coal mine industry.Sampling is done at the point of production at the mines. The sample is ground to reduce particle size and sub-sampled and then analysed for: Total Moisture, Ash, Volatile Matter, Fixed Carbon, Gross Calorific Value, Sulphur, Crucible Swelling Number and Ash Fusion. Temperature Hemi. Commercial coal normally has lower moisture content than as mined coal unless it has been exposed to wet weather. Coal with lower moisture will have correspondingly higher calorific value, volatile matter and ash.

Figure 2

The typical duties of analytical chemistry

As an analysts I will be require to roll will be do Proper sampling and sample preparation for a critical accurate analysis. There are two criteria that I will be expected to follow when sampling.

1. Ensure that the sample is a true representative of the bulk material, and
2. Ensure that the sample does not undergo any chemical or physical changes after completion of the sampling procedure and during the storage prior to analysis (new media publishing, 2005).

Some of the duties that I will be required to do, as analytical chemistry have on the coal mining industry is to analysis the following things

Figure 2. The Role of Analytical Chemistry in the Mines

There is a syntactic error in the second sentence, "the reason why sulphur is analyse it's to determine it is sulphide mineral or in sulphate form", as the word order is inappropriate; inclusion the noun phrase "the reason" and tautology "why"; the omission of "a" in the phrase "in sulphide form". The inclusion of phrases "it's" and "the reason why" indicates mother tongue interference.

There are a number of developmental errors made, namely: (i) verb-tense, (ii) contraction, (iii) colloquialism, (iv) double-noun phrase, and (v) omission. The verb in "is analyse" indicates the absence of past tense marker, "ed". Contraction occurs in the phrase "it's to determine" which serves to indicate both the influence of mother tongue (interference) and colloquialism. The employment of double-noun phrase (the reason and its referential pronoun "it") augments the sentence construction challenge.

The pronoun "it" which succeeds the verb "to determine" is misleading. It is not known whether "it" represents the analysis of sulphur or the reason why sulphur is to be analysed. There is also an omission of the complementary clause, "if" or "whether", between the verb "to determine" and pronoun "it". This affects the meaning of the sentence. As much as the above errors can be categorised as developmental, they reflect the challenge the writer experiences in terms of understanding rules and conditions under which they apply – intralingual challenge.

Other errors arising from Fig 2 are: paragraphing, punctuation, referencing, omission, verb tense and syntax. In the second and third paragraph an error associated with misapplication of the referencing rule is evident (intralingual error). The two sentences containing errors are: "Sulphur present iron pyrite or dissolution of sulphate in hydrochloric acid with precipitation as barium sulphate (tonje, james. 1906:405)" and "charls, v. nielson George f (1982,:524) Carbon mineral are analyse similarly, by measurement of the amount of carbon dioxide emitted when coal is treated with hydrochloric acid". In terms of the application of rules: (i) though the page numbers are provided there are no inverted

commas used by the writer to indicate direct citation, (ii) first names or initials of the author cannot be applied inside the text (in-text referencing), (iii) first letter in the person's name or surname ought to be written in capital letters, (iv) full-stop cannot be included on the in-text referencing, (v) comma cannot be inserted between the year of publication and semicolon, (vi) there is no need for starting the word "Carbon" with a capital letter after the reference, and (vii) it is unclear whether "charls, v. nielson George f (1982,:524)" refers to court case or Harvard system of referencing.

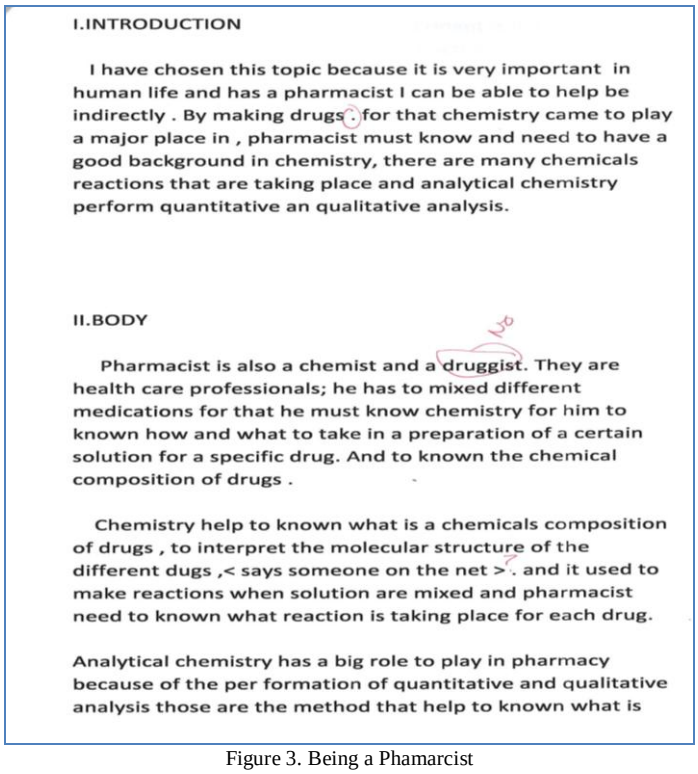
Furthermore, the writer tends to employ two different font types. This indicates copying and pasting from different sources, which renders the sentences unclear and ambiguous. The use of personal pronoun "I" in the second part indicates partiality of voice, subjectivity, authority and shift in the thinking trend. In the first part the writer sounds more objective even though lots of omission occurs. There is possibility that the writer was aware of the need to paraphrase by leaving out certain parts of the information, especially in the last paragraph.

The opening sentence of the second part "As an analysts I will be require to roll will be do Proper sampling and sample preparation for a critical accurate analysis" comprises of a number of errors such as mother tongue interference, tense, faulty syntax, subject-verb agreement. The last sentence "some of the duties that I will required to do, as analytical chemistry have on the coal mining industry is to analyse the following things" presents similar errors. It is difficult to make sense of what the writer is trying to say. Thus, these types of errors signify the students' limited exposure to academic writing– the developmental challenge.

Category 2 Errors

Fig 3 and Fig 4 fit into Category 2 Errors (Persuasive writing). This type of writing shows elements of persuasive writing, but not adequately sophisticated jargon is used, and exhibits some grammatical and spelling errors.

In Fig 3 the writer's voice is present and is carried throughout the argumentation process. Upon examining the student's voice, one can conclude that there is humility and persuasion in the voice. The writer offers a good justification for the choice of a topic in the first sentence of the introductory paragraph. There is some form of authority in the voice which could also be witnessed in the first/opening sentence, "I have chosen this topic because it is very important in human life and has a pharmacist I can be able to help indirectly." Moreover, layout is clear. The essay is structured with the necessary headings.



I.INTRODUCTION

I have chosen this topic because it is very important in human life and has a pharmacist I can be able to help be indirectly . By making drugs , for that chemistry came to play a major place in , pharmacist must know and need to have a good background in chemistry, there are many chemicals reactions that are taking place and analytical chemistry perform quantitative an qualitative analysis.

II.BODY

Pharmacist is also a chemist and a druggist. They are health care professionals; he has to mixed different medications for that he must know chemistry for him to known how and what to take in a preparation of a certain solution for a specific drug. And to known the chemical composition of drugs .

Chemistry help to known what is a chemicals composition of drugs , to interpret the molecular structure of the different dugs ,< says someone on the net >. and it used to make reactions when solution are mixed and pharmacist need to known what reaction is taking place for each drug.

Analytical chemistry has a big role to play in pharmacy because of the per formation of quantitative and qualitative analysis those are the method that help to known what is

Figure 3. Being a Phamarcist

Although there is an indication a topic whose relevance is specified in the opening sentence thesis statement is missing. There is a problem of punctuation and lack of vocabulary so as to enable the writer to express him or herself properly and comprehensively. Syntax is faulty. Sometimes, there is a wrong use of concepts. Conjunction "as" has been replaced by an auxiliary verb "has". The second sentence is not complete ("By making drugs") because there is no noun phrase. The predicate would often confuse the readers if its subject is unknown or omitted.

The sentence which reads, "for that chemistry came play a major place in, there are many chemicals reactions that are taking place and analytical chemistry perform both quantitative and qualitative analysis" contains a number of unwarranted syntactic and semantic faults. Firstly, this sentence begins with a small letter. Secondly, the use of verbs

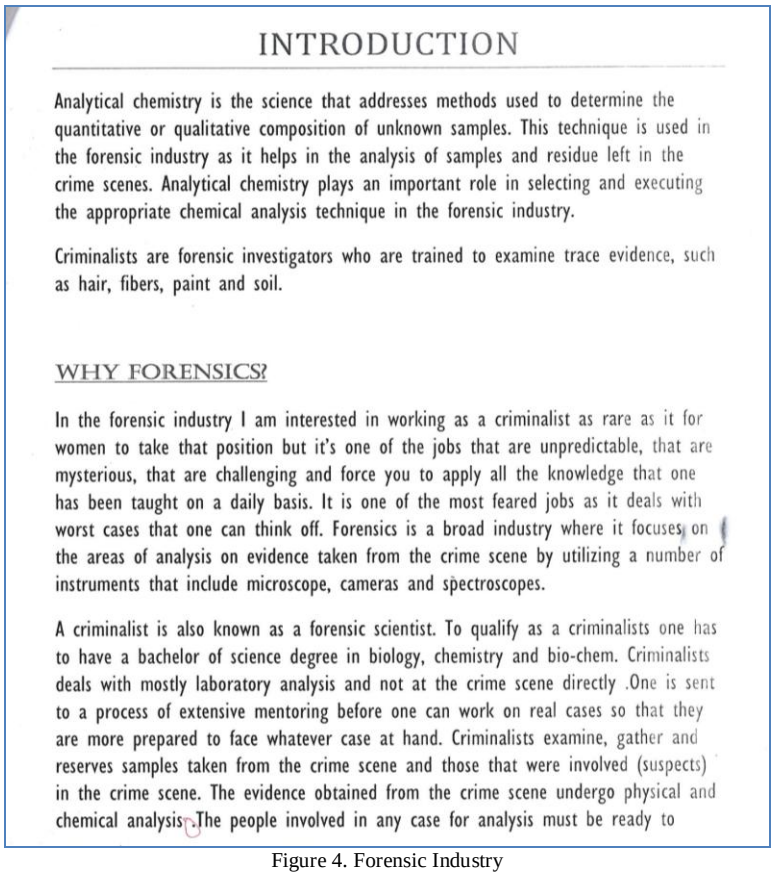
"came" and "play" is confusing. Possibly, the writer sought to use the word "can" for *came* and "role" for *place*. There is no object after the preposition "in" (defaulted intransitive sentence). The inflectional suffix "s" attached to the words "chemicals" breaks the relationship between the word "chemical" and "reactions". It now reads as two distinct words whereas it should logically have been treated as one phrase ("many chemical reactions") with the head word "reactions". This is clearly a problem of word formation – morphological compounding.

Usually, the word "body" does not have to appear within the body text of an essay. It is an imaginary structure. In fact, three issues arise from the body section of the essay, namely: sloppy or faulty syntax, wrong of punctuation and wrong application of conjunction rules. The sentence "Chemistry help to known what is the chemicals composition of drugs, to interpret the molecular structure of the different drug, <says someone on the net>. and it used to make reactions when solutions are mixed and pharmacist need to know what reaction is taking place for each drug" contain a number of grammatical mistakes. Firstly, the infinite verb and subject-verb concord rule are flouted in the phrase "Chemistry help to known". The choice of verbs and tense ("chemistry help", "to known", "pharmacist need" the chemicals composition of drugs") shows inadequate development of grammatical, morphological and syntactic competence. It also indicates the lack of competence in general sentence construction rules.

The encircled phrase "<says someone on the net>" uses greater and smaller than instead of inverted commas when citing directly from external sources. Moreover, the last paragraph/sentence does not make sense at all. There is also an incorrect word use, for example, the word "per formation". It does not exist both as a stand-alone lexical item or compound. Generally, the types of errors identified above demonstrate that the writer is still in learning process and has not yet mastered the rules. Claims are not substantiated by means of reference to expert views or secondary material. This shows that the writer has a long way in terms of learning academic language or academic writing conventions. Errors identified were classified as developmental and intralingual errors.

In Fig 4 the writer/student is fairly persuasive. The structure is evident and the reader is made aware of the phenomenon under discussion. Background information is provided and the presence of voice gives authority and confidence to the utterances made. However, the introduction misses: (i) thesis statement, (ii) scope, and (iii) plan of development (i.e. the outlining of key issues or themes). The second paragraph under the introduction section does not give any detail about the direction the discussion will assume. In addition, paragraph does not be a single sentence.

Though there is connection between the body of the essay and the content of the introduction utilising a question in the heading "Why Forensics?" makes it sound advertorial. The style is similar to that of a brochure, magazine, newspaper or pamphlet. Clearly, the writer intends to be persuasive although employing non-academic style. Ideas are appropriately discussed in separate paragraphs, and the argument is presented generally in third person. The writer's voice is heard throughout the essay. The inclusion of the pronoun "I" in the opening sentence of the body give credibility to claim made about the writer's confidence and sustainability of voice. Besides, there a number of errors identified. See figure 4 below.



INTRODUCTION

Analytical chemistry is the science that addresses methods used to determine the quantitative or qualitative composition of unknown samples. This technique is used in the forensic industry as it helps in the analysis of samples and residue left in the crime scenes. Analytical chemistry plays an important role in selecting and executing the appropriate chemical analysis technique in the forensic industry.

Criminalists are forensic investigators who are trained to examine trace evidence, such as hair, fibers, paint and soil.

WHY FORENSICS?

In the forensic industry I am interested in working as a criminalist as rare as it for women to take that position but it's one of the jobs that are unpredictable, that are mysterious, that are challenging and force you to apply all the knowledge that one has been taught on a daily basis. It is one of the most feared jobs as it deals with worst cases that one can think off. Forensics is a broad industry where it focuses on the areas of analysis on evidence taken from the crime scene by utilizing a number of instruments that include microscope, cameras and spectroscopes.

A criminalist is also known as a forensic scientist. To qualify as a criminalists one has to have a bachelor of science degree in biology, chemistry and bio-chem. Criminalists deals with mostly laboratory analysis and not at the crime scene directly .One is sent to a process of extensive mentoring before one can work on real cases so that they are more prepared to face whatever case at hand. Criminalists examine, gather and reserves samples taken from the crime scene and those that were involved (suspects) in the crime scene. The evidence obtained from the crime scene undergo physical and chemical analysis.The people involved in any case for analysis must be ready to

Figure 4. Forensic Industry

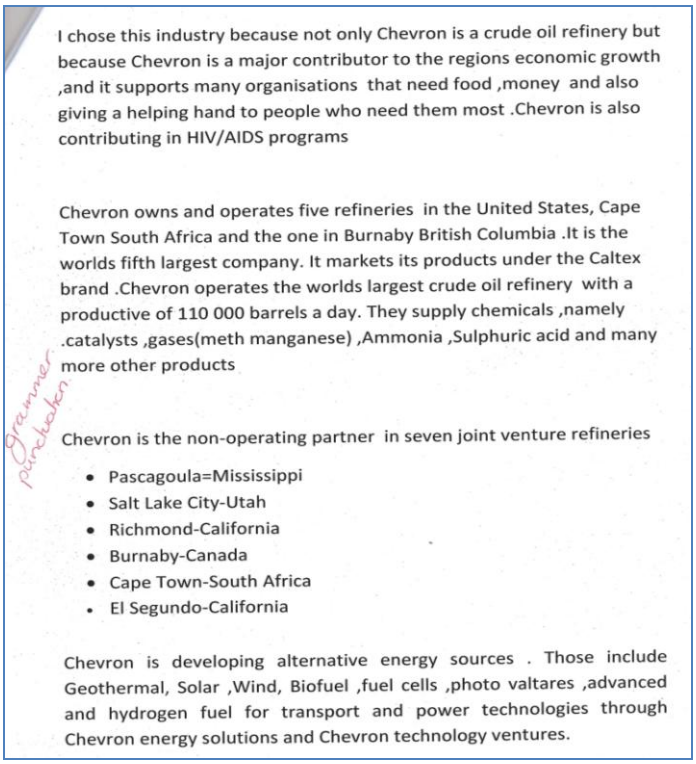
There is one incident of the use of the first person pronoun "I" (in the opening sentence of forensic discussion) and one occurrence of contraction in the phrase "it's one of the jobs that are in unpredictable". Syntax is also identified as a challenge – the use of long meandering sentence with so many conjunction does not only make this writing colloquial or informal, but senseless. Without the use of examples and references the argument becomes too abstract and somewhat vague. There is also a missing plural marker and inconsistent application of subject-verb-agreement rule in "Criminalists gather, examine and reserves" and "The evidence obtained from the crime scene undergo physical and chemical analysis". This indicates that the rules are known but not consistently applied. Such mistakes are associated with developmental and intralingual errors.

Category 1 Errors

Fig 5 and Fig 6 (Complex Vocabulary and Rhetoricality) show that the students in this category are capable of using complex jargon, demonstrating limited grammatical and spelling errors, and their argument is persuasive. In other words, the students' voice is heard and understanding is evident. Though three categories of errors (interference, intralingual and developmental) were identified the former is not a dominant feature.

In Fig 5 one cannot clearly identify the structure because in the introductory paragraph the writer did not identify the key points (themes). Due to the justification for the choice of industry the first sentence/paragraph serves as an introduction. The writer's voice is present and the personal pronoun "I" in the first sentence legitimises the writer's utterances or claim to be authoritative. The confident and persuasive voice is carried out through the essay.

The following errors were identified: (i) claims are not supported or explicated, (ii) the use of bullet points which are not followed by an explanation, (iii) citations and references are not included, (iv) punctuation is not done properly, (v) there is no logical connection of ideas, and (vi) syntax is faulty. For instance, the first sentence in the introduction is long and meandering. It contains a number of conjunctions ('but because', 'and', 'and also'), which interfere with the intended meaning. In the event where "but" is used to mark the beginning of the embedded clause there is no need for one to include another conjunction "because". It is redundant to do so. One can conclude that there is mother tongue interference. See Fig 5 below.



I chose this industry because not only Chevron is a crude oil refinery but because Chevron is a major contributor to the regions economic growth ,and it supports many organisations that need food ,money and also giving a helping hand to people who need them most .Chevron is also contributing in HIV/AIDS programs

Chevron owns and operates five refineries in the United States, Cape Town South Africa and the one in Burnaby British Columbia .It is the worlds fifth largest company. It markets its products under the Caltex brand .Chevron operates the worlds largest crude oil refinery with a productive of 110 000 barrels a day. They supply chemicals ,namely .catalysts ,gases(meth manganese) ,Ammonia ,Sulphuric acid and many more other products

grammar punctuation

Chevron is the non-operating partner in seven joint venture refineries

- Pascagoula=Mississippi
- Salt Lake City-Utah
- Richmond-California
- Burnaby-Canada
- Cape Town-South Africa
- El Segundo-California

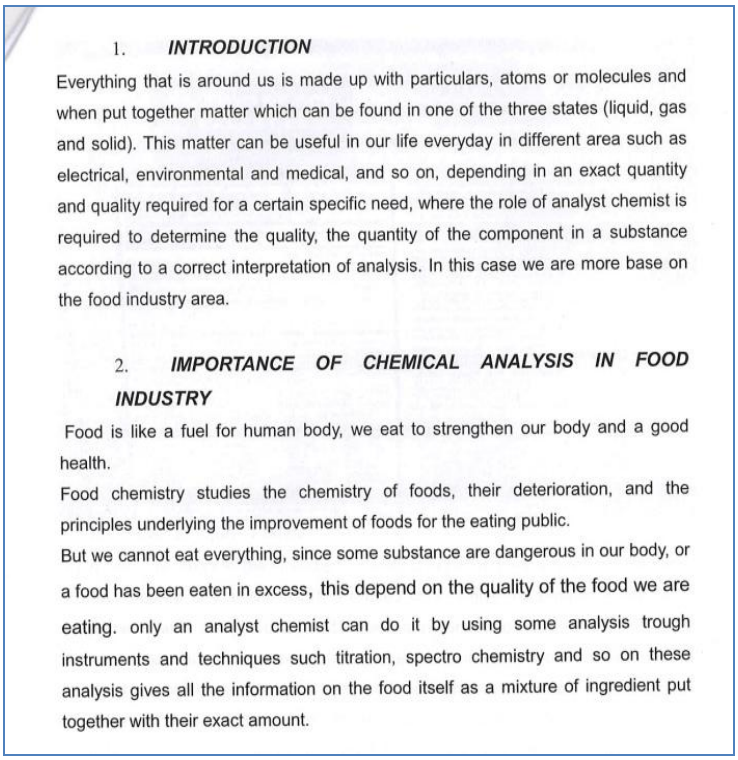
Chevron is developing alternative energy sources . Those include Geothermal, Solar ,Wind, Biofuel ,fuel cells ,photo valtares ,advanced and hydrogen fuel for transport and power technologies through Chevron energy solutions and Chevron technology ventures.

Figure 5. Oil Refinery (Chevron)

Two sentences cannot stand in the place of a paragraph. The introductory paragraph is made up of only two sentences. Besides the provision of background information about the phenomenon (Chevron), the writer does not provide the thesis statement, scope and plan of development. In addition, the word “regions” should have been apostrophised to give the indication of possession. Finally, the word “them” in the clause “and also giving a helping hand to people who need them most” is misleading. It is clear the writer here is referring to money and food or the organisations or Chevron. Though it is evident that the writer presents the background of Chevron the developmental errors made have a potential to indicate both progress and the amount of work needed to be done to assist the student to advance in learning the target language.

Some details in the second paragraph are provided authoritatively without reference. In other words, there are signs of plagiarism. The language used, except for punctuation, is without errors. Subject-verb agreement is appropriately used, and sentences are short. The overall argument is persuasive with enough examples being provided. Thus, types of errors identified are developmental.

Fig 6 below contains some positive features of academic and persuasive writing. There is authority and confidence in the utterances made. Key features such as contextual significance of the phenomenon, the outlining of the key themes and thesis statement made a powerful introductory paragraph especially for a short essay. Though the thesis statement is not accurate in terms of indicating the topic, but one can identify the topic to be chemical analysis in food industry. The layout is spot on. The opening sentence gives an indication of a writer’s legitimate and confident voice. It comes across as an attention grabbing device. The personal pronoun “us” presents a compelling argument. Examples are provided and the reader is left clear what the content is about.



1. ***INTRODUCTION***

Everything that is around us is made up with particulars, atoms or molecules and when put together matter which can be found in one of the three states (liquid, gas and solid). This matter can be useful in our life everyday in different area such as electrical, environmental and medical, and so on, depending in an exact quantity and quality required for a certain specific need, where the role of analyst chemist is required to determine the quality, the quantity of the component in a substance according to a correct interpretation of analysis. In this case we are more base on the food industry area.

2. ***IMPORTANCE OF CHEMICAL ANALYSIS IN FOOD INDUSTRY***

Food is like a fuel for human body, we eat to strengthen our body and a good health.

Food chemistry studies the chemistry of foods, their deterioration, and the principles underlying the improvement of foods for the eating public.

But we cannot eat everything, since some substance are dangerous in our body, or a food has been eaten in excess, this depend on the quality of the food we are eating. only an analyst chemist can do it by using some analysis trough instruments and techniques such titration, spectro chemistry and so on these analysis gives all the information on the food itself as a mixture of ingredient put together with their exact amount.

Figure 6. Chemical Analysis in Food Industry

Nonetheless, there are basic errors identified, namely: (i) second person pronouns ("us", "we", "our"), (ii) colloquial utterances (words or phrases) such as "like", "eat everything", "the chemistry of foods" (iii) paragraphing (the use of short and improper paragraphs), (iv) punctuation, (v) the misapplication of subject-verb agreement rule, and (vi) absence of citations and referencing. Though these errors many not necessarily negatively affect the meaning but they have a bearing on the assessment of the quality and authenticity of the argument presented.

IV. Discussion and Conclusion

The analysis of errors made by the Analytical Chemistry first year students in their writing provided an insight into how the academic language proficiency of students reflects both their writing challenges and progress they have made in the learning of chemistry through medium of second language (English). Based students' performance which varied according to the students that performed above 65%, between 50% and 60% and those below 50% in their assignment, Richard's (1971) categorisation (interlanguage, intralingual and developmental errors) was used to identify, classify and determine the impact these errors may have on students' performance and their ability to communicate meaning in Chemistry.

The study helped the lecturers to get feedback on how writing errors can affect teaching and learning practices. Two dominant errors identified are **intralingual** (faulty generalisation, incomplete application of rules and failure to learn conditions under which rules apply) and **developmental errors** (building hypothesis about the target language on the basis of limited experience). Put differently, mother tongue interference, syntactic and morphological errors, misapplication of essay construction rules, punctuation and spelling errors are found to compromise the quality and rhetoricality in students writing. Falih (2010) maintains that errors are 'a healthy sign of learnability'. They are a natural phenomenon in learning with pedagogical implications (Robinson, 1998). Errors found in the study are mother tongue interference, sentence formation, morphological errors, punctuation and spelling errors, and misapplication of essay construction rules. They are grouped into intralingual and developmental errors. These two categories of errors compromise the quality of students' writing; interfere with students' ability to communicate meaning; and their rhetorical capability. The study also revealed without the elimination of linguistic and conceptual obstacles the students will find it difficult to learn Chemistry successfully.

Dominant categories of errors found are developmental and intralingual errors. There are instances where mother tongue interference is evident. These errors cannot be attributed to mother tongue interference. For instance, in Figure 2 and Figure 5, there are errors than can be associated with mother tongue interference. Though the use of the first person pronouns "I" and "us" is prohibited in academic writing, as it flouts maxim of objectivity and impartiality. Avoiding personal pronouns forces one to be objective; to sound more formal; and maintain an appropriate tone (Maddalena, 2010), but at the same time, it increases credibility, precision and clarity of identity on the writer's voice. Personal pronoun "I" gives a powerful authorial presence, which often display the writer's high level of authority within the text.

This authority legitimises 'a right to control or command others' and 'knowledge or expertise in a particular field' (Kuhi, 2012; Tang & John, 1999).

Monica Chavez Muñoz who studied discourse functions of personal pronouns and verb forms referring to writer and reader interaction adds, "the interpreter" construct to Tang and John (1999) taxonomy (1. I as representative; 2. I as the guide; 3. I as the architect; 4. I as the recounter of the research processes; 5. I as the opinion holder and 6. I as the originator). Interpreter explains and constructs knowledge based on the researcher's experience, expertise and understanding the field of study (Muñoz, 2013). In terms of rhetoricality science writing places high premium on objectivity and neutrality (Allen, 2004). However, knowledge of the strategic use of personal pronouns is of great value to journal article writers (Kuo, 1999). For instance, when used properly as in Figure 6 the first person pronoun can be a crucial instrument for conveying the writer's voice and communicating originality.

The presence of errors in Chemistry students' writing demonstrates the pedagogic value of focusing curriculum on teaching and learning of academic language. Errors should not discourage lecturers but instead expose the students more into academic writing activities so as to enable them to identify, correct and improve upon errors (Mutema and Mariko, 2012). Many errors identified do interfere with the meaning. Mother tongue interference, incorrect use of tense, incorrect application of disciplinary concepts, omissions, faulty syntax, use of first person pronouns and subject-verb disagreement often challenge the reader to guess what the intended meaning could be.

Krashen and Brown (2007) propose Academic Proficiency (AP) as a mechanism to make input more comprehensible and the acquisition of academic language or the learning of new concepts and facts possible. Therefore, critical language and literacy skills are essential elements in acquiring scientific content knowledge (technical vocabulary, concepts), writing, research and critical analysis and communication (Shin *et al*., 2009; Purser *et al*., 2008). The teaching of academic language and discipline-specific concepts concurs with the principle of reorganising teacher's point of view and methodology for fixing and fulfilling the students' learning gaps advocated by Heydari & Bagheri (2012). Though Chemistry teachers lack adequate expertise required to teach and evaluate language (Klein & Aller, 2008; Kelly, 2010), but Wilson and Spink (2005) suggest that teachers should introduce the learner to one form of social language of science (school science) and should mediate the language used.

The study also revealed that the successful teaching and learning Chemistry subject depends on the elimination of linguistic and conceptual obstacles. This contributes to the ongoing research on the value of language in helping university students to gain epistemological access to disciplinary knowledge. Thus, Discipline-Specific Academic Literacy Intervention Programme should be conceptualised in Applied Sciences to empower the Chemistry students with critical literacy, disciplinary knowledge, metacognition, self-monitoring and self-editing capabilities.

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REFERENCES

[1] Abeywickrama, R. (2010). An Analysis of Errors in English Writing of Sinhala Speaking Undergraduates. *Sabaramuwa University Journal*, 9 (1), 97-114.

[2] Allen, M.C. (2004). The rhetorical situation of the scientific paper and the "appearance" of objectivity. *Young Scholars in Writing*: *Undergraduate Research in Writing and Rhetoric*, 2, 94-102.

[3] Becher, T. (1994). The significance of disciplinary differences. *Studies in Higher Education*, 19(2), 151-161. Brown The principles of language teaching and learning. Englewood Cliffs, NJ: Prentice Hall.

[4] Corder, S. P. (1967). The significance of learners' errors. In J.C. Richards (ed.) 1984 *Error Analysis: Perspectives on second language acquisition*, pp 19 – 27. London: Longman.

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

[6] Denzin, N. K. and Lincoln. Y.S. (eds) (2003). The SAGE handbook of qualitative research. 2nd ed. Thousands Oaks: SAGE Publication.

[7] Denzin, N. K. and Lincoln. Y.S. (eds) (2011). The SAGE handbook of qualitative research. 4th ed. Thousands Oaks: SAGE Publication.

[8] Ellis, R. and Barkhuizen, G. (2005). Analyzing learner language. Oxford: Oxford University Press.

[9] Falih, H. H. (2010). Analysis of errors made by Iraqi first-year university students in using the English cardinal numbers. *Journal of the college of arts*, 52, 1-20.

[10] Flick, U. (2011). Mixing methods, triangulation and integrated research: challenges for qualitative in a world of crises. In N. K. Denzil and M. Giardina (eds.) *Qualitative inquiry and global crises. Walnut Creek*, Ca: Left Coast Press, pp. 132-251.

[11] Green, B. (1999). The New Literacy Challenge? *Literacy Learning: Secondary Thoughts*, 7(1), 35-46.

[12] Green, D. A. (2009). New academics' perceptions of the language of teaching and learning: identifying and overcoming linguistic barriers', *International Journal for Academic Development*, 14(1), 33-45.

[13] Hedge, T. (2000). Teaching and learning in the language classroom: a guide to current ideas about the theory and practice of English language teaching. Oxford: Oxford Handbooks for Language Teachers.

[14] Heydari, P. and Bagheri, M. S. (2012). Error Analysis: Sources of L2 Learners' Errors. *Theory and Practice in Language Studies*, 2(8), 1583-1589.

[15] Huan, W. (2011). An Analysis of Errors in College English Writing in China. *Sino-US English Teaching*, 8(6), 369-375.
[16] Hussain, Z., Hanif, M., Asif, I. S. and Abaid Ur Rehman, A. U. (2013). An Error Analysis of L2 Writing at Higher Secondary Level in Multan, Pakistan. *Interdisciplinary Journal of Contemporary Research in Business*, 4(11), 828-844.
[17] James, C. (1998). Errors *in language learning and use: exploring error analysis*. Harlow, Essex: Addison Wesley Longman Limited.
[18] Joubish, M. F. Khurram, A. M.,Ahmed, A., Fatima, T. S. and Haider, K. (2011). Paradigms and characteristics of good qualitative research.*World Applied Sciences Journal*, 12(11), 2082-2087.
[19] Klein, B., &Aller, B. M. (2008). Writing across the curriculum in college chemistry: A practical bibliography. *Language and Learning Across the Discipilines*, 2(3), 25-35.
[20] Kovac, J., Sherwood D.W. (1999). Writing in chemistry: an effective learningtool. *Journal of Chemical Education*, 76(10), 1399–1403.
[21] Krashen, S and Brown, C. L. (2007). What is Academic Language Proficiency? Singapore Tertiary English Teachers Society (STETS). http://www.joanwink.com/research/Krashen-Brown-ALP.pdf. (Accessed: 22 September 2013).
[22] Kuhi, D., Azar, S. A., Shomoossi, A. and Shomoossi, N. (2012). Interaction markers in the written output of learners of English: the case of gender. *Journal of Education*, 1(2),79-90.
[23] Kuo, C. H. (1999). The use of personal pronouns: role relationships in scientific journal articles. *English for Specific Purposes* 18(2), 121–38.
[24] Lankshear, C. and Knobel, M. (2003). New literacies: Changing knowledge and classroom learning. Maidenhead and New York: Open University Press.
[25] Maddalena, M. K. 2010. "I need you to say 'I'": why first person is important in college writing. In Writing Spaces: Readings on Writing, Volume 1:180. (http://www.parlorpress.com/pdf/mckinney-maddalena--i-need-you-to-say-i.pdf. (Accessed: 22 March 2014).
[26] Mariko, I. and Mutema, F. (2012). Common errors in second language (L2) speakers; written texts. a case of first year first semester (L1:S1) Arts students at Midlands State University: An Error Analysis Approach. *Modern Journal of Applied Linguistics*, 4(4), 218-235.
[27] Merriam, S. B. (2002). Qualitative research in practice: examples for discussion and analysis. San Francisco, CA: Jossey-Bass, a Wiley Company.
[28] Moriarty, J. (2011). School for Social Care Research: qualitative methods overview. London: National Institute for Social Research.
[29] Muñoz, M. C. (2013). The "I" in interaction: authorial presence in academic writing. *Revista de Lingüística y Lenguas Aplicadas*, 8, 49-58.
[30] Purser, E., Skillen, J., Deane, M., Donohue, J. and Peake, K. (2008). Developing Academic Literacy in Context.Zeitschrift-schreiben.http://www.zeitschrift-schreiben.eu/Beitraege/purser_Academic_Literacy.pdf. (Accessed: 10 May 2013.
[31] Reif, F., Larkin, J. H., & Brackett, G. C. (1976). Teaching general learning and problem-solving skills. *American Journal of Physics*, 44, 212-217. (**doi**:10.1119/1.10458).
[32] Richards, J. C., and Schmidt, R. (2002). Dictionary of Language Teaching & Applied Linguistics. Pearson Education Limited. London: Longman.
[33] Richards, J.C. (1971). A Non-Contrastive Approach to Error Analysis [book], Vol 25 (3), 17 halaman.
[34] Robinson, P.J. (1988). A Hallidayan framework for vocabulary teaching: an approach to organizing the lexical content of an EFL syllabus, *IRAL*. 26(3), 229-238.
[35] Sanal, Fahrettin. (2008). Error-Analysis Based Second Language Teaching Strategies. (http://www.sosyalbil.selcuk.edu.tr/sos_mak/articles/2008/20/FSANAL.PDF). (28 November 2013). (doi: 10.1590/S2176-94512012000100015).
[36] Shin, T. S., Koehler, M. J., Mishra, P., Schmidt, D. A., Baran, E., and Thompson, A. D. (2009). Changing Technological Pedagogical Content Knowledge (TPACK) through course experiences. In I. Gibson, R. Weber, K. McFerrin, R. Carlsen, & D. A. Willis (Eds.), *Society for Information Technology and Teacher Education International Conference Book* (pp. 4152–4156). Chesapeake, VA: Association for the Advancement of Computing in Education (AACE).
[37] Snow, C. E. (2010). Academic language and the challenge of reading for learning about science, *Science*, 328, 450-452.
[38] Taher, A. (2011). Error analysis: a study of Swedish junior high school students' texts and grammar knowledge. Unpublished Master's Thesis. http://www.diva-portal.org/smash/get/diva2:496190/FULLTEXT01.pdf. (Accessed:16 November 2013). (Report nr: 2011ht5009).
[39] Tang, R., & John, S. (1999). The 'I' in identity: Exploring writer identity in student academic writing through the first person pronoun. *English for Specific Purposes*, 18, 23-39.
[40] Tuner, J. (2011). Language in the academy: cultural reflexivity and intercultural dynamics. Bristol: Multilingual Matters.
[41] Wilson, E. and Spink, A. (2005). Making meaning in chemistry lessons. *Electronic Journal of Literacy Through Science*, Volume 4 (2). http://ejlts.ucdavis.edu/sites/ejlts.ucdavis.edu/files/articles/Wilson.pdf. (Accessed: 20 September 2013). (doi:10.1126/science.13.320.268)
[42] Zhuang, L. (2011). A study of verb errors committed in written English by Chinese college students in Taiwan. *Journal of Humanities and Social Science*, 7 (1), 91-101.

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