ENHANCING ESL WRITING SKILLS IN PAKISTAN: THE ROLE OF AI-DRIVEN COMPUTATIONAL MODELS

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ABSTRACT

English as a Second Language (ESL) learners require great deal of motivation to acquire a second language, they are, however, very likely to face numerous challenges. Nevertheless, combining AI and computational models has enormous potential for improving language acquisition. Such models allow Pakistani ESL learners to receive constant feedback on their written work, which subsequently helps them improve their academic writing skills. Due to their grammatical and writing skills in English, many of the students from Pakistan need help completing their English composition papers. This article considers how cognitive and computational models can be used to overcome these barriers and analyzes their prospects for practical implementation in Pakistan. We focus on the problem of redundant phrasing, inappropriate use of prepositions, and choosing the wrong words. We also suggest computer programs that help classroom teachers reduce their workload while maximizing their students' performance.
Keywords: *Artificial Intelligence in ESL Learning, Systems for feedback in Writing, Tools based on AI for English grammar.*

INTRODUCTION

English is an essential language in Pakistan and is used in all education, government, and commerce areas. However, as a foreign language, English has become a big problem for many Pakistani learners, especially in writing. Because of the complexity of English grammar and sentences, many English learners with little experience get overwhelmed. In addition, many Pakistani ESL learners have the accentuated problem of having a language immersion deficit, which lowers their chances of communicating in English.

Addressing these challenges, we propose that computational models and AI-assisted tools, with their adaptability, can be a significant aid. Technologies such as natural language processing (NLP) and machine learning can minimize errors and enhance the learning experience for students. This paper aims to evaluate the relevance of models developed by Xue and Hwa (2010, 2014) in improving writing skills among Pakistani ESL learners. Our focus is on three key areas: repetition, preposition misuse, and lexical choice, and how these models can be tailored to the specific needs of the Pakistani education system (Akram et al., 2020).

Background

Among other things, writing proficiency among Pakistani ESL learners is considered a formidable task. It is due to the cultural context and the need for adequate exposure to the language. Moreover, where Urdu, Punjabi, and Sindhi are predominant, language differences further aggravate the issues (Bokhari, 2015; Rahman, 2002). Research conducted in the past indicates that Pakistani students lack creativity, do not understand the usage of prepositions,

choose wrong words, and are guilty of excessive redundancy (Mahboob, 2015; Mansoor, 2004). Such barriers prevent adequate expression of ideas when communicating in English, adversely affecting educational performance and employment opportunities.

In a recent paper by Xue and Hwa (2010) on ESL, the authors design computational models and provide tools that enable ESL teachers to work smart by automating the detection of redundant elements, starting with their email communications and extending to grammatical errors and self-correcting suggestions. This paper presents the application of Xue's techniques but emphasizes the requirements of Pakistani students as severe educational paradigms are being addressed. Besides, AI-powered models offer a potential alternative means for enhancing writing skills using large corpora to provide relevant advice and suggestions ad hoc, which could be particularly useful for Pakistani ESL learners.

Challenges Faced by Pakistani ESL Learners
Redundancy in Writing
Pakistani students never seem free from this problem; they seem to have this problem of redundancy as they come from a native background, and most of the time, they repeat essential points in their languages to stress them out. To put it succinctly, the detection and reconstruction of redundancy are instrumental in effective writing. Xue and Hwa's system deploys a machine-learning approach to redundancy detection. Such a framework for Pakistani learners could focus them on removing the redundant factors in writing, thus boosting their fluency.

Metaphor and Preposition Misuse
Pakistani ESL students view prepositions as metaphors – no more and no less. Many Pakistani students find it difficult to use proper prepositions properly because they are not enough in their regional languages. As these students seem less proficient in both English and regional languages, it could be very confusing for them; prepositions are another category where Pakistani students repeatedly make the same mistake. Xue and Hwa (2014) alleviate the concern by suggesting confusion sets to remind students about more sensitive prepositions. This model would also allow for correcting preposition misuse in terms of writing without needing to proofread the assignments, leading to improved efficiency.

Word Choice Errors
Sometimes, Sri Lankan ESL students translate directly from their first language to English because they need help finding appropriate English words or have no knowledge of idioms. The confusion set proposed by Xue and Hwa (2014) can assist in predicting the correct word by allowing the context to rule. It thus can help broaden-broaden the angle of these Pakistani learners' academic vocabulary and possibly make them commit fewer errors.

AI-Enhanced Computational Models for Writing Improvement
Redundancy Detection
The redundancy detection model is based on supervised Machine Learning to extract redundant information using n-gram language models (Rozovskaya & Roth, 2010). N-gram language models are a type of probabilistic language model that predicts the next item in a sequence, based on the previous n-1 items. The same method can be used when training this model on Pak English corpora, where the model can learn common mistakes and provide specific feedback. AI techniques can also be helpful, as they can learn over time and increase response accuracy while giving feedback to Pakistani learners.

Correction Rationale and Feedback Automation
An ESL teacher usually focuses much of his time on explaining mistakes and how the students can correct them. The proposal put forth by Xue (2010) aims to mechanize this practice with the help of a correction classification model capable of recognizing and justifying several types of errors, such as grammatical or redundancy. The potential of artificial intelligence resources to further enhance and refine these models is a promising development for ESL

education, particularly for Pakistani learners.

Confusion Set Construction
As mentioned, 'set theory'is indispensable for error prediction task components. Xue and Hwa (2014) constructed systems that clustered the words that the learners of English as a second language were likely to get confused with. These models are not fixed, and, with the aid of AI, they can adapt and modify the confusion sets from the existing ones due to new error patterns (Felice et al., 2014). This adaptability is a reassuring feature for Pakistani learners and helps the teachers refine their strategy in terms of grammar corrections. Implementation in the Pakistani Context

Building a Corpus of Pakistani English
In order to verify the accuracy of these computational models, it is necessary to create a developed corpus of Pakistani English containing a representation of many grades and known errors (Dahlmeier et al., 2013).

Training Machine Learning Models
This corpus would train machine learning models, marking redundancy, misuse of a preposition, and word selection. This would assist in customizing the models to work with learners from Pakistan.

Integration into Educational Systems
These computational models could be adapted into the present college and university education systems by incorporating literary online tools, classroom assistance tools, and self-learning modules. It will provide timely feedback, exemplary classroom instruction, and enhanced utilization of students living in rural regions.

The advantages that computational models boast of are enormous. However, problems such as the need for more technology access in rural areas, teacher training, and issues about languages, among others, need to be addressed in this regard. Constructing bilingual interfaces for these tools would address the problem and ensure that many users can utilize these tools.

Conclusion and Discussion
English as a second language students in Pakistan are disadvantaged and need help in attempting to write in English. Even though the population of Pakistan is increasing the number of students studying English, AI-powered computational models are brilliant and can be the answer. This would, in turn, lead to more focused English learning and an increase in the marketable skills of Pakistanis, such as models for redundancy detection, confusion sets, and automated feedback systems. The factors motivating the use of such models would be the probable improvement in the writing of these learners and eventual enhancement in their education and marketing aspects (Rahman, 2002; Shamim, 2008). Many focused scholars should design the research entities to design a last word in Pakistani English corpus and assess these models' application viability in Pakistan. These cultural and linguistic hurdles separate education for English as a second language students in Pakistan from other countries.

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