

Evaluating the Effectiveness of Mind Mapping as a Cognitive Tool in Teaching English Grammar in Algerian Higher Education

تقييم فعالية الخرائط الذهنية كأداة معرفية في تدريس قواعد اللغة الإنجليزية في التعليم العالي في الجزائر

Zohra Benamor*

Salhi Ahmed University ; Naama (Algeria)

(Literature and Languages Laboratory, University Center of El Bayadh)

mrszohrabenamor@gmail.com

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Abstract : Grammar is one of the basic foundations of learning a foreign language. It enables EFL learners to form meaningful and correct sentences and express their thoughts clearly and correctly. However, its complexity often makes it a difficult and boring subject to learn, mainly when taught through traditional methods such as direct presentation, lecturing and memorizing. Hence, there is a crucial need for more interactive tools to learn grammar. This study investigates the pedagogical effectiveness of mind mapping as a cognitive and visual tool in improving grammar teaching among EFL learners, majoring in English at university, compared with traditional grammar teaching methods. It explores mainly its relevance for EFL students' grammar comprehension, their motivation and learning engagement. For the field of study and to assess its pedagogical value, a descriptive and critical evaluation is conducted in this piece of research to explore the value of using mind mapping in learning English, mainly grammar. We provide a comprehensive summary of relevant scholarly sources, identifying their important findings. We also address the current situations of teaching grammar within the context of higher education in Algeria, suggesting mind maps as an alternative relevant instructional tool, proving its efficiency through similar studies

Keywords: Grammar instruction ; Mind mapping ; EFL learners ; Learning outcomes ; Learners' engagement ; Higher education

الملخص

تعد القواعد النحوية من الركائز الأساسية لتعلم أي لغة أجنبية، إذ تُمكن متعلمي اللغة الإنجليزية كلغة أجنبية من تكوين جمل صحيحة وهادفة، والتعبير عن أفكارهم بوضوح ودقة. ومع ذلك، فإن تعقيدها غالباً ما يجعلها مادة صعبة ومملة، خاصة عند تدريسها بالطرق التقليدية، مثل العرض المباشر، والمحاضرات، والحفظ دون ربط بمواد أصلية. لذا، ثمة حاجة ماسة إلى أدوات تفاعلية أكثر لتعلم القواعد. تبحث هذه الدراسة في الفعالية التربوية للخرائط الذهنية، كأداة معرفية وبصرية، في تحسين تدريس القواعد لدى متعلمي اللغة الإنجليزية كلغة أجنبية، المتخصصين

في اللغة الإنجليزية في الجامعات، مقارنة بأساليب تدريس القواعد التقليدية. وتستكشف الدراسة بشكل رئيسي أهميتها في فهم طلاب اللغة الإنجليزية كلغة أجنبية للقواعد، وتحفيزهم، وانخراطهم في التعلم. ولتقييم مجال الدراسة، ولتقييم قيمتها التربوية، تجرى في هذه الدراسة عملية تقييم وصفي ونقدي لاستكشاف قيمة استخدام الخرائط الذهنية في تعلم اللغة الانجليزية خاصة النحو. نُقدم ملخصاً شاملاً للمصادر العلمية ذات الصلة، مع تحديد أهم نتائجها. كما تناولنا أيضاً الوضع الراهن لتدريس قواعد اللغة في سياق التعليم العالي في الجزائر، و اقترحنا الخرائط الذهنية كأداة تعليمية بديلة ذات صلة، وأثبتنا كفاءتها من خلال دراسات مماثلة.

الكلمات المفتاحية: تعليم القواعد النحوية، الخرائط الذهنية، متعلمو اللغة الإنجليزية كلغة أجنبية، نتائج التعلم، مشاركة المتعلمين، التعليم العالي

* Corresponding author:

Introduction :

Grammar is the foundation of learning any language since it serves as the structural framework of a language. It provides a set of rules that structure how words are formed and then combined to form meaningful sentences. Learning grammar is essential for mastering a language because it helps us use words correctly and convey our thoughts accurately and clearly. It connects words, phrases, and ideas in a way that ensures effective communication. Without grammar, language would lack structure, making it difficult to understand and be understood. The linguist Wilkins (1987) once said, “Without grammar, there are few things that people can express, without words, and people can’t express anything.” (as cited in Wang, 2019, p. 990) . This makes it so important to learn. When it comes to the four main language skills ; reading, writing, speaking, and listening, grammar plays a vital role in each. Understanding grammar allows readers to comprehend the meaning of sentences and then interpret the information in texts. For writers, it helps construct proper sentences and word forms. For communication in which we need speaking and listening skills, it helps people express their thoughts clearly and confidently and avoid misunderstandings in conversations. Hence, the major objective of teaching grammar is to enable effective communication by providing learners with the tools to understand and construct meaningful sentences properly. However, there are different and several methods for teaching grammar, changed to address different learning styles and objectives. Some focus on traditional approaches that favor rules memorization and repetition. However, others prefer interactive and visual tools to learn it, mostly the recent ones. Among them is mind mapping, which offers a way to organize information in a visual and cognitive way. It is especially useful in teaching complex subjects such as grammar, which is one of the most challenging areas for learners of English as a foreign language such as our case; first- and second-year students pursuing a licence degree in English at university. From this standpoint, the main objective of this research paper is to evaluate the effectiveness and relevance of mind mapping with first and second year EFL learners at university.

Accordingly, we attempt to shed light on the role of concept maps in grammar instruction among those learners through answering the following questions:

- What impact does mind mapping have on EFL students' grammar comprehension ?
- What is the effectiveness of mind map-based instruction compared with traditional grammar teaching methods at university?
- To what extent does the integration of mind maps into grammar instruction influence students' interest and engagement ?

To answer the aforementioned questions, first, this research paper will explore some concepts related to didactics of grammar, grammar instruction and mind mapping, making great emphasis on its meaning, its potential role in teaching English grammar. For the field of study, we provide a comprehensive survey of scholarly sources published on this subject, summarizing some of the existing research, and identifying their relevant findings. We start with the field of language education in general then in grammar instruction at different levels with specific emphasis on university level mainly in Algeria. We also address the current situations of traditional grammar teaching methods within the context of higher education in Algeria, suggesting mind maps as an alternative relevant instructional tool proving its efficiency through similar studies. Finally, this paper will provide some suggestions for further studies on the effectiveness of mind mapping in such context based on the current grammar instruction situation in Algerian universities.

I. Main Concepts

I. 1. Didactics

Many define the term didactics as the science that deals with the way of teaching. Others add learning as it is the ultimate objective of teaching. In the same vein, Dolch defines didactics as “the science of learning and teaching in general. It deals with learning in all possible forms and with teaching of all kinds at all levels” (Zierer & Seel, 2012, p. 1, as cited in Meziani & Khemmad, 2022, p. 1042). Uljens (1997) defines it also as the art of (teaching everything to everybody) (as cited in Meziani & Khemmad, 2022, p. 1042). The term “didactics originated from the Greek word *didaskein*, which means to be a teacher or to educate” (Hopmann, S. & Riquarts, K. 2000. p. 3). However, it is considered as a notion that has several dimensions dealing with all aspects related to the teaching and learning process including teachers, learners, content to be taught and methods and strategies that determine how this content should be taught. Kron (1993) explains these dimensions in:

- “1. the ability to teach, to instruct and information
2. the people who has this ability
3. the content that should be learnt
4. the teaching aids, including methods and media
5. the school and the class where the learning takes place

6. the learning as the main activity of pupils” (*as cited in Gundem, 2000 , p. 238*)

I. 2. Grammar Instruction

Grammar is the set of rules that guide how words are formed and then how they are used to form sentences, helping us communicate clearly, which means that it encompasses both the sciences that study words and sentence formation; morphology and syntax respectively. Grammar can be generally defined as “a knowledge of what words can go where and what form these words should take” (Harmer, 2015, p. 22 as cited in Ly, 2020, p. 187). For the second part of definition, Ur (2012) explains that grammar is “the way words are put together to make correct sentences” (p. 76 as cited in Ly, 2020, p. 187).

The systematic teaching of rules that determine how words are formed including inflection, derivation and words composition, and how these words are arranged into sentences is known as grammar instruction. The ultimate objective of grammar instruction is to enable learners to use the language accurately, appropriately and effectively either orally or in written forms. Grammar instruction according to Ellis (2006) “involves any instructional technique that draws learners' attention to some specific grammatical form in such a way that it helps them either to understand it metalinguistically and/or process it in comprehension and/or production so that they can intern” Ellis, 2006, p. 84 as cited in Ly, 2020, p. 187). This instruction can be delivered in two major ways ; either explicitly through direct teaching of grammatical rules or implicitly, by embedding grammar lessons within meaningful contexts such as reading and writing tasks, known as deductive and inductive methods of teaching. DeKeyser (1994: 188) defines these approaches as follows: “Deductive means that the rules are given before any examples are seen; inductive means that rules are inferred from examples presented (first). Implicit means that no rules are formulated; explicit means rules are formulated (either by the teacher or the student, either before or after examples/practice” (as cited in Moumene, 2007, p. 7).

I. 3. Mind Mapping

A mind mapping is a visual tool used to organize information in a structured way in a shape similar to the web format. It is a tool inspired by the neurological structure of the brain, as it is derived from the shape of the nerve cell in the brain. The nerve cell has a center from which branches are derived and then sub-divided into other sub-branches. In the same way, mind mapping design is formed around a central concept from which main branches including main ideas extend, and then sub-divided into other sub-branches relating secondary concepts and so on. Its visual design in which information are well-structured helps learners to understand better concepts and internalize connections between them. Green (2015) offers a detailed description and defines the mind map as :

“a web-like structure composed of words, pictures or images, and lines created with the sole intention of visual organization of information. A single concept or the main topic is drawn at the center of this structure, usually written in a blank landscape page. From the main topic, other major concepts are drawn out. Supporting words and ideas are loosely connected to these major concepts while minor topics are branching out until the very last idea is reached.” (Green, 2015, p. 1)

Accordingly, it seems to be an effective tool to organize information in a visual view that illustrates their connections and how they are interrelated.

II. Grammar Necessity for Effective Language Learning

Grammar has been one of the most debatable aspects of language learning for a long time. It has been always given a considerable position in language teaching as well as testing the learner's language abilities (Purpura, 2004). For centuries, “to learn another language, or what is generically known as a second language, meant to know the grammatical structures of that language and to cite prescriptions for its use.” (Purpura, 2004. P. 1).

Thornbury (1999) defines grammar as the description of the rules that determine how sentences are formed, however learners do not need only to learn the correct forms in a language, rather they need to learn what particular meanings these forms express. This means that grammar is a means to make meanings as noted by Ly (2020, p. 5) that grammar “helps learners to understand how language works and how meaning is constructed”. To learn a foreign language, learners should improve “the ability both to recognize and produce well-formed sentences” (Thornbury, 1999, p. 3). However, these sentences should convey meanings. By studying grammar, learners gain the necessary linguistic competence to accurately interpret and construct sentences. Grammar helps them express their thoughts clearly and correctly in both written and spoken language. In this vein, Long and Doughty state that “grammar is a system of meaningful structures and patterns that are governed by particular pragmatic constraints” (2011, p. 521). In this way, grammar can be seen as form, meaning and use (Benamor, 2023).

Learning grammar is considered as a basic component of learning a foreign language. As Ly (2020) claimed that “it plays an important role in the development of the learner's language system” (p. 2). Many advocate learning grammar as a very necessary condition in language acquisition for several benefits. According to Larsen-Freeman (2009, p.518), “grammar learning promotes accuracy. Learners who have good grammatical competence have the ability to produce accurate written or oral language”. The second benefit is that “grammar is important for noticing and consciousness-raising in a communicative language classroom” (Larsen-Freeman, 2009, p.527). Having a good command of grammatical knowledge has always been considered as a necessary requirement for the development of a second

or foreign language proficiency. A good command of grammatical knowledge helps EFL learners to understand the meanings of words through their three branches of word formation as well as the meanings of sentences from simple to complex and thereby understanding both written and spoken texts, from which their receptive skills can be enhanced. When EFL learners master key grammatical concepts and use them accurately and appropriately when reading, writing and communicating, they can achieve both accuracy and proficiency in that language.

However, teaching grammar through using traditional methods makes it boring and a heavy subject to learn. Grammar when taught through lecturing, passive presentation away from authentic material often leads to boredom and demotivation among learners. These approaches can make grammar dry and difficult to learn, resulting in a lack of motivation and interest, as the case of English education in Algeria, mainly in higher education.

III. Current Situation of English Grammar Instruction in Algerian Universities

Grammar forms a fundamental module in the yearly curriculum for first and second year students majoring in English Licence at Algerian universities. In other specialties such as Arabic and French Licence, students learn English as a subject in Discovery Units through a set of forms and structures with a theme reference to the specialty. EFL learners enrolled in English language licence, learn grammar as a set of grammatical rules and structures. In the first year, they are introduced to basic definitions of sentence, clause, phrase, and types of speech, nouns and pronouns, adjectives and adverbs, quantifiers and prepositions in the first semester, and to verbs and auxiliaries, tenses : simple, continuous and perfect, modals, phrasal verbs and special verbs : get, do and make in the second semester. In the second year, the programme of the third semester includes: types of phrases ; the noun, verb, adjectival and adverbial phrases, conditional and if clauses, questions, reported speech, and passive and active forms. However, in the fourth semester, students study conjunctions, clauses, simple, compound, complex and compound complex sentences, parallelism, sentence fragments, run-ons, punctuation and collocation. In these two first years, grammar instruction covers the most important aspects of English grammar (Adapted from: canevas et descriptifs des matières de licence d'anglais, Arrête N°1116, 2022).

Concerning the methods used to deliver this material in higher education in Algeria, there is a great reliance on traditional ones which favor lecturing, explicit presentations, rules memorization, repetition and extensive task- based practice, most of time being out of authentic materials and contexts. Concerning approaches used in grammar instruction at Algerian universities, teachers mostly teach rules and structures through explicit deductive method in which grammar rules are presented

and explained, then, the learners are engaged in practice tasks on the basis of these explanations and structures. For the models of presenting grammar lessons, there are many ; PPP (Presentation, Practice, Production), TTT (Test, Teach, Test), ESA (Engage, Study, Activate), and others, but the most dominant one is the PPP model.

In spite of the considerable benefits of teaching grammar in such way in producing better and long-lasting learning (Cowan, 2008) and in achieving academic language proficiency (Stathis and Gotsch, 2013), learners at university see grammar as a challenging subject due to its abstract nature and complexity, mainly in grasping complex structures and grammatical terminologies, even if it is taught in such ways. Others find it a boring and unengaging subject to study. This situation can be resulted from several challenges that affect grammar instruction in Algerian higher education. The most significant one is the new tendency of the government towards using English. Due to the great importance given to the English language by the Algerian Ministry of Higher Education, there is a great demand and tendency towards learning English among students even if they aren't well knowledgeable in it. Many choose English as a field of study though they have limited linguistic competence and background in grammar. Teachers also lack training in modern teaching methods and in the use of modern technologies to deliver their courses as well as the learners. This leads both teachers and learners to lack interest, mutual interaction and motivation.

To address these challenges, it is widely required to adopt modern and more interactive teaching strategies to teach grammar effectively. It can be easy to transform lectures into stimulating and enjoyable experiences just by being approached in the right ways. As noted by FunCation Academy (2024) that grammar instruction (doesn't have to be overwhelming, it can be fun and engaging when approached in the right way) ,one of these alternative strategies is mind mapping.

IV. Method

From the recent perspectives and findings of different researchers in previous studies , a descriptive and critical evaluation is conducted in this piece of research to explore the value of using mind mapping in learning English, especially in grammar instruction and in particular, at university level. This study examines findings from various literature sources,through using qualitative methods and literature research, exploring whether using mind mapping can improve students' comprehension, their engagement and motivation,and language mastery in general or not, and to what extent.

V. Previous Studies in Mind Mapping Effectiveness in Grammar Instruction

In this piece of research, we attempt to provide a comprehensive description of some recent studies previously conducted about this topic and summarizing their

important findings. We start with the field of language education in general then in grammar instruction at different levels with specific emphasis on university level, mainly in Algeria.

V. 1. Mind mapping in English language instruction

A considerable number of recent published studies were examined to explore the role of mind mapping in improving language learning in general. In a recent research, Berta and Mulat (2024) emphasize the importance of employing mind mapping as one of the effective strategies of teaching English as a Foreign Language. Based on a considerable number of published studies, the authors conducted a narrative study in which they investigated to what extent mind mapping improves language skills mainly vocabulary, grammar and speaking abilities. The findings proved the significance of mind mapping in stimulating learners' engagement and developing the basic competencies to master foreign languages.

In the contexts of learning languages in higher education, Kadagidze (2016) explores the pedagogical potential of mind mapping as a teaching tool in the development of core language skills: reading, writing, speaking, and listening. The results reveal that mind maps foster creativity, enhance information processing, and support the development of aforementioned core language skills as well as learners' engagement in foreign language instruction. Al- Zyoud, Al Jamal and Baniabdelrahman (2017) conduct a study about the influence of Mind Mapping on Students' Writing Performance. The findings proved the benefits of using mind maps to improve writing skills through the ability to organize ideas and being more motivated.

In another piece of work, Alba (2022) investigates the pedagogical effectiveness of mind mapping in developing vocabulary among learners of English as a Foreign Language (EFL). The study proves that using mind maps significantly improves vocabulary acquisition through enhancing memory, comprehension, and learner autonomy. The results revealed that learners who engaged in mind mapping demonstrated significantly and accurately higher vocabulary retention and usage. Moreover, this technique increased motivation and engagement among learners.

A similar study conducted by Shirban Sasi (2024) examines the impact of combining mind map techniques and Schema Theory on learning English vocabulary among EFL learners in a Taiwanese university. The findings revealed that the integration of the two approaches together offers a powerful pedagogical framework in which learning vocabulary can be widely improved mainly in EFL reading contexts.

V. 2. Mind Mapping in English Grammar Instruction

These are some interesting findings from recent research on the effectiveness of using mind mapping in grammar instruction, emphasizing on those conducted in higher education. Wang (2019) investigated the application of mind maps in English grammar instruction and its possible effects in enhancing learners' interest and efficiency in learning English grammar. The findings revealed that the application of mind mapping in teaching English grammar can improve learners' autonomy and creativity, as well as interest in learning. Accordingly, it can enhance grammar learning efficiency to get the required knowledge. In this piece of research, Wang (2019) reported different studies on mind maps use in education covering different sciences, among them two main studies concern using mind maps in English grammar teaching. Gu Xiuqing (2016) stated that introducing mind mapping in teaching English grammar enabled learners to improve their grammar knowledge and raise their interest in its learning, and similarly He Fangping (2013) emphasized the positive effects of mind mapping on teaching grammar, vocabulary, reading and writing (Wang, 2019, p. 991).

Chankasorn, Sunthornklam and Chamnannarong (2023) compared between mind mapping and inductive method of teaching in teaching English grammar. The findings revealed that learners who used mind mapping had a greater achievement in grammar knowledge compared to those who used inductive instruction. They were also more motivated and autonomous in their learning. Another very recent study conducted by Nguyen (2025) with EFL learners at Hanoi Law university proved the statement of positive and effective impact of mind mapping on facilitating grammatical rules and structures of English language.

V. 3. Mind Mapping in English Grammar Instruction in Algerian Higher Education

Depending on a comprehensive search for related studies about the role of mind mapping in teaching English grammar in Algerian higher education, it seems that there are no peer-reviewed studies whether journal articles or conference papers or PhD theses done by researchers or university teachers who tackled this topic. The available studies specifically addressing English grammar instruction using mind mapping in Algerian higher education are found just in master's theses conducted at Algerian universities. And which themselves didn't investigate the subject explicitly, but embedded within other aspects of English language. except some published studies in Algerian reviewed journals, which address English grammar instruction at university level in Algeria but with a slight reference. Among them are those studies that dealt with English language in general or English as a medium of instruction in higher education, such as those done by Ghouali and Bouabdallah (2024) and Amara (2025). Depending on the most recent and comprehensive related search for related sources, the available studies specifically addressing English grammar instruction using mind mapping in Algerian higher education are found just in master's theses

conducted at Algerian universities. These are some of them that do not mostly address grammar directly but embedded in other aspects of language learning.

Chiakha and Bouaziz (2020) in a master thesis study how mind mapping can be beneficial in reading comprehension among EFL learners at university of Guelma, in Algeria. The finding proved its effectiveness in ideas organization, text comprehension and more importantly in learners' engagement and motivation. Concerning the use of digital mind mapping, a study conducted by Guemriche (2019) investigates how digital mind mapping tools can foster creative writing among EFL learners at Guelma university, in Algeria. The results come to the usefulness of mind mapping software in writing instruction through learners' assistance in effective planning, organizing ideas, and expressing ideas creatively. Khadraoui (2017) investigates the role of mind mapping in improving memorization strategies among first year LMD students as EFL learners at Biskra University in Algeria. These strategies include organizing, summarizing, and recalling information. Findings revealed that mind mapping positively influences memorization and had positive attitudes from both teachers and learners. Abid Charef (2025) in a recent study titled (Power of Colours in Buzan's Mind Maps: Investigating Cognitive and Psychological Boosters among Second-Year Students at Ecole Normale Supérieure de Constantine (ENSC) investigates the the role of colours in improving the effectiveness of mind mapping in learning foreign languages. The results show that using colours in mind mapping helps learners memorizing knowledge, being more motivated, creative and focused.

VI. Discussion

Based on the researches that have been examined above, a considerable number of recent published studies have increasingly highlighted the effectiveness of mind mapping as a pedagogical tool in English language learning. Their findings prove that mind mapping significantly enhances student engagement and learning effectiveness among EFL learners emphasizing its role mainly in improving writing skills, vocabulary retention and comprehension, and thereby supporting the development of basic language skills ; namely reading, writing, listening, and speaking in general. In addition to the aforementioned benefits, mind mapping increases students' self confidence, critical thinking and learning autonomy. Through its attractive and interactive design, mind mapping increases learners' engagement and motivation.

Coming to the point of grammar, all findings emphasized that incorporating mind mapping into English grammar instruction can help EFL learners to develop their grammatical knowledge, fosters their grasp of grammatical concepts, rules and different structures. Using mind maps to teach grammar can enhance interest, engagement and motivation among EFL learners compared with traditional teaching methods due to its visual, interactive, and autonomy learning nature. These results

suggest that mind mapping is a more effective and engaging strategy for teaching English grammar to EFL students.

However, and in spite of all the aforesaid effective benefits of using mind mapping in English language instruction in general and English grammar in particular, research on mind mapping for teaching English grammar in Algerian universities is still quite scarce and very few compared to the great deal of concern given to it and the long time since it has emerged. Most available studies focus on broader EFL skills like writing, vocabulary, or reading comprehension, without a specific focus on grammar. It is often treated as a secondary element to study, and the most available sources are just master theses.

However, this state of being scarce in Algerian universities contexts is due to several factors concerning mainly teaching methods, and both instructors and learners. As mentioned above, English grammar is still taught through frontal lectures and explicit deductive methods through which rules and structures are presented and explained, and then practised. This is the dominant situation in most universities, which mostly resulted in learners' passivity and lack of self-reliance to study. This situation leaves little space for learners for visual and interactive tools or applying learner-centered approaches that rely on autonomy learning as mind mapping does. The main second factor is that mind mapping when introduced in some research is mostly linked to writing skills or vocabulary instruction. Little interest is given to grammar, just as a secondary focus of study. It is widely believed to have importance in brainstorming and generating ideas or in vocabulary retention. Another factor not less significant than the two previous ones is the limited integration of digital tools due to inadequate training in such fields for both teachers and learners, as well as the foundations to apply digital mind mapping tools effectively in grammar lessons.

Conclusion :

Although mind mapping has proven its value and effectiveness in teaching foreign languages including grammar, its use in teaching English grammar in Algerian higher education is limited and often overlooked. There are almost no sufficient and detailed peer-reviewed studies that tackle the use of mind mapping to teach English grammar at universities. No experimental studies to assess its effectiveness in enhancing linguistic competence and enriching grammatical knowledge as well as motivation among EFL learners at the Algerian university level. Even when research handles this topic in this context, it lacks scientific accuracy and review by specialized teachers, experts and scientific committees and just a limited number of master theses. This calls for a necessary and clear need for academic reviewed studies to integrate mind mapping in English grammar instruction in higher education in Algeria and give it the central importance in solid research as it forms a clear and noticeable gap for further research. Traditional grammar teaching methods relying mostly on frontal lecturing and memorization

often limit learners' autonomy, motivation and engagement in interactive learning. Mind mapping forms an alternative solution to foster long-term grammar comprehension, motivation and self-confidence. More research on its several valuable benefits as a visual and interactive tool in modern English grammar instruction with experimental studies will shape the future of grammar teaching practices in Algerian higher education.

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