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### **Abstract**

This paper examined how artificial intelligence can be utilized in the teaching and learning of English grammar as well its problems and prospects. Concepts such as English language, English grammar, artificial intelligence and teaching and learning were discussed. Equally, the paper looked into related sub-headings such as problems inherent in the teaching and learning of English grammar, need for utilizing AI in the teaching and learning of grammar among others. Based on the literature reviewed, empirical evidences showed that AI teachers unarguably hold the potentials to revolutionize teaching and learning of English grammar by eradicating challenges associated with conventional educational methods. Invariably, AI teachers possess the capabilities to enrich teaching and learning experiences in grammar and help students have an in-depth knowledge about these complex grammatical rules as well as lessen the burden of language teachers. However, while this technological advance in education is imminent and notwithstanding the prospects of AI in teaching and learning grammar, there are also problems inherent in its usage. Thus, the paper concludes that irrespective of the enormous benefits of utilizing AI in the teaching and learning of English grammar, there are also challenges in its usage such as techno-economic and security problems, accuracy and reliability of AI-generated content among others.

**Keywords:** Artificial Intelligence, English grammar, Teaching and Learning

### **Introduction**

One of the emerging issues at the moment is the use of Artificial Intelligence (AI) in teaching and learning processes. The domineering rate and pace of AI in education is obvious worldwide. The use of AI in education is gradually transforming various dimensions of the education system, such as instructional practices, assessment strategies, and administrative processes. With the emergence of this recent technology, there is always a lot of hype and skepticism surrounding its application in the teaching and learning process. This skepticism centers on its impact on students' learning outcomes, contexts of its adoption, students' and teachers' perceptions about its use, and the challenges of its use within education sectors. Empirical evidences show that AI is capable of actions and behaviours that depict intelligence possessed by humans. As articulated by Shobomehim (2021), AI unarguably

holds the potential to revolutionize the teaching and learning of English grammar by eradicating challenges associated with conventional educational methods.

Thus, the above assertion is an indication that the application of AI in teaching and learning English grammar especially in countries where English is learnt as a second language is a welcome idea as the use of AI in the teaching and learning of English grammar can help students have an in-depth and clearer understanding of grammar as well as learn grammar at their own pace. Since grammar is concerned with the rules governing language use and English language is taught and learnt as a second language in Nigeria, it means there are challenges its teaching and learning undergoes such as lack of expertise and competence on the part of the teachers' as well as limited resources in teaching, lack of motivation on the part of learners due to complex grammar rules, limited practice opportunities for learners, linguistic differences in learners native languages among others. Since AI unarguably holds the potential to revolutionize the teaching and learning of English grammar, it is however not without problems especially in underdeveloped countries of the world such as Nigeria. The focus of this piece therefore centers on how AI can be utilized in the teaching and learning of English grammar as well as its problem and prospects. To this end, clarifications of concepts such as English language, English grammar, artificial intelligence, teaching and learning in this perspective are required.

### **Conceptual Clarifications on English language, English grammar, Artificial Intelligence, Teaching and Learning**

The English language is originally the speech of the Angles which is one of the three Germanic tribes that invaded England during the fifth century. According to Richard (2020), the English language is the primary language of several countries, including Australia, Canada, New Zealand, the United Kingdom and the United States, and the second language in a number of multilingual countries, including India, Singapore, Philippines, Liberia, South Africa, and Nigeria where it also serves as the official language. English as a language is learned around the world by children in schools as either a second or foreign language and often becomes a common denominator between people of different nationalities when they meet while traveling, doing business, or in other contexts. As explained by Shobomehim (2019), English has been universally acknowledged as a world language because of its use for worldwide communication in every aspect of human endeavour. With particular reference to Nigeria, the English language plays a crucial role in education of its citizens. It is the language of instruction at different levels of education as well as the yardstick for measuring who is educated or not. It is a tool for success and excellence in Nigeria's academic world and even the world generally. Literacy and oracy in English play a key role in acceptance and success anywhere in the country.

The English language is the centre piece of teaching and learning in Nigeria. Due to the value attached to the status and study of English language in Nigeria, Igbokwe & Akabogu, (2010) assert that Nigerian students in all institutions of learning are expected to have an appreciable degree of proficiency in the use of the language especially in reading and writing, so that they can go through their studies with little linguistic impediment and also

function effectively in their respective societies after school. However, for students to be able to do well in literacy skills as well as in speaking, they must have a good knowledge of the grammatical rules of English.

Grammar can be simply explained as the rules that guide the usage of a language. It can also be seen as the principles and rules that govern the use of language. In other words, grammar refers to those rules which users of a language observe consciously or unconsciously in order to be able to use such a language correctly and effectively. In the view of Nordquist (2024), grammar is the systematic study and description of a language. The author further explains that grammar is a set of rules dealing with the syntax and word structures (morphology) of a language. For Crystal (2006), grammar is the study of all the contrasts of meaning that is possible to make within sentences. Crystal further explains that grammar is the set of rules for how language is structured as demonstrated by its speakers or writers.

English grammar is the set of structural rules of the English language. It includes the structure of English words, phrases, clauses, sentences and whole texts. Ittianath (2024) expresses that English grammar is a method through which users connect words to form a meaningful sentence with the help of some general rules applied. In the context of this paper, English grammar is the set of rules guiding the usage of English language as depicted in speaking and writing that accounts for correctness or incorrectness of learners' expressions.

There is no universally acceptable definition of AI. However, a comprehensive definition of AI as Besaw and Filitiz (2024) had it refers to computing systems that can engage in human-like processes such as learning, adapting, synthesizing, self-correction and use of data for complex processing tasks. The underlying concept of AI presupposes the creation of intelligent machines capable of learning from their environment (via data collection and analysis) and replicating tasks hitherto attributed to humans. Artificial intelligence is a machine that thinks, understands languages, solves problems, diagnoses medical conditions, keep cars on the highways, play games like chess and other related activities. AI is often defined as a computer system with the ability to perform tasks commonly associated with intelligent beings. As expressed by Brynjolfsson, Erik and McAfee (2012), artificial intelligence is commonly defined as a scientific discipline; as the activity that creates machines that can function appropriately and with foresight in their environment. Artificial intelligence deals with the development of systems that act more or less intelligently and are able to solve relatively hard problems. As recorded by Aberšek (2015), its methods are often based on the imitation of the human problem solving. It is a technology that is capable of actions and behaviours that require intelligence when done by humans. In the context of this paper, Artificial Intelligence is limited to its teaching and learning aspect.

Teaching and learning are interrelated. However, the concept of teaching has been defined in different ways by different scholars. While the lay person refers to teaching as what the teacher does in the class with the learner to make the learner learn, some scholars

such as Izuagba, Anyanwu, Obiefuna and Afurobi (2008), assert that teaching goes beyond this, as it refers to other related activities designed by the teacher for the learners, which take place in and outside the class to ensure that learning take place. In a similar view, Afe, Ezeonu, and Edozie (2014) had it that teaching is a process by which a teacher guides the learner in the acquisition of knowledge, skills and attitudes, a system of interactions involving the teacher, the learner and the learning task. Through teaching, skills and new knowledge are imparted into the learners.

Learning is an unending process of interaction between the learner and his environments. It is unending because it starts from birth and continues till death. Learning is acquiring new or modifying existing knowledge, behaviours, skills, values or preference and may involve synthesizing different types of information. Learning does not end with the acquisition of new knowledge or skills or ideas. Onyejekwe (2006) reiterated that the acquired knowledge or skills must be habitually utilized by the person who acquired them for learning to be said to have occurred. Learning is a process through which behaviour is initiated, modified and changed. The main objective of learning is to bring certain desirable changes in the behaviour of the learners.

Teaching and learning are closely allied such that qualities and skills employed in the teaching process will determine the level of behavioral change in the learner. For effective teaching and learning to occur, the role of the teacher is very important, very complex and challenging. Thus for learners to learn English grammar very well, it demands that the English language teacher should be very competent and flawless in teaching the grammatical rules of the English language. This however, is not usually the case in many linguistic classrooms where English is taught as a second language as many language instructors are not very competent in handling these rules due to the fact that they are not native speakers but are people who themselves have learnt the target language as L2 coupled with limited resources that could have helped teachers in teaching grammatical rules.

Since grammar accounts for correctness or incorrectness of learners' expressions especially in terms of speaking and writing, there is great need for educators to employ different resources and technologies such as AI in teaching English grammar in order to help learners learn these rules clearly and correctly and also to supplement classroom instruction in order to curtail the problems inherent in the teaching of English grammar.

### **Problems encountered in the teaching and learning of English grammar**

English grammar which is a set of structural rules that guides the usage of the English language encounters a lot of problems in its teaching and learning especially in countries where English is taught as a second language. Some of the problems as discussed by Yusob (2018), are: handling large classes, time limitation for practice, handling learners from mixed linguistic background, teachers low proficiency level, lack of motivation on the part of learners due to complex rules, lack of resources or teaching materials in linguistic classrooms among others. Coleman (2006), asserts that handling large classes has been a challenge for teachers when teaching grammar. The author explains that it is extremely difficult for

language teachers to provide personal attention in a time frame of 40-45 minutes in a class of 40-50 students which results in students' inability in mastering grammatical rules. Coleman further explains that another huge problem in the teaching and learning of grammar is limited time for practice as teachers' due to time constraints restrict teaching grammar to explicit instruction while language constructs in practical communicative contexts are not addressed which results in students ability in stating grammatical rules but unable to apply these rules when speaking or writing.

Another problem encountered as explained byYusob (2018) is teachers' proficiency in the English language. The author explains that in a second language context, some language teachers are not competent as they learnt from educators who are not professionals or experts which will definitely affect their teaching expertise. For the author, other problems associated with teachers proficiency includes level of teaching skills and methods adopted by teachers' in teaching English grammar, lack of confidence in their capabilities and others. Yusob futher explains that lack of technological resources is also a great limitation in addressing students' grammatical needs as second language learners' need a lot of resources in the classroom to have a better grasp of English grammar.

From the above expressions it is clear that the teaching and learning of English grammar is faced with a lot of challenges both on the part of teachers and learners. Due to the fact that grammar is an indispensable part of a language and it is difficult for the teacher alone to handle all the aspects of grammar, it becomes imperative that technological teaching resources such as AI be adopted in language classrooms to help teachers teach with more ease and help learners learn grammar more effectively.

### **Need for Utilizing AI in the Teaching and Learning of English Grammar**

AI, which is an intelligent machine capable of replicating tasks hitherto attributed to humans can be of a great help when utilized in the teaching and learning of English grammar. Research has shown that English grammar faces a lot of challenges in its teaching and learning necessitating the utilization of AI in this sector. One of the needs for utilizing AI in the teaching and learning of English grammar is due to the different tools it possesses that can assist students' in learning grammar effectively. AI enabled platforms such as Grammarly, ChatGPT and Write and Improve provide real time correction, contextual explanations and adaptive learning paths that support learners' at various proficiency levels in the field of language education, especially English grammar instruction (Ranali, 2018; Hsu et al 2021).

Another need for utilizing AI in the teaching and learning of English grammar is that it can provide grammar instruction in a personalized manner that adapts to individual learner's learning style and pace. Monaghan (2021) opines that Talkio AI which is an AI-powered English learning platform can help learners to personally develop their core grammar skills, improve their pronunciation and accent, tackle advanced grammar concepts as well as providing immediate feedback for learners to be able to monitor their progress and address any areas of improvement which motivates students' to engage in continuous learning that enhances their grammar acquisition. AI Talkio also leverages sophisticated



language models that analyzes learners writing and provide in-depth insights into sentence structure, punctuation and contextual nuances.

A cursory look at the above helps one to understand that the use of AI in the teaching of grammar can transform it into a memorable and enjoyable experience for both teachers and learners helping especially learners to learn grammar in an in-depth and interesting manner as well as reducing the burden of educators which will yield positive results in learners use of the target language. Notwithstanding the huge benefits associated with the use of AI in teaching English grammar, a lot of underdeveloped countries experience a lot of problems in applying it in teaching and learning.

### **Problems Surrounding the Application of AI in Teaching and Learning English Grammar**

Notwithstanding the enormous benefits of AI in education, there are several problems that hinders its wide spread adoption in the teaching and learning of English grammar such as techno-economic and security problem, accuracy and reliability of AI-generated content, threat of replacing human teachers among others.

Techno-economic problem is one of the major challenges surrounding the application of AI in teaching and learning English grammar. The optimization of AI in teaching and learning grammar requires an environment with adequate infrastructure, state-of-the-art data facilities and requisite AI expertise, which are largely inadequate in Africa, Nigeria inclusive. As articulated by Buttice (2019), extremely inconsistent information and technology infrastructure represents a major challenge that needs to be addressed by various third world countries, Nigeria inclusive. This is because AI requires robust networks, immense computing power, and stable connections.

Equally, the absence of sufficient technical infrastructures possesses another challenge towards the application of AI in teaching and learning grammar. AI skills and data gaps as well as poor regulatory environments limit the application of AI in teaching and learning grammar. As noted by Goralski and Tan, absence of sufficient technical infrastructures often results in intellectual and financial advantage to some countries, communities and people over others.

Furthermore, there are concerns regarding the accuracy and reliability of AI generated content particularly in language teaching. This is because AI tools may sometimes provide incorrect or misleading information, leading to confusion and misinformation among learners’.

Thus, suffice it to say that no matter how good something may be, it definitely has its weaknesses. Therefore, irrespective of the numerous benefits associated with the use of AI in teaching and learning it is worthy to note that it also has challenges in its use in the classroom.

## **Prospects of Utilizing AI in the Teaching and Learning of English Grammar**

In this paper, prospects in the use of AI in teaching and learning of grammar are grouped into two categories such as the teaching and learning prospects,

**Learning prospects:** Judging from the angle of learning prospects, AI allows smart learning as students can have personalized learning instructions in their areas of interests. With the aid of AI, homework and classes in grammar could be customized based on student's aptitudes, needs and interests, while their overall performance in the assessments could be analyzed to determine relevant resources to help students understand assigned tasks in grammar. AI can play a vital role of a personalized learning resource allocator for students, thereby helping teachers focus more on facilitation, while technology handles the intricacies of teaching and learning grammatical rules, assessment and resource distribution.

Apart from allowing students to learn at their own pace, there might be diverse learning options, some of which may also tackle learning disabilities. The use of AI such as Tutoring Software, robots and humanoids has shown prospects in enhancing the learning experience of students with Autistic Spectrum Disorder (ASD). Similarly, as expressed by the Schools of ICT, Immersive Reader (IR) is an AI service which enhances reading and comprehension through text decoding solutions for students with learning differences such as dyslexia. Equally, AI could also reinforce student learning by combining technology interface with face-to-face interaction as blended learning. Blended learning combines the online delivery of educational content with the best features of classroom interaction and live instruction in such a way as to personalize learning, allow thoughtful reflection, and differentiate instruction from student to student across a diverse group of learners. This is very helpful for learners to practice grammatical rules usage their own and in class for better assimilation and application of these rules.

**Teaching prospects:** based on empirical evidences, it is expected that AI will give flexibility to teachers. Depending on the specific technology, using AI could reduce the burden of attending classrooms, marking papers and other tasks, enhancing the overall teaching experience and quality. The use of AI could assist teachers in identifying the learning needs and abilities of individual students in grammar and developing appropriate measures to respond to such needs. For instance the use of AI Talkio can help teachers identify the grammar needs and abilities of individual students in his/her classroom in order to be able to create appropriate measures in handling these grammatical needs which can be done in the classroom or through tasks given on the AI tool. Also, teacher-facing AI systems are used to support the teacher and reduce workload by automating tasks such as administration, assessment, feedback, and plagiarism detection. As explained by some authors such as Zawacki-Richter, Marin, Bond and Gouverneur, AI could also provide additional support for teachers in analyzing students' data, predicting their academic achievements and proffering solutions to address their learning challenges

## **Conclusion**

AI unarguably holds the potentials to revolutionize the teaching and learning of grammar by eradicating challenges associated with conventional educational methods. Invariably, AI possesses the capabilities to enrich teaching and learning experiences in grammar and other areas of academic learning. Research has shown that there are lots of challenges encountered in the teaching and learning of grammar such as incompetence of language teachers, lack of motivation on the part of students due to complexities in grammatical rules, lack of materials and resources that can facilitate the teaching and learning of English grammar among others which necessitates the utilization of AI in teaching English grammar in order to help learners have an in-depth understanding of grammatical rules, provide personalized learning opportunities to cater for students with different learning styles and needs as well as reduce the burden of teachers in teaching English grammar. However, this paper concludes that irrespective of the enormous benefits of utilizing AI in the teaching and learning of grammar, there are also challenges in its usage.

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