Developing an Effective English Writing Assistant Based on the AWE System

Jae-il Yi[a], [a]College of General Education, Semyung University, Jecheon-si, 27136 Korea, Email: [a]nayltd@semyung.ac.kr

Conveying thoughts to other people as clearly and concisely as possible is a priority in writing, especially when the writer is an L2 learner. This paper proposes a system that utilizes the AWE process to enhance the clarity of a text written by a non-native English speaker. The system is designed to analyse English sentences, deconstruct them into essential and optional elements, and then give the user the choice to modify or delete selected elements. The system proposed in this study will comparatively analyse the user's vocabulary and sentence structure, and present them with relatively universal synonyms and an improved sentence structure to ultimately create a sentence that clearly conveys its meaning. The proposed system distinguishes sentence elements, subjects, verbs, objects, complements, and adjuncts by deconstructing the sentence into units. Among these sentence elements, adjuncts are considered to be optional elements and the remaining elements are considered to be essential to completing a grammatically appropriate sentence. However, each essential element may contain various additional words and adjuncts that make the sentence fancy or give the sentence various meanings. These additional words often complicate the sentence structure and interfere with L2 learners' mutual communication. Through further research and development, these additional words and adjuncts can be introduced into the system to enhance the structure of a given sentence according to the user's English level. In modern societies, English is a global language used for communication by people of different nationalities. In many cases, complicated sentence structure plays a crucial role in misunderstanding the English language. Therefore, the development of software that simplifies complicated sentence structures and makes clear communication possible will further improve the status of English as a global language.

Key words: *Computer Assisted Writing, AWE, English sentence elements, Semantic Scope, Lexical Synonym, Structural Complexity.*

Introduction

In modern society, English is not a language limited to a particular country, rather, it is a popular language used by people of different nationalities to communicate with the world. In an EFL environment, it is uncommon to have direct contact with people who speak English as their first language. In this limited environment, English learners often take detours to improve their linguistic skills by reading and writing English sentences. Typically speaking, English writing requires an advanced level of linguistic ability in terms of linguistic education. In order to write at a relatively high level, it is imperative that the language skills of the writer are above average levels (Rivers, 1980). English writing requires high levels of linguistic ability because it is difficult to apply correct grammar in sentences that include various kinds of rhetoric phrases and unfamiliar language.

Nowadays, with the development of computer technology, the Automated Writing Evaluation (AWE) system can help the English writing process. AWE literally refers to a computer technology that helps learners to correct mistakes by examining the grammar, spelling, and punctuation of sentences that have been entered into the computer. The software is designed to evaluate sentences written in English and give the user feedback so that they may modify the initial sentence. A variety of computer applications are being developed using the AWE system to help English learners improve their English writing skills. Although it depends on the individual's English language level, in general, the most important factor in writing is to convey the writer's thoughts to another person as clearly and concisely as possible. The English level of people who need to write in extended English learning courses, in everyday life, or in business activities varies greatly from person to person. However, for non-native English speakers, the most effective way to communicate in English is to use concise and clear sentences. One of the main factors that complicates English sentences is the use of excessive adjuncts – in other words, the use of modifiers. Adding excessive adjuncts to a sentence is beneficial for native English speakers because they make the meaning of a given sentence rich and versatile. However, for non-native English speakers, excessive adjuncts complicate English sentences and cause grammatical errors. Therefore, if we can develop and use a system designed to selectively exclude optional sentence elements in order to focus on the sentence's core meaning, this will allow users to make and use grammatically legitimate sentences. This paper proposes a system that can divide a sentence into essential and optional elements, deliver feedback to users, and remove or modify unnecessary elements according to user selection.

Background and Related Work

The flow of time and the development of technology has diversified the ways to learn foreign languages. However, this does not mean that traditional methods of learning English have

completely disappeared. In this section, we will observe multiple studies on English writing methods from both the past and the present. English writing methods have traditionally been accomplished through mutual communication between instructors and learners in a classroom. Various technologies and advanced techniques based on these traditional learning methods have been used to diversify learning methods and improve learning efficiency. In recent years, a variety of online-writing-assistant tools have been developed for users to take advantage of. In addition to these tools, computer-aided writing tools such as improved word processors, spelling checkers, and grammar checkers can be utilized by people who need to write in English.

Traditional English Writing Practice

In the 1970s, English writing education began as a way to teach English grammar through a method called Controlled Writing (Raimes, 1983). Today, this type of English writing education is the most common learning method in an EFL environment. Controlled Writing is a learning method that has learners acquire English expressions by repetitively learning examples used in textbooks and memorising English expressions through one-on-one correspondence with their native language. This learning method is an appropriate strategy for learners to learn the target language's structure. Controlled Writing improves the learner's ability to use the target language by training them to acquire knowledge of vocabulary, grammar, and punctuation based on text book examples (Olshtain and Celce-Murcia, 2001). Unlike the Controlled Writing method, Summary Writing Education is advantageous for learners as it allows them to clearly memorize the content and meaning of a text by summarizing the important parts. The summary methods suggested in Summary Writing Education include 'deletion' – a process that excludes non-important or repeated information – and 'reconstruction' – a process that presents additional information from the reader's point of view (Garner and McCaleb, 1985; Brown et al., 1981). This strategy of summarizing the writer's thoughts and learning English writing through control and summarization techniques can be said to have both advantages and disadvantages. Common errors made by English learners during the English writing process include the use of improper adverbs, incorrect subject and verb concordance in complex sentences, and errors in proper vocabulary selection.

AWE Utilization in English Writing Practice

The necessity and utility of English writing is increasing due to the development of advanced technology. Communication via e-mail or SNS is rapidly increasing due to frequent international exchanges of information, – proving the necessity of English writing. The development of advanced technologies and devices is expanding the classroom learning environment for the lives of learners. In the digital age, smart media has become a new educational medium for it improves mobility and accessibility. Learning English writing by

using communication devices available to learners in their daily life is effective for learning on an individual level and is very useful for constructing a self-directed learning environment. Mobile language learning is utilized to increase the effect of learning, leading to various software developments that help users learn English writing. The development of an English writing method using computers has been carried on to an automated writing evaluation (AWE) level, designed to help English learners evaluate English sentences that they themselves have written. The AWE system corrects errors and gives feedback to the learners so that they may make improvements on the original sentence (Dikli, 2010). One of the disadvantages of the AWE system is that the feedback it provides is complex, and L2 learners who do not have enough of an English learning background often find it difficult to understand the essential points (Dikli, 2010; Wang et al., 2013). On the other hand, in the AWE system, feedback is given to the user in real time. As a result, the learners' writing practice and self-editing opportunities will increase, which can be a potential benefit to L2 learners (Chandler, 2003).

Sentence Intuitiveness Enhancement System

The core of the system proposed in this study is to mitigate feelings of frustration and loss experienced by non-native English speakers during the process of learning English. The system will automatically or selectively remove additional words that are unnecessary to the sentence's basic meaning. By omitting unnecessary sentence elements, English sentences can be simplified and clarity in communication can increase (Nunan, 2003).

Intuitiveness Enhancement English Writing

The elements that constitute English sentences can be classified into 5 categories: subjects, verbs, objects, complements, and adjuncts. Of these five categories, adjuncts are considered to be non-essential elements generally used to convey detailed meaning or additional information. For those who speak English as their first language, it is not overly burdensome to use a variety of adjuncts in the communication process. The use of various supplementary elements is useful for making a sentence fancy, and there are many cases where the use of various supplementary elements assists mutual communication based on deep vocabulary. However, for non-native speakers, basic vocabulary is often limited and fancy and difficult vocabulary is unnecessary for conveying their thoughts. In most cases, those who do not speak English as their first language are unaccustomed to communicating through sentences with complex vocabulary and fancy structure (Firth and Wagner, 1997). L2 learners are able to communicate sufficiently with intuitive and simple sentence structures. When L2 learners use intentionally complex grammatical structure or vocabulary, grammatical errors and ambiguous sentence structures can be induced, causing confusion in mutual communication (Ferris and Roberts, 2001; Kirkpatrick, 2011; Moussu and Llurda, 2008). Therefore, this study

proposes a system designed to present intuitive English sentence structures that fulfil basic meanings to the users. Fig. 1 below is a flow chart of a proposed system designed to improve the intuitiveness of English sentences written by the user through simplification.

Figure 1. Intuitive Enhancement System for English Sentence
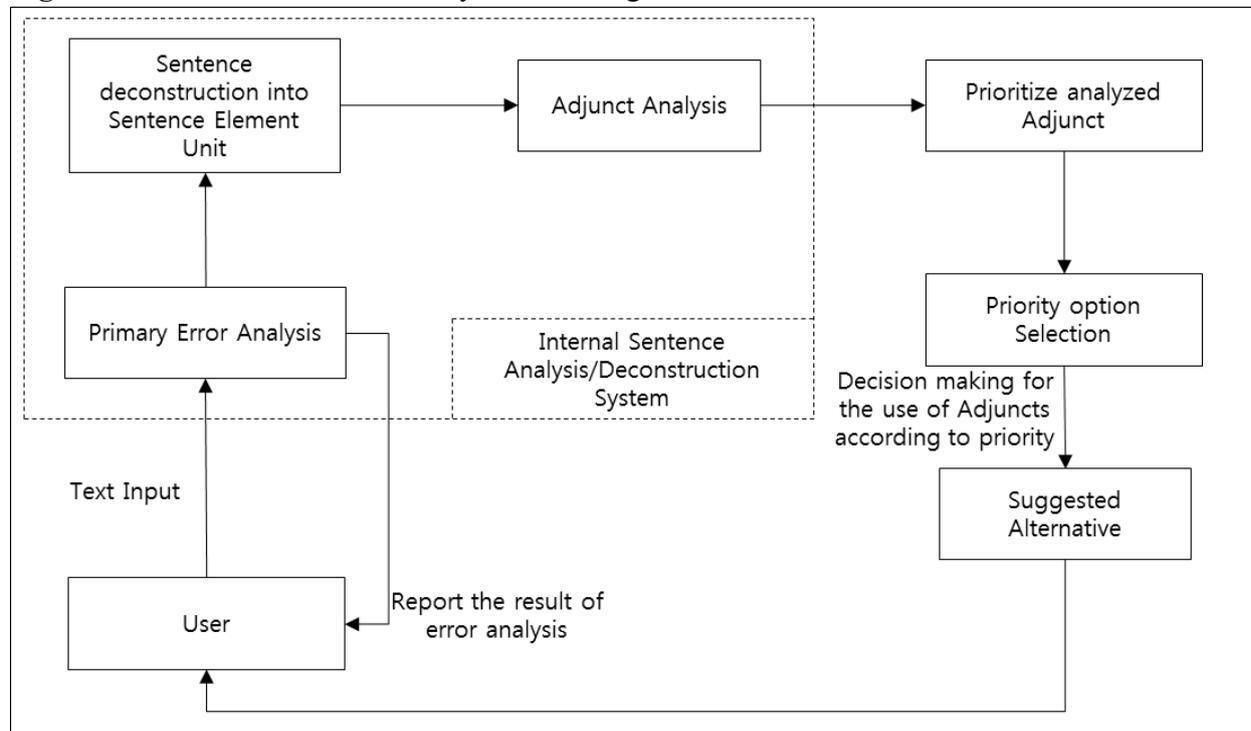
The proposed system consists of a dual structure that includes a Sentence Analysis/ Deconstruction System. When a user enters a sentence into the system, a sentence error analysis is performed. If a serious error is found during this process, the error is reported to the user, and the user must modify the initial inputs and reconstruct the initial sentence to make it more appropriate.

Sentence Deconstruction Process

During the primary error analysis stage, the Internal Sentence Analysis/Deconstruction System deconstructs the inputted text into sentence elements. Each deconstructed sentence element is classified as essential or optional through an additional element analysis stage. Sentence elements classified as optional by the internal system are prioritised according to their importance. These optional elements are given priority according to the user's English level. The system is designed to provide the final output by suggesting an alternative to the initial text. The sentence analysis and reconstruction process and the Internal Sentence Analysis / Deconstruction System is shown in the below Fig. 2.

Figure 2. Internal Sentence Analysis/Deconstruction System Process
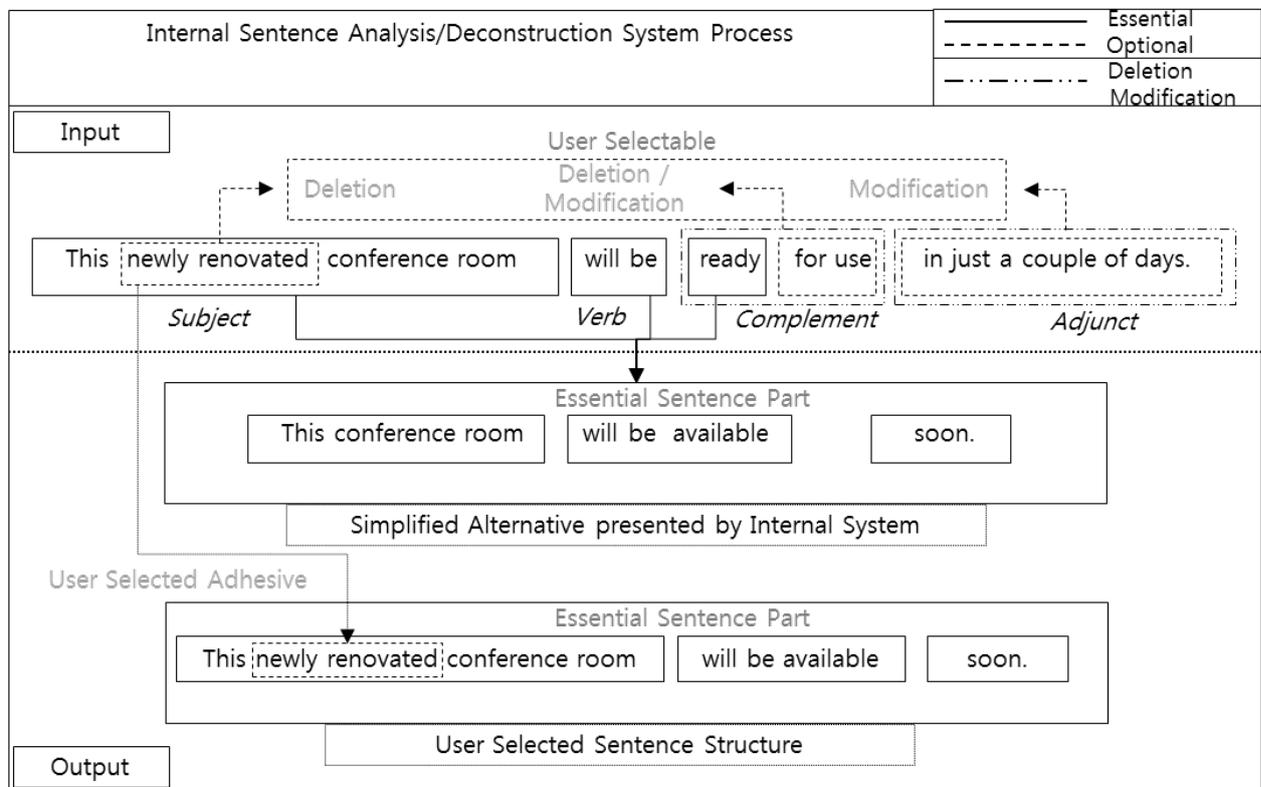
The Internal Sentence Analysis/Deconstruction System distinguishes the inputted text by subject, verb, object, complement, and adjunct on the basis of the sentence verb. The sentence elements classified in this way are once again classified as essential and optional sentence elements. In this sentence analysis stage, semantic perspectives are applied and adjuncts that are considered to be important to the meaning of the sentence are identified and classified as optional essential elements, thereby giving priority over the sentence elements categorized as non-essential. Additionally, the supplementary elements inserted in the essential elements are also categorises as optional elements, and the sentence structure is subdivided so to achieve intuitive optimization.

The inputted sentence in Fig. 2 is "This newly renovated conference room will be ready for use in just a couple of days". In this sentence, there are both essential and optional sentence elements. The Internal Sentence Analysis/Deconstruction System shown in Fig. 2 deconstructs the sentence into sentence elements, units, subjects, verbs, objects, complements, and adjuncts. Each deconstructed sentence element is defined as an unacceptable sentence element or an acceptable sentence element, both of which can be deleted/modified. The analysis result is displayed for the user to recognize, and they can then choose whether or not to use the selected element. However, an optimized alternative sentence that does not require the user to make any individual selections is automatically presented to the user, so to

guarantee the optimization of the sentence regardless of the user's English ability. In this process, the system utilizes a multiple output system designed to give the user the option to delete/modify individual elements.

Lexical Scope Analysis

In the User Selection step in Fig. 2, the process of correcting vocabulary is crosschecked by calculating the semantic range of the Lexical Synonym, calculating the relatively universal vocabulary, and presenting an alternative sentence to the user using the selected vocabulary. Synonym selection and universality calculation is determined using corpus, which checks the frequency of use of vocabulary and infers causal relationship between vocabulary. Fig. 3 illustrates the alternative vocabulary selection process by analysing the semantic scope of the vocabulary.

Figure 3. Lexical Semantic Scope Analysis
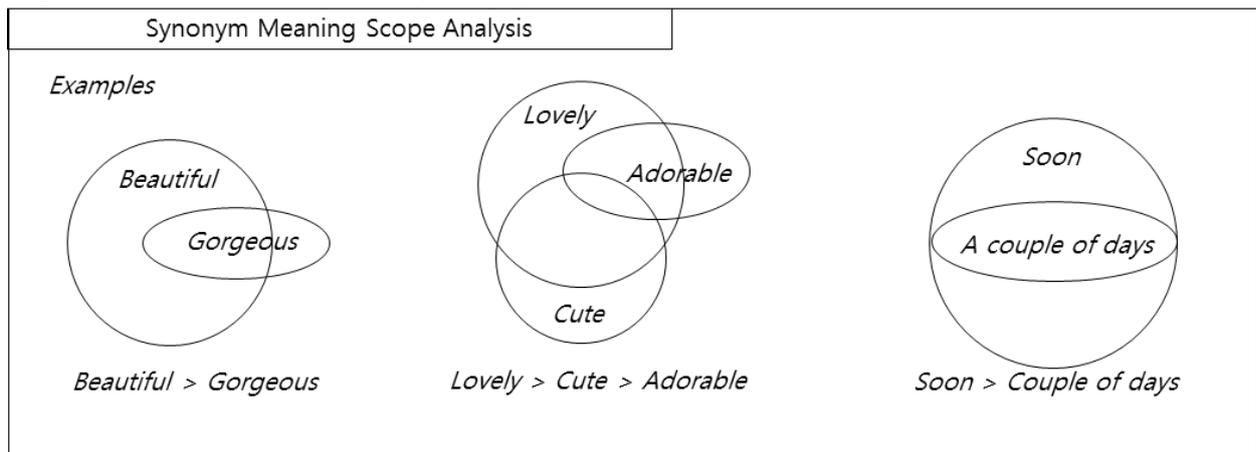
As shown in Fig. 3, the ratio of Lovely and Adorable is 5.86 to 0.18, the ratio of Lovely and Cute is 1.38 to 0.78, and the ratio of Cute and Adorable is 4.12 to 0.24. The overall ratio can be organized as Lovely> Cute> Adorable. As a result, the most universal word is Lovely, so the system will grant priority first to Lovely, second to Cute , and last to Adorable. Table 1 shows the ratio through word comparison in COCA.

Table 1: Lexical Semantic Scope

Priority	COCA Word Comparison by Ratio[14]	
1	Lovely(1.38)	Cute(0.78)
2	Cute(4.12)	Adorable(0.24)

| 3 | Adorable(0.18) | Lovely(5.86) |

The priorities assigned by the system are not fixed, and it is quite possible that for the user to select a low priority synonym. For example, according to the simplified alternative presented by the system, the sentence "the most beautiful city that I have ever been to is…" is the most universal sentence. However, the user can choose to use "the most gorgeous city that I have ever been to is…". This allows the user to select the vocabulary appropriate for a the intended meaning of the sentence according to the user's level of fluency in English. As a result, the proposed system is designed to provide appropriate level of sentences for English users at various levels, which means that the system can attract users regardless of their English level.

System discussion

In terms of sentence completion, both the existing and the suggested methods show high degrees of completeness. However, the proposed system uses simple vocabulary and structure to ensure that a given sentence is mutually understood. In conclusion, the proposed system is designed to maximize the conveyance of meaning by constructing sentences with relatively simple grammar and vocabulary. For those capable of using grammatically complex sentences, complexity of sentence structure is not a problem when writing a; but, simplicity does matter to low-level language speakers. Therefore, the system that simplifies sentences is much more useful for low to intermediate speakers of foreign languages.

Conclusion

Common computer-aided English writing tools are designed to focus on three things: punctuation, grammar, and spelling. The system proposed in this study distinguishes between essential and optional sentence elements and identifies basic punctuation, grammar, and spelling errors,. The semantic analysis of the user's inputted vocabulary suggests relatively universal synonyms as alternatives. This can create intuitive and concise sentences that bring meaningful results to communication between non-native speakers. It is unnecessary to write English sentences using luxurious vocabulary or fancy sentence structure unless the writer is a person who uses English in a professional environment. Clear communication is most effective when L2 learners construct simple and intuitive sentences. Therefore, it is good to use the proposed system to write English sentences that are concise and faithful to the sentence's core meaning. In order to achieve such a result, further research should be carried out so that a system useful for high level L2 learners that reinforces user choice can be implemented.

REFERENCES

Brown, AL., Campione, JC. & Day, JD. (1981). Learning to learn: On training students to learn from texts. Educational Researcher, 10(2):14-21.

Chandler, J. (2003). The efficacy of various kinds of error feedback for improvement in the accuracy and fluency of L2 student writing. Journal of Second Language Writing, 12(3): 267-296.

Dikli, S. (2010). The nature of automated essay scoring feedback. CALICO Journal 28(1): 99-134.

Ferris, D. & Roberts, B. (2001). Error feedback in L2 writing classes: How explicit does it need to be?. Journal of Second Language Writing, 10(3): 161-184.

Firth, A. & Wagner, J. (1997). On discourse, communication, and (some) fundamental concepts in SLA research. The Modern Language Journal, 81(3): 285-300.

Garner, R. & McCaleb, JL. (1985). Effects of text manipulations on quality of written summaries. Contemporary Educational Psychology, 10(2):139-149.

https://www.english-corpora.org/coca/

Kirkpatrick, A. (2011). English as an Asian lingua franca and the multilingual model of ELT. Language Teaching, 44(2): 212-224.

Moussu, L. & Llurda, E. (2008). Non-native English-speaking English language teachers: History and research. Language Teaching, 41(3): 315-348.

Nunan, D. (2003). The impact of English as a global language on educational policies and practices in the Asia-Pacific Region. TESOL Quarterly, 37(4): 589-613.

Olshtain, E. & Celce-Murcia, M. (2001). 36 Discourse Analysis and Language Teaching. The handbook of discourse analysis. Malden, Massachusetts: Blackwell Publishers; p.707.

Raimes, A. (1983). Techniques in teaching writing. New York: Oxford University Press.

Rivers, WM. (1980). Foreign Language Acquisistion: Where the Real Problems Lie. Deseret Language and Linguistic Society Symposium, 6(1): 1-13.

Wang, YJ., Hui-Fang, S. & Paul, B. (2013). Exploring the impact of using automated writing evaluation in English as a foreign language university students' writing. Computer Assisted Language Learning, 26(3):234-257.