Atomic Grammar: A Learning Source of ESL Error Identification and Correction

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Abstract

Error analysis is deemed a fundamental component in language teaching which helps language learners to identify, understand and eventually correct language errors on their own. 40 ESL students took part in the study by producing two sets of 100-word composition. The researchers identified the grammatical errors in the essays before performing error analysis and error correction on the identified errors. The findings were utilized for the construction of Atomic Grammar, an online source of English language grammar lessons based on error identification and error correction. The website which is accessible via personal computers and smartphones stores a compilation of the common errors made by ESL learners in their compositions followed by detailed explanation which include the reasons and rules that formulate the correct use of English parts of speech. In short, Atomic Grammar offers benefits to both language learners and instructors at all levels of English language competency.

Keywords: *Error analysis, grammar, writing, MALL.*

Introduction

Error correction is regarded as a form of feedback on language use amongst language learners which contributes significant impact on the improvement of language learners' proficiency. Malaysian students have learnt English formally at the primary and secondary levels of education. Despite that, various types of errors either in their choice of words, spelling or grammar are still prevalent among many students even at the tertiary level of education. According to Corder (1967), language learners at their early stage of learning commit errors due to their lack of command of the target language system. Indeed, grammatical errors among novice language learners is inevitable partly because they do not recognize the errors and even if they do, their inadequate understanding of the target language grammar hinders them from correcting the errors (Putri & Dewanti, 2014). Nevertheless, language teachers must not avoid addressing this problem particularly at the tertiary level where students are expected to have acquired the proper language skills to produce academic dissertations. At this stage, grammar is undeniably one of the crucial skills students are required to have to ensure that only a minimal number of errors are present in their written works which

could affect their writing quality (Nor Syamimi Iliani, Nor Hairunnisa, Wan Nuur Fazliza & Rohazlyn, 2019; Pae, 2018; Watcharapunyawong & Usaha, 2012).

The present study is extended from the first phase of our study – identification of English language errors in learners' written works which has been reported in Nor Syamimi Iliani, Nor Hairunnisa, Wan Nuur Fazliza and Rohazlyn, (2019). Error analysis is one of the instrumental parts in language teaching (Vásquez, 2008) but it must be followed by proper explanation to enable learners to understand why certain uses of language is considered inappropriate or inaccurate in the target language although such uses, e.g. plural noun versus singular verb is acceptable in their first language. The main objective of the study is to develop a website in which all the common grammatical errors found in students' written works are presented for ESL students' reference as well as for ESL language teachers' supplementary teaching material.

Corrective Feedback and Its Role in L2 Writing

Earlier definition of corrective feedback (CF) revolved around "any teacher behaviour following an error that minimally attempts to inform the learner of the fact of error" (Chaudron, 1988, p.150). This teacher behaviour may evidently prompt a response from a learner, and in a while result in self-correction or else the errors are corrected in ways which he or she may not discern that a response is desirable. Many years later, CF, frequently referred to as 'negative evidence' or 'negative feedback', was viewed as an indication to a learner that his or her target language use is inappropriate (Lightbrown & Spada, 1999). They further highlighted that such indication can be implicitly and explicitly procured in various ways. The former indirectly informs learners of their incorrect use of linguistic features while the latter provides the learners with an explicit error treatment.

Bitchener (2008) advocated that direct CF, the presentation of correct linguistic features or forms above or near the linguistic error, may include deletion of unnecessary lexical items or phrases, the insertion of missing lexical items or phrases, or the presentation of the correct features or forms. Meanwhile, indirect CF illustrates such indications in one of these four ways: underlining or circling the error, stating the number of errors using any suitable codes to show where the error has occurred and highlighting the types of error (Bitchenor, 2008). Nevertheless, direct observations and experimentations thus far ascertain that there is no advantage for indirect CF over direct CF (Amin & Saadatmanesh, 2018; Rustipa, 2014; Chandler, 2003), yet more evidence is there about the usefulness of feedback.

Research on the roles of CF in the writing of L2 has been hotly debated for decades and now. Among researchers, there has been on-going disagreement about the efficacy of CF on these learners' writing. The main opponent of CF, Truscott (1996; 1999), rejected this notion due to its harmful effects on learners L2 acquisition; he alleged that error correction on L2 learners' writing is not only unnecessary and ineffective, but even inefficacious. He doubted whether language teachers are capable of providing feedback adequately and consistently, and if so, he still questioned the learners' ability and willingness to use the presented feedback effectually. In contrast, Ferris (1999; 2004) provided arguments for the use of CF in writing instruction. By claiming Truscott's conclusions as impetuous, she proposed that more, well-designed and well-conducted studies are required in determining the efficacy of CF so as to improve learners' accuracy performance in future writing. In response to this, recent studies on written CF with improved design (control versus experimental group, focused versus unfocused feedback and measuring accuracy on new pieces of writing) have been conducted by Bitchener and Knoch (2008), Baker and Bricker (2010) and Sheen et al. (2009) respectively. These scholars have proven that CF does have positive and significant effects on learners' writing output.

Noticing Hypothesis

Noticing hypothesis is a very significant theory in the field of second language acquisition. The focal attention in this hypothesis is given to both the attention and awareness in the second language acquisition learning process (Schmidt, 1990). The underpinning concepts of this hypothesis are second language learners have limited capacity of information processing. This means they cannot pay attention to all the input that are given to them and this attention too has the ability to control the awareness and thus responsible for noticing. Other than awareness at the level of noticing, Schimdt (1990) also introduced the concept of higher level of awareness which is called understanding. According to Leow (2013), noticing is necessary for intake to take place, understanding on the other hand may act as a facilitator for learning. Schimdt (1990) also concluded that noticing results in intake while understanding promotes deeper learning, making it a more sophisticated process than noticing. Therefore, to enhance the process of second language learning, it is crucial for second language learners to have a certain degree of noticing to detect all the input (linguistic and semantic features) given to them (Robinson, 1995). When learners are able to notice the input, they will learn more because only noticed input would be converted into intake and this finally leads to positive second language learning (Schmidt, 1990). It is also important to note that not all input would be processed into intake as some input could go unnoticed; as a result, it will be stored in the internal system.

Hence, it is imperative to carefully understand the early stages of the learning process outlined in this hypothesis.
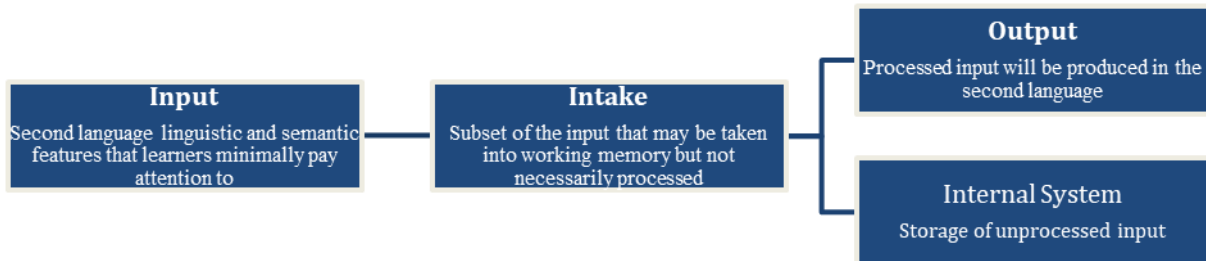

Figure 1: The stages of learning process

Second language learners' noticing could be improved when they are positioned to produce output where it refers to learner's production of the second language (Kim, 2015). Along this development, learners will go through the process of noticing the gaps. In this process, they will notice what they can and cannot express in their written work. This is where written corrective feedback is viewed as a very important mean to provide relevant information to learners. From the written corrective feedback, learners may actively find solutions to the errors that they have made (Izumi, 2003). Moreover, the written corrective feedback will help learners to notice the difference between their interlanguage and the target form and help them to fill in the gaps in their interlanguage knowledge before producing the correct output (Kim, 2015).
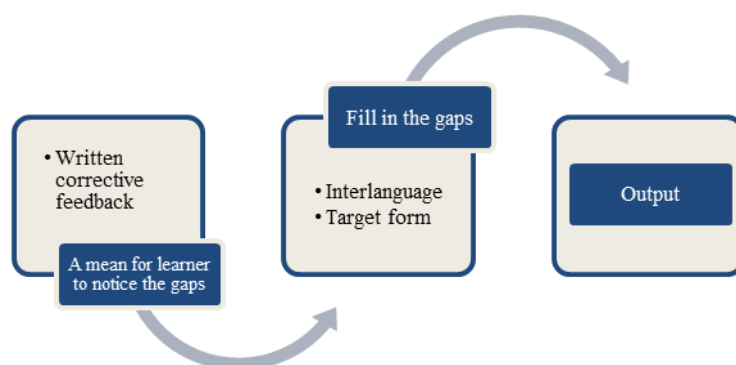

Figure 2: The function of written corrective feedback

The types of written corrective feedback provided would also affect second language learners' noticing and this quality of noticing could closely relate to their second language improvement (Kim, 2013). There are various types of written corrective feedback but the one which will help better noticing is direct error correction. Direct error correction helps learners to better notice their errors and eventually lead to tremendous improvement in second language linguistic accuracy (Sachs & Polio, 2007). Thus, from the

above literature, it can be concluded that second language learners' ability to notice the input will greatly facilitate them in their early stages of second language learning.

Mobile-Assisted Language Learning (MALL)

The rapid growth of sophisticated mobile technologies has gained significant impacts on our society and this too has geared us towards Mobile-Assisted Language Learning (MALL) environment in our education system (Kulska-Hulme, 2009). To define MALL, it means the use of mobile technologies in language learning especially in situations where device mobility offers specific benefits (Kukulska-Hulme, 2013). The following diagram presents the trail of MALL until its full implementation in 2004.
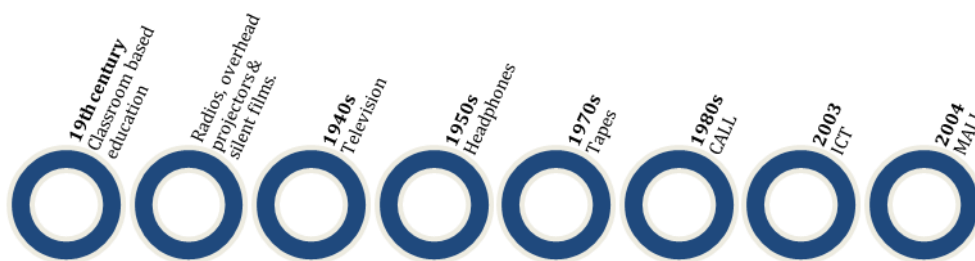

Figure 3: The chronological implementation of MALL

In the 19th century, everything started with a strict classroom setting education. In this setting, teachers fully rely on methodologies and teaching theories in teaching a language. Later on, technology was incorporated into the classroom with the use of radio, overhead projectors and silent films as teaching tools. Then, in 1940s, we could see the invention of television and during this time, learning became more visual and attractive. After that, headphones were very popular for second language learning in 1950s. In 1970s, teachers started to introduce tapes to learners in order to polish their speaking and listening skills. The game changer would be in 1980s with more teachers introducing computers to learners and Computer-Assisted Language Learning (CALL) materials were also widely sold in the market. With the existence of CALL, learning became more student-centered as students could access their own computers at home for self-study. In 2003, Ybarra and Green developed information and communication technologies (ICT) to be integrated in education and a year after that we could see educational technology had turned to MALL (Sharma & Kitchens, 2004). This was due to the reason that mobile technologies provide great convenience to all.

There are three general concepts projected in MALL based on Kulska-Hulme (2009); mobility of technology, mobility of learning and mobility of learner, and with these three underlying concepts, a lot of

researchers viewed mobile learning as the immediate replacement of e-learning (Abd Karim, Abu & Mohd Khaja, 2017). This indicates that our adoption of technology has improved from the traditional CALL to MALL (Li & Hegelheimer, 2013). Moreover, MALL is not a new way of learning languages as it complements other existing learning activities (Martin & Ertzberger, 2013). Today we could see MALL is gaining huge acceptance especially in English medium countries like Europe, the United States and parts of East Asia (Nik Mastura et al., 2011) and a lot more teachers are adopting mobile learning in class for its portability, connectivity and just because of nearly everybody can afford it (Samsiah et al., 2013). Nevertheless, Taylor (2007) claimed that not all learning contents can be transmitted through mobile technology. Only short and light contents can be transferred to MALL so that feedback and periodical revision could be done among learners (Looi, Seow, Zhang, So, Chen & Wong, 2010).

Principles in Mobile-Assisted Language Learning (MALL)

In designing online teaching and learning content, it is commendable to review vital principles in Mobile-Assisted Language Learning (MALL) in view of elements such as individual and group differences, limitations of face-to-face classroom interactions and its flexible features. Dealing with the application of mobile technologies in language education, MALL is acknowledged for its underlying principle, "language learning potential" (Stockwell & Hubbard, 2013). It is further highlighted that a personal communication device seems applicable to be utilized due to its flexible function in carrying over the main purpose of any technology devices i.e. personal or social use to language learning province. This echoes with Herrington, Herrington and Mantei (2009)'s four recommended principles of mobile-learning which are i) affordances of mobile technologies in providing users portability and convenience, ii) exploitation of non-traditional learning environment, iii) spontaneous and opportunistic aspects offered and iv) opportunity for the learners to use their own mobile devices. These principles are in some way advantageous for both, teachers and students in the 21st century in accomplishing the aim of building knowledge of teaching and learning.

Apart from that, Kukulska-Hulme (2016) argued that MALL is purposely for individual learning, which requires self-regulations and independent learning. In this regard, learners have the authority to select which content to be focused on and interact with their chosen content informally. It is therefore believed that MALL is closely related to the concept of autonomous learning in which lessons learnt formally complement the learner-initiated practice executed in informal contexts. Following her previous research on distance education, Elias (2011) came out with four universal design principles which are perceived valuable in coping with educational diversity issues. Those four principles noticeably represent MALL are as follows:

i.   equitable use (free access of the devices),

ii.   flexible use (ability to cater individual abilities, preferences, level of connectivity and methods use),

iii.   tolerance for error (minimal adverse consequences caused by errors), and

iv.   instructional climate (roles of instructors in course delivery).

Nonetheless, few considerations have to be made during the implementation of MALL. These are emphasized by Stockwell and Hubbard (2013) in the following principles:

i.   Distinguish the limitations of mobile devices and environment

ii.   Reduce the amount of distractions (multitasking and environment)

iii.   Respect boundaries

iv.   Maintain equity

v.   Accommodate language learner differences

vi.   Understand existing uses and cultures of devices use

vii.   Provide short and concise language learning activities

viii.   Synchronize language learning activities with technology and environmental issues

ix.   Be responsible for guidance and training

x.   Acknowledge multiple stakeholders

Integration of MALL in ESL Classes and its Effectiveness on ESL Development

Mobile technologies have been omnipresent in language classes, and have been notably utilized in ESL classes. The prevalent use of mobile technologies by language teachers and learners is furthermore reinforced by its ease of access, inexpensive mobile provider cost and good quality Internet connection (Park, Nam & Cha, 2012). Besides, teachers and learners are now presented with multifarious platforms of mobile learning which they can integrate in the language teaching and learning process such as Edmodo, Google docs, Zoho writer, Blogs, Wikis and Facebook (Eid Hamoudeh, Samsiah & Ibrahim, 2018). Thus, mobile-assisted language learning is not far-fetched in the 21st century and can be realized in numerous ways depending to support teaching and learning needs using cutting-edge technology.

Andujar (2016) examined the effectiveness of WhatsApp-assisted learners' interaction on ESL writing development in which the learners maintained their interaction synchronously and asynchronously through WhatsApp on a daily basis. The constant conversation on the online mobile platform contributed to improvement in learners' written language accuracy. Besides the mobile applications developed by mobile

companies, language instructors have innovated their own language learning application or platforms. In an effort to improve learners' writing skills, Li and Hegelheimer (2013) developed a mobile application through which learners can do grammar exercises in the error-identification and error-correction format. Learners' self-editing progress was reflected in the post-test grammar exercises done on the application – Grammar Clinic and reduced number of errors in their writing assignments. Another mobile-based grammar application has been developed by Ganapathy, Shuib, Gunasegaran and Azizan (2016) which is equipped with notes, quizzes, enrichment and forum which take into account the visual, kinaesthetic, reading, writing and auditory learning styles. The application i-MoL receives a positive feedback from language lecturers as the materials available on i-MoL can be accessed and used by students as consolidation activities at their own convenience. Based on the mobile-assisted language teaching and learning practices discussed above, language teachers are encouraged to fully utilize mobile technology in their pedagogy so that they can keep abreast of the fast-paced technological advancement in teaching a language.

Selection of Participants

Forty ESL students who were in their Semester 2 of a diploma program at a Malaysian public university were selected to participate in the study. The students achieved a passing grade (grade C and above) in the English course of the first semester. Based on their results, all students were of mixed English language proficiency and showed moderate ability to write in English.

Identification of Students' Errors in Writing

Each student was requested to write two essays containing 100 words and the total number of essays collected from the students were 80 essays. According to Corder (1975), teachers should examine the difficulties experienced by students in learning a language which can be accomplished by qualitatively scrutinizing students' linguistic errors and quantitatively analyse the error frequency. For a better evaluation of the errors, teachers need to identify whether the errors tend to happen due to communicative or pedagogical factors which can facilitate teachers in treating the errors more effectively. Based on the recommendation, the researchers examined the students' essays to identify the errors that might have been committed by students in the production of the essays. All the essays have been randomly separated into four different sets with twenty essays in each set. Therefore, each researcher was tasked with examining twenty essays individually which were completed in the duration of two weeks. Next, all the researchers discussed and cross-checked the essays to validate the types of grammatical errors and to identify any mistakes which may have occurred during the process of examining the grammatical errors by individual researchers. Cross-

checking can increase accuracy (Brown, Glasswell & Harland, 2004; Lapadat & Lindsay, 1999) which helps all the researchers to reach a consensus in determining the right type of errors encountered in students' essays. All the errors were calculated to identify their frequency of occurrences according to the type of parts of speech as presented in the table:
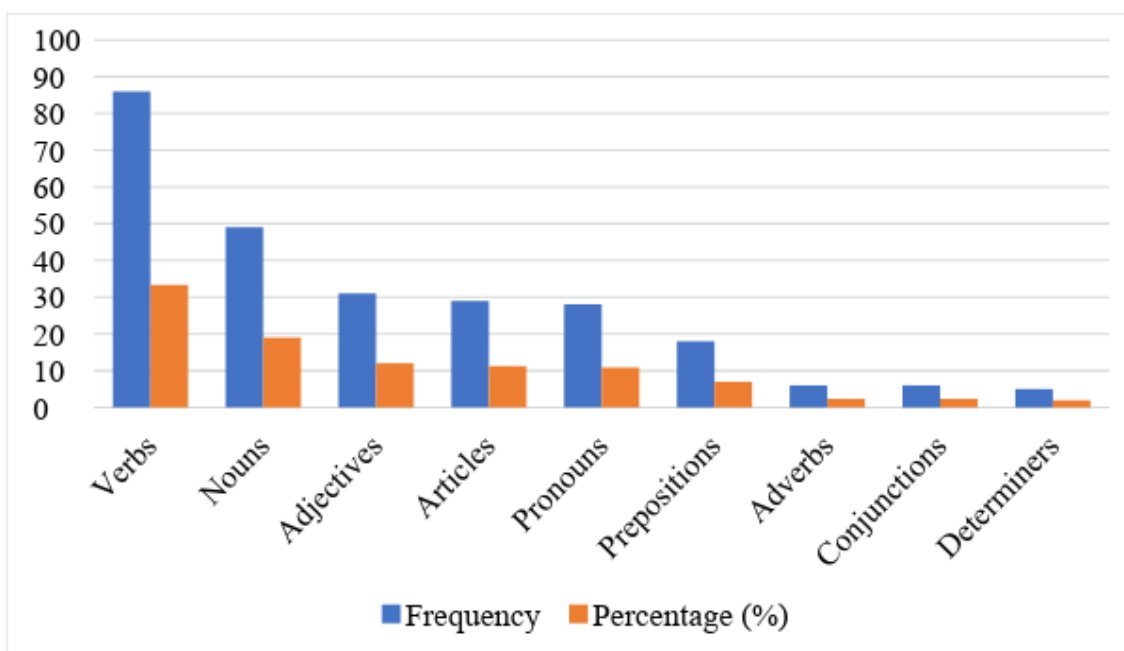

Figure 4: Types of Errors: Frequency & Percentage of Occurrences

The most frequent errors produced in the essays were verb errors at 33.33%, followed by errors in the use of nouns at 18.99% while errors in using English determiners were the least frequently produced by the students at only 1.94%.

Error Analysis and Error Correction

To achieve the main purpose of establishing the website to be used by ESL students as their reference, the researchers analysed the errors, made correction to the errors and supplement the correction with a detailed explanation by using English textbooks authored by Azar (2003), Larsen-Freeman and Celce-Murcia (1999) and Thevarajoo, Syed Hussain, Subramaniam, Sheikh Hassan and Anna (2010) alongside ESL grammar websites: Dave's ESL Café www.eslcafe.com, www.grammarly.com, Towson University Online Writing Support webapps.towson.edu/ows/index.asp and Purdue Online Writing Lab owl.purdue.edu/owl/purdue_owl.html as the researchers' sources of reference. Each error was given correction and provided with elaborate explanation to help students understand the reason behind the

incorrect use of a part of speech and rules that formulate the correct use of the part of speech. The attention given to linguistic form as in the focus-on-form approach facilitates the success of language learning and stimulates language learning progress (Beuningen, 2010). The table presents some of the correction and explanation provided for every type of error:

Table 1: Sample of erroneous sentences, correction and explanation of errors

Parts of speech	Erroneous sentences & correction	Explanation
Verbs	Error: Students can access the recorded presentation via their smartphones to review what they *had learnt* in class. Correction: Students can access the recorded presentation via their smartphones to review what they *have learnt* in class.	Present Perfect Tense (has/have + past participle) is used to show that the activity (learning) has finished sometime before now at an unspecified time in the past.
	Error: Students *can recording* lectures using various applications. Correction: Students *can record* lectures using various applications.	Auxiliary verbs (can, could, should, will, etc.) must be followed by base form verb.
	Error: Students *will ^ able* to snap a picture of the tasks assigned by their lecturers. Correction: Students *will be able* to snap a picture of the tasks assigned by their lecturers.	"Able" is an adjective thus the verb precedes must be "be Verb" (am, is, was, are or were).
	Error: Some people *who ^ not* smart tend to be cheated by dishonest personal shoppers. Correction: Some people *who are not* smart tend to be	"Smart" is an adjective thus it preceded by "be Verb" (am, is, was, are or were).

	cheated by dishonest personal shoppers.	
	Error: He *did improved* as he practised a lot before the tournament. Correction: He *did improve* as he had practised a lot before the tournament.	Since the auxiliary "did" shows that the sentence is in the past, the verb "improve" should be in the base form.
Nouns	Error: Sellers put up *advertisement* all over the Internet. Correction: Sellers put up *advertisements* all over the Internet. Error: *One's* can prevent oneself from getting involved in social problems by marrying young. Correction: *One* can prevent oneself from getting involved in social problems by marrying young. Error: Students can search additional *informations* using their smartphones. Correction: Students can search additional *information* using their smartphones. Error:	The subject of the sentence (Sellers) is in plural form; hence, the object of the sentence (advertisements) should also be in plural form. To show possession, an apostrophe (') is added to a noun. However, in this case, the use of an apostrophe (') is not needed to show any possession or ownership. Therefore, the sentence needs only a noun (One) that functions as the subject of the sentence. 'information' is an uncountable noun; hence, it must always be in singular form (without -s).

	Searching for additional information is *one of the reason* why students should be allowed to use smartphones in class. Correction: Searching for additional information is *one of the reasons* why students should be allowed to use smartphones in class.	The correct form should be 'one of the reasons' as the context of the sentence indicates plurality in which it explains 'there are many reasons why students should be allowed to use smartphones in class' and one of the reasons is 'searching for additional information'.
	Error: Some people said that they did not get support for their *successfulness*. Correction: Some people said that they did not get support for their *success*.	'successfulness' and 'success' are nouns. However, the correct English term that suits the context is 'success' as it defines 'a thing to be achieved'. The incorrectly used word, 'successfulness', on the other hand, is 'a characteristic that enables success to be achieved'.
Adjectives	Error: The biggest advantage of online shopping is *various of* choices available customers to choose from. Correction: The biggest advantage of online shopping is *various* choices available for customers to choose from.	'various' is an adjective and does not require a preposition.
	Error: Some people enjoy doing *adventure* activities. Correction: Some people enjoy doing *adventurous*	'Activities' is a noun and is described using an adjective 'adventurous'. 'adventure' is

	activities.	not an adjective but a noun.
	Error: Students must *be determine* to make their dreams come true. Correction: Students must *be determined* to make their dreams come true.	A noun 'person' is described by an adjective. The correct form of the adjective is 'determined' while 'determine' is a verb.
	Error: They went to *a restaurant Chinese* to have dinner with their friends from Europe. Correction: They went to *a Chinese restaurant* to have dinner with their friends from Europe.	'restaurant' is a noun and 'Chinese' is an adjective. In English, to describe a noun, an adjective must be placed before the noun.
	Error: Their family became *more poor* when their father lost his job last year. Correction: Their family became *poorer* when their father lost his job last year.	There are two ways to express adjectives in the comparative form: -er and more-. The adjective in the above sentence 'poor' takes the -er comparative form. Thus, the correct way to express this is 'poorer'.
Articles	Error: *The half money* that we earn should be given to our parents to lessen their burden. Correction: *Half of the money* that we earn should be given to our parents to lessen their burden.	To say an amount equal to a half, the correct phrase is 'half of the…'.
	Error: As *a parents*, we must be considerate in making any decision for our children.	The indefinite article 'a' is used before singular countable

	Correction: As *parents*, we must be considerate in making any decision for our children.	nouns. Therefore, 'a' is dropped because the word 'parents' is in the plural form.
	Error: Sasha told her mother that she had ^ *school activity* last Monday. Correction: Sasha told her mother that she had *a school activity* last Monday.	Singular countable nouns are to be used with the articles 'a, an, the'. Hence, the indefinite article 'a' is added before 'school activity' because it is a singular countable noun.
	Error: His family treated him like *a children*. Correction: His family treated him like *a child*.	The indefinite article 'a' is used before a singular countable noun. Thus, the noun 'children' is changed to its singular form – 'child'.
	Error: Salt is *the important ingredient* in cooking, but we must control the amount of it to avoid illnesses. Correction: Salt is an important ingredient in cooking, but we must control the amount of it to avoid illnesses.	The indefinite article 'an' is used before a word that begins with a vowel sound. In this case, 'an' is used to refer to something mentioned for the first time.
Pronouns	Error: We bought *ourself* new diaries. Correction: We bought *ourselves* new diaries.	The correct pronoun to use is 'ourselves' since it relates to the subject of the sentence – 'We' which is a plural subject pronoun.
	Error: I will take care of my mother and make *she*	The correct word must be an

	happy. Correction: I will take care of my mother and make *her* happy.	object pronoun which comes after a verb. In the sentence, the correct pronoun to use is 'her'.
	Error: It depends on sunlight as *it* main source of energy. Correction: It depends on sunlight as *its* main source of energy.	'its' is a possessive adjective that shows possession or belonging which is used before a noun.
	Error: *Its* because they want to see their grandfather's effort to get what he needs. Correction: *It is* because they want to see their grandfather's effort to get what he needs.	A sentence begins with a subject and is followed by a verb. However, both subject and verb are missing in the sentence. Hence, 'it' becomes the subject and 'is' the verb.
	Error: Women should be grateful and proud of *their self*. Correction: Women should be grateful and proud of *themselves*.	The correct pronoun is 'themselves' since it relates to the subject of the sentence – 'Women'. The incorrect word, 'themself' does not exist in English.
Prepositions	Error: *When* the winter, our family often goes ice skating. Correction: *During* the winter, our family goes ice skating.	'When' is used to refer to specific time periods or eras. Meanwhile 'during' is used before an activity to indicate that a parallel action is happening at the same time as that activity.

	Error: Simon still takes care *for* his father. Correction: Simon still takes care *of* his father.	When we want to say that we look after somebody, the correct phrase is 'take care of'.
	Error: He just depends *to* his family. Correction: He just depends *on* his family.	The phrasal verb 'depend' is followed by 'on'.
	Error: The children also ignore *about* him. Correction: The children also ignore him.	After the verb 'ignore', no preposition is required.
	Error: She was shocked because people *at* Vietnam were obsessed with fair and flawless skin. Correction: She was shocked because people *in* Vietnam were obsessed with fair and flawless skin.	'in' is normally used for countries, cities, towns and villages.
Adverbs	Error: He eats so *greedy*. Correction: He eats so *greedily*.	'greedy' is an adjective while 'greedily' is an adverb. To describe a verb 'eats', an adverb should be used which is 'greedily'.
	Error: We must *careful* manage our expenses especially at the end of the semester when most students are on tight budget. Correction: We must *carefully* manage our expenses especially at the end of the semester when most students are on tight budget.	'careful' is an adjective while 'carefully' is an adverb. To describe the verb 'manage', the correct word to use is 'carefully' which is an adverb.

	Error: Many people now prefer shopping *in* online because it is very convenient. Correction: Many people now prefer shopping online because it is very convenient.	'Online' is an adverb. It requires no preposition such as 'in', 'at' or 'on'.
Conjunctions & Transitional Words	Error: *Even* he was the least important employee, Luke always completed his work on time. Correction: *Even though* he was the least important employee, Luke always completed his work on time.	'even' is used to refer to something surprising, unexpected, unusual or extreme whereas 'even though' means the same as 'although' which is used to show contrastive ideas.
	Error: *While* he was young, he was not a good person. Correction: *When* he was young, he was not a good person.	'When' is used to talk about something that occurs at the same time as a longer action that is described in the main clause.
	Error: *Beside that*, another factor that contributes to the marriage turmoil is Prasat's bad behaviour. Correction: *Besides*, another factor that contributes to the marriage turmoil is Prasat's bad behaviour.	'Beside' is used only as a preposition. It means either "next to" or "compared to" whereas 'besides' is used to introduce additional information.
	Error: By preparing our own meals, we can control our budget *yet* strengthen the relationships with our family members. Correction:	The conjunction 'yet' is used to show contrasting ideas, 'and' is used to link two similar ideas such as 'can

	By preparing our own meals, we can control our budget *and* strengthen the relationships with our family members.	control our budget' and 'can strengthen the relationship'.
Determiners	Error: He does not have *many* energy to carry out the tasks given by his boss. Correction: He does not have *much* energy to carry out the tasks given by his boss.	The determiner 'many' is used with plural countable nouns. Since 'energy' is an uncountable noun hence, the determiner 'much' is used.
	Error: Lastly, we can prevent ourselves from getting *a* food poisoning by cooking our own meals. Correction: Lastly, we can prevent ourselves from getting food poisoning by cooking our own meals.	An article is not required for uncountable nouns, 'food poisoning'.
	Error: There are many *of* benefits if we prepare our own meals. Correction: There are many benefits if we prepare our own meals.	The determiner 'many' is not used with any preposition 'of' as in 'a lot of'.

The description of the causes of errors and explanation of the error correction were examined and proofread by two senior English lecturers who have had teaching experience of more than twenty years. They assisted the researchers at this stage by proofreading the content to ensure only simple vocabulary and sentences were used to accommodate students of all proficiency levels. Because reading comprehension is affected by students' vocabulary knowledge (Quinn, Wagner, Petscher & Lopez, 2015; Tighe & Schatschneider, 2016), the researchers must take into consideration the proficiency levels of all students, who are the potential and future users of the website, by using vocabulary that all students comprehend.

Development of Atomic Grammar Reference Website

The development of Atomic Grammar website was not funded by any institution and was developed only with the researchers' initiative to help students become better ESL writers by avoiding the common grammar errors which is also the factor of students' low grade in the writing tests. After careful selection and contemplation of website creators available online, the researchers decided to use WiX, a free website builder which is accessible via www.wix.com. The researchers could choose the type and design of website from the numerous templates available on WiX and were also entitled to customize the website by adding texts, images and videos to make the website more appropriate and appealing as an educational website. The URL to access Atomic Grammar website is https://10ignitors.wixsite.com/atomicgrammar.

Each type of errors is presented in individual tabs according to the types of parts of speech: verbs, nouns, adjectives, articles, pronouns, prepositions, adverbs, conjunctions, determiners. Presenting the errors in such categories helps students to understand better and lessen their confusion about grammatical rules and structures that may arise.
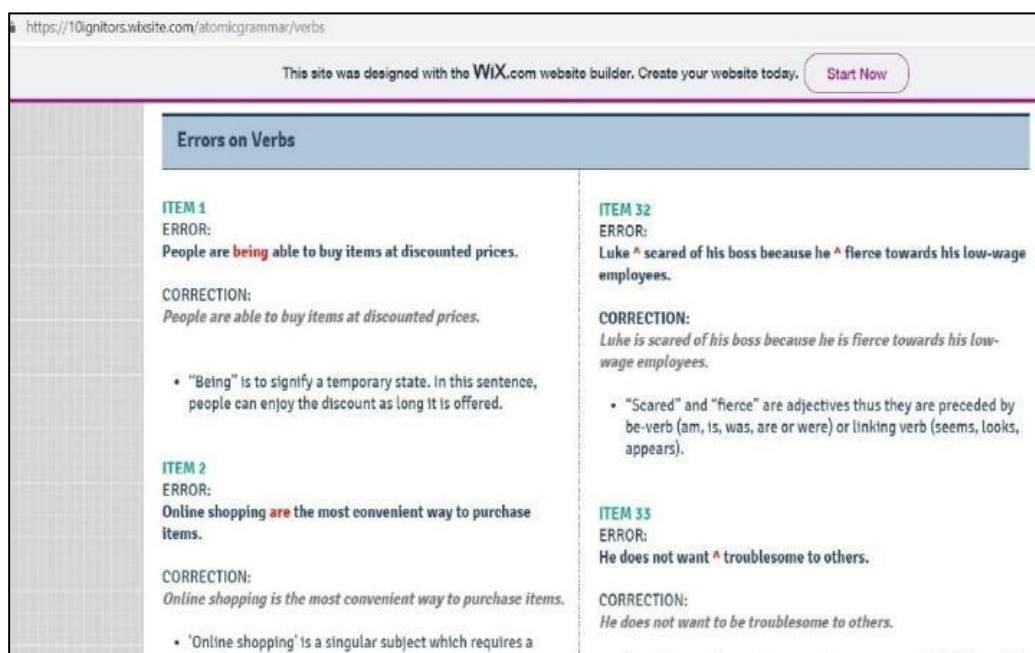

Figure 5: Categories of errors in Atomic Grammar

Besides the grammatical error presentation, three sets of grammar quizzes included in the website were arranged in three categories: beginner, intermediate and advanced. The purpose of having the tests in the website is to encourage students to test their comprehension after using the website as a reference. The

difference between the three quizzes lies in the form of the questions and answers. Quiz at the beginner level provides multiple-choice answers to replace the erroneous part of speech underlined in the sentence. Meanwhile, quiz at the intermediate level has the erroneous part of speech identified for students but they are to type the answer without being given any options for answers. The advanced level tests students' overall comprehension of English grammar which requires them to identify the errors by themselves without being given any clue and correct the errors by rewriting the sentences. Since the quizzes are not compulsory, they can choose to do only one quiz, two quizzes or complete the quizzes at all levels. Each answer is given an automated feedback in the form of explanation of the relevant grammar rules as well the suggested items of parts of speech they should refer to in the website to allow them to read similar examples of errors and explanation. Two hundred and twenty-seven students did the beginner-level quiz and 32 students scored a full mark - 20 points whereas most students (43) scored 19 points. At the intermediate level, the number of students who did the quiz was only 101 which is less than those who did the first-level quiz. Only five questions were posted in the quiz where 27 students scored 4 points and 25 students scored 5 points. The advanced level of quiz in the website was attempted by only 79 students. It was also the same number of questions as that of the intermediate level. Ten students scored a full mark - 5 points while most students, 23 of them scored 3 points.
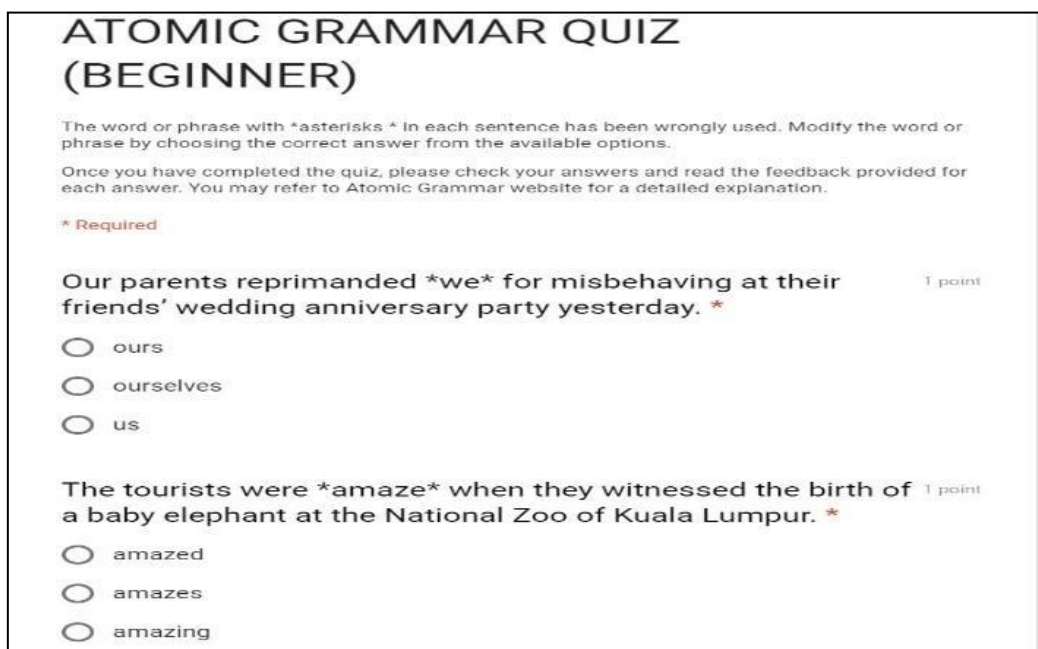

Figure 6: Atomic Grammar quizzes: Beginner, Intermediate and Advanced

Evaluation of Atomic Grammar Reference Website

The researchers launched the website and invited a number of students from the researchers' university and also some secondary school students to use the website. One hundred and twenty-three students participated to evaluate the website by using their tablets/ smartphones and computers. Thus, it can be concluded that Atomic Grammar website is accessible via computers and mobile gadgets. The statistics also showed that 65.9% of the students used their mobile devices to use dictionary, 49.6% to learn a language and 0.8% for study purposes. Although most of the responses about the main usage of their mobile devices were about non-educational purposes, there were some students who use their devices for academic purposes which is promising for educational website developers.

As for the overall feedback of the website, students were required to rate their responses to five items adapted from Li and Hegelheimer (2013). Only five out of eight items were selected to be included in the questionnaire because they were the most relevant to the website use. A summary of students' responses to the statements is as follows:

Table 2: Students' overall feedback about Atomic Grammar

	Completely disagree	Disagree	Neither agree nor disagree	Agree	Completely agree
Atomic Grammar is easy to use on my mobile device or computer.	0.8%	8.9%	17.1%	39.8%	33.3%
The explanation in Atomic Grammar is clear.	0.0%	4.1%	11.4%	39.0%	45.5%
The errors in Atomic Grammar are the common errors in my writing.	0.8%	6.5%	17.9%	35.8%	39.0%
The practice in Atomic Grammar can help me notice errors in my writing.	0.0%	4.9%	11.4%	38.2%	45.5%
The practice in Atomic Grammar can help me notice errors in my peers' essays.	0.0%	8.1%	17.9%	39.8%	34.1%

Based on the responses, most students held a positive perception towards Atomic Grammar and its use as a reference for ESL writing. The finding is almost similar to Li and Hegelheimer's (2013) study in which the students positively viewed Grammar Clinic as effective in drawing students' attention towards noticing their own errors and that of their peers in writing. Although the feedback was not given directly to their own

writing, the website proves that it is also useful for students as they can read the comments on grammatical errors which frequently occur in ESL students' writing. Kim (2015) asserted that written corrective feedback is efficacious in attracting students to notice grammatical features and encouraging them to make self-grammatical revisions. Despite the usefulness of corrective feedback, Pan (2010) reported that the students' linguistic accuracy may not be significantly facilitated by teachers' feedback of their errors if it is not reinforced by adequate exposure to grammar use and practice in reading and writing. Thus, Atomic Grammar may not be sufficient for students to help in their ESL writing improvement unless its use is supplemented by additional instruction and practices in class. Integrating technology in language class does not mean that teachers give total freedom to students and let them navigate their own learning because teachers should also provide students with feedback and correction on language use (Kukulska-Hulme, Norris & Donohue, 2015).

From the open-ended feedback of Atomic Grammar, most of the students suggested that more quizzes should be incorporated in the website. The responses indicate that students enjoy learning through error correction which is accompanied by comments and written feedback of the errors. Through the quizzes, they get to test their own understanding after reviewing the errors highlighted in the Atomic Grammar. The three sets of quizzes in Atomic Grammar is a form of summative evaluation which is often conducted at the end of a unit. Through assessments, students can judge their degree of learning achievement which is represented by the numerical ratings or scores (Taras, 2005). McDaniel, Wildman and Anderson (2012) averred that students who do online quizzes without teachers' supervision show increased performance in examinations. The findings imply that students can enhance their understanding of topics by doing additional quizzes of their own volition. This is one aspect that is taken into consideration in developing Atomic Grammar as it strives for autonomous learning in which students exhibit an active and independent learning attitude (Dickinson, 1995) for more significant learning outcomes.

Conclusion

The study reports the development of Atomic Grammar which is a reference website of common ESL grammatical errors in writing. The main objective of the website is not to teach ESL students the rules of the use of parts of speech, but to document the frequently committed errors and provide reasons for such errors. Although fluency – one's ability to use a language spontaneously, easily and smoothly (Housen, & Kuiken, 2009) may be sufficient in delivering one' message, accuracy which is one's ability to produce grammatically correct sentences and to what degree the structure (while errors are deviations from a

linguistic norm) (Housen, & Kuiken, 2009) is one of the main components in scoring rubric of writing evaluation. The more proficient students who are able to produce grammatically accurate sentence structures will usually score higher in the language ability as opposed to less proficient students. Therefore, ESL grammar lessons remain necessary throughout the learning stage even at the tertiary level to enhance students' proficiency and ability to produce language more accurately in the productive skills.

Atomic Grammar was developed based on noticing hypothesis in which attention and awareness are the main elements highlighted because in order for second language learners to have the awareness, attention should come first. When learners pay attention to the input given to them, they will be aware of any language errors. This kind of awareness is closely related to the level of noticing; however, Schmidt (1990) also introduced another higher level of awareness which is identified as understanding. From this understanding level, it will create a deeper learning of the second language. In this hypothesis too, there are three stages of the learning process; it starts with input and then converted into intake and finally the output will be produced by the second language learners. To further enhance learners' ability of noticing, written corrective feedback could be provided to them and the most influential written corrective feedback is direct error correction. In short, noticing hypothesis plays a significant role in producing robust second language learning.

Nonetheless, the present study is not without its limitations. Because the data of grammatical errors were collected only from 80 samples, future studies are recommended to include a larger size of sample of essays to generate a broader repertoire of common ESL errors which can be included in the website. The study also examined the errors committed by learners who speak the same first language, so, their errors are largely influenced by the transfer on one type of language only. Examining errors produced by students who have a different language background or speak different languages as their first language will yield a different set of data which is useful for ESL teachers and website developers. Finally, the researchers suggest an experimental study to investigate the effects of online corrective feedback on students' performance in their writing skills with the use of Atomic Grammar as an instrument for the research treatment and alternative to most common feedbacks provided by ESL teachers. Past studies (e.g. Benson & DeKeyser, 2018; Marzban & Arabahmadi, 2013; Sachs & Polio, 2007; Van Beuningen, De Jong & Kuiken, 2012) have reported the positive correlation of corrective feedback and students' writing performance in which the feedback is given in a written format instead of online.

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