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التحقيق في تأثير الأسئلة المعرفية على التعقيد النحوي لإنتاج الطلاب في فصول اللغة الإنجليزية  
كلغة أجنبية

Sonder l'impact des questions épistémiques sur la complexité syntaxique des productions des étudiants en classe de EFL

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### **Sonder l'impact des questions épistémiques sur la complexité syntaxique des productions des étudiants en classe de EFL**

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#### **Introduction**

Having an adequate command over a second/foreign language (L2/FL) requires learners to possess a certain level of mastery over three main dimensions of language production : complexity, accuracy, and fluency (CAF). The ability of learners to manipulate complex syntactic patterns for communicating meaning is currently considered one of the major determinants of proficiency in L2 or FL (Ortega, 2003 ; Wang, 2020). This kind of skillfulness can be predicted by investigating the level of grammatical complexity exhibited throughout the oral production of the target language. That is to say, the capacity to make use of syntactic structures with a satisfactory degree of sophistication is associated with competency in processing and exploiting the patterns of a given L2 or FL system.

This prospect among researchers stems from the conception of language learning as a gradual dynamic process that witnesses the emergence of new structures and the waning of others according to the developmental stages of learning (Larsen-freeman, 2006). Numerous substitutions of older patterns with new ones can occur during the progress of learners' interlanguage system. Obviously, this gradual developmental process of grammatical complexity, rooted in learners' verbal or written production, is supposed to depart initially from the utilization of simplest forms and progresses toward the usage of more complex syntactic variants. In this sense, we can arguably spot the actual grammatical level of students in terms of the complexity of structures that govern their language use through the analysis of spoken discourse. What renders the task of examining the syntactic variations of students' production more important is associated with the former dimension as being one of the most frequently measured components of linguistic complexity in SLA research (Kuiken et al, 2019). The role of complexity as

a learning factor was recently stressed in literature, given that the ultimate purpose of any informed language-related research is to establish an understanding of those phenomena that make a difference in teaching and learning (Norris & Ortega, 2009). Verily, a plethora of studies on teachers' questions and students' responses have been directed toward investigating cognitive and linguistic complexity in relation to the outcomes of learning (Hu & Lie, 2017). Nevertheless, within the local context of Algeria, there is a scarcity of studies implementing proxy measures of length (e.g. mean length of utterances) and complexity (e.g. mean frequency of subordination or developmental syntactic units) as a means to examine the oral production of learners.

When considering the earlier theoretical premises and the feasibility of the contemporary research approaches devised for examining the properties of students' discourse elicited by teachers' verbal behaviour, it would not be unreasonable to make an attempt to explore the correlation between key teaching practices, like epistemic questioning techniques (display/referential questions) in our case, and the resultant syntactic complexity of students' responses. Therefore, this research paper aims to answer the following questions :

1. What is the average syntactic complexity level of students' oral responses to epistemic questions ?
2. Can syntactic complexity be influenced by the nature of epistemic questions used by EFL teachers ?

Moreover, the following null/alternative hypotheses are put forward :

- H0 (null) : there is no significant association between the functional nature of teachers' epistemic questions and the levels of syntactic complexity embedded in students' responses.
- H1 (alternative) : there is a significant association between the functional nature of teachers' epistemic questions and the levels of syntactic complexity embedded in students' responses.

To our best knowledge, this is the first research paper that aims to probe the effects of display/referential questions on the syntactic complexity of language output on the basis of the revised D-level scale. Also, it is the first initiative to employ the aforementioned framework for investigating the construct of complexity in Algeria, since there is a research gap concerning the use of such analytical models for the analysis of syntactic complexity in the local context of EFL education.

## 1. Literature review

### 1.1. Pedagogical Questions and Learners' Oral Production

Since learners' production in EFL classrooms is primarily driven by teachers' questioning behaviour, the use of one or another category of epistemic questions can yield different learning outcomes and the syntactic level of learners' output makes no exception in this regard. This notion is supported by many studies conducted in different educational contexts indicating the potential primacy of referential questions (Brock, 1986 ; Gouider & Ameziane, 2022 ; Long & Sato, 1983 ; Wright, 2016). Indeed, the last four decades have known a growing interest in exploring the effects of questioning techniques on learners' production, particularly after the inception of Swain's output hypothesis in 1985. Researchers started to pay attention to questions for recognizing their role as a catalyst for learners' production and involvement within SL/FL classrooms, as they lie at the core of classroom discourse (Marton & Tsui, 2004).

Thompson (1997) pointed out that classroom questions can be categorized according to three dimensions : form (e.g., yes/no or wh-questions), content (e.g., factual or personal), or purpose (e.g., display or communication). The last dimension can be examined by drawing on the functional nature of teachers' questions in the sense of being either evaluative (display) or referential (communicative or quasi-authentic). The two mentioned questioning categories are defined by their level of authenticity since evaluative questions are considered to be less authentic than their referential counterpart (Dalton-puffer, 2007). In modern language teaching approaches like CLT, the aim of language practitioners is presumed to be appertaining to the maintenance of an interactive atmosphere similar to the one that interlocutors are exposed to in real-life communication (Harmer, 2007 ; Richards, 2005). As a result, the objective would be the simulation of a discussion that emulates what happens outside the walls of academic institutions (Galloway, 1993). In this particular respect, referential questions are believed to be more effective since they inquire about unknown information that the teacher cannot predict beforehand (Long & Sato, 1983), and therefore serve the same purpose as the majority of questions that occur in real-life situations (Dalton-puffer, 2007). On the other hand, display questions are already known to the teacher and their underlying objective is the mere evaluation of learners' knowledge about a certain subject or point related to the content of the discussion (Long & Sato, 1983).

These distinctive properties that characterize each category render referential questions more superior to display questions in terms of the authenticity of discourse and the likely discursive patterns which would consequently emerge following their implementation. Nevertheless, the qualitative eliciting force of the two questions cannot be predetermined without a thorough analysis of learners' responses within the educational context of concern, since the outcomes may not be possibly inferred drawing only on theoretical considerations about the properties that questions are initially anchored with. In this sense, the syntactic complexity of the resulting output needs to be empirically examined to reach an understanding about the impact of these dichotomous categories (display/referential) on the quality of language production.

## **1.2 The Link between Teachers' Questions, Complexity, and Implicit knowledge**

There is a common belief in the literature that instruction is beneficial for L2/FL development (Long, 1983 ; Norris & Ortega, 2000 ; Spada & Tomita, 2010). As a matter of fact, language teaching cannot be separately defined apart from language learning, since the whole purpose of language instruction is the facilitation of the learning process (Brown, 2014). Yet, many questions about what features of pedagogy might benefit language learning remain unanswered, especially when considering the varying effects of teaching techniques within different contexts of learning. Likewise, examining students' immediate responses to teachers' questions can be very informative about the implicit knowledge of students, because such a kind of output is often generated spontaneously and instantaneously during classroom interaction. Here, it should be noted that implicit knowledge is typically manifested in "some form of naturally occurring language behaviour" (Bialystok 1990, as cited in Han & Ellis, 1998, p. 5) and can be "easily accessed in tasks that call for fluent language performance" (Han & Ellis, 1998, p. 6). Similarly, Erlam (2006) points out that there is to some extent an agreement among researchers on correlating implicit language knowledge with automaticity in language use. It is not doubtful that students' responses to teachers' questions fall within the frame of this type of verbal behaviour because those answers are often supplied immediately in reaction to interrogatives that are usually not pre-empted in advance. Hence, the complexity of the ensuing observed grammatical variants can be used as a partial index of the implicit knowledge related to the syntactic level of communicative competence.

Moreover, it is quite intuitive that the analysis of complexity based on research instruments designed for examining the learners' declarative grammatical knowledge may not yield the same results as measuring grammatical complexity in terms of performance ; the former would involve an inquiry about explicit knowledge while the latter would be more about measuring the implicit knowledge of learners (Ellis, 2006 ; Spada & Tomita, 2010). Yet, it is important to note that explicit knowledge can be sometimes intertwined with naturally-occurring language behaviour as it can be converted into implicit knowledge or at least facilitative for the latter (Han & Ellis, 1998 ; Ellis 1993) owing to the interface that exists within the apparatus (DeKeyser, 1998 ; Ellis, 1994). The generation of this sort of responses is bound, for instance, to questions that seek insights about the language itself, or that aim at activating the students' explicit focus on linguistic forms (Erlam, 2006). Despite that both the paradigms of explicit and implicit knowledge cannot be fully delineated, the element of spontaneity in language use along with the resulting patterns of syntactic complexity would be more dependent on linguistic and cognitive assets linked to the implicit knowledge of learners.

### **1.3. The Notion of Complexity in Language Research**

One of the problematic issues that may face a researcher occurs when deciding to adopt a definition for the construct of complexity. Complexity can be defined as “the extent to which learners produce elaborated language” (Ellis & Barkhuizen, 2005, p. 139). The term can be used in literature to refer both to cognitive complexity and linguistic complexity (Housen et al, 2012). Such terminological choices may be linked to the fact that language can be seen as a cognitive phenomenon (Atkinson, 2002) due to the existent interplay between the cognitive ability of learners and the relative pace of L2 acquisition (Berthele & Udry, 2022 ; Genesee et al, 2006 ; Geva & Ryan, 1993). Though linguistic complexity might be seen as an aspect of cognitive complexity due to the partial contingency of linguistic complexity on the latter construct, the two notions are incommensurable.

Linguistic complexity is examined departing from objective considerations related to the mere analysis of the linguistic properties embedded within language forms, while the latter case may entail the evaluation of the difficulty with which language is produced alongside other subjective considerations arising, for instance, from the appraisal of learners' background (Housen et al, 2012). To avoid the pitfall that researchers might go through when discarding the implications of embracing complexity as an umbrella term encapsulating the two concepts, this study uses the term exclusively for

referring to the syntactic dimension of linguistic complexity exhibited in students' production. For instance, Ortega (2003) framed the concept briefly stating that "syntactic complexity (syntactic maturity or linguistic complexity) refers to the range of forms that surface in language production and the degree of sophistication of such forms" (p. 492). Conforming to the earlier conception can be more reliable and feasible for classroom research as it renders proxy measures of complexity more reliant on the observable data (e.g. grammatical structures) that emerge in classroom discourse.

#### **1.4. Measures of Syntactic Complexity**

Syntactic complexity of utterances has been examined in multiple ways based on different measures, such as : C-units (e.g., Loban, 1963), T-units, mean length of utterance (MLU) (e.g., Brown, 1973), degree of markedness (e.g., Long & Sato, 1983), speech units (e.g., Foster et al, 2000) or D-level scale (e.g., Convington, 2006 ; Lu, 2009 ; Rosenberg & Abbeduto, 1987). Early research about this subject can be traced back to the works of Loban (1963 ; 1976) and Hunt (1966). Numerous studies attempted to gauge complexity in terms of the subordinations used within learners' discourse. Richards and Schmidt (2010, p. 105), for instance, defined complexity as "a composite measure of language use, normally reflecting the length of utterances and the amount of subordination used". The length of utterances is often highlighted as one of the defining criteria of complexity (Inoue, 2016) because of the common assumption postulating that the lengthier the productivity of learners, the more complex utterances are supposed to be (Foster et al, 2000).

The developmental level scale (D-level scale) which is used in this study was originally introduced in the work of Rosenberg and Abbeduto (1987). The first model consisted of seven levels of complexity ranging from "level 0" to "level 6". It was revised later on by Convington et al (2006) who included an eighth category rendering the model extending from "level 0" to "level 7". The framework comprises a sentence-based scale that classifies discourse departing from simplest utterances (level 0) to the most complex sentences (level 7) according to the gradual stages with which learners tend to acquire language structures. An adaptation of the model is illustrated in table 1 below.

## **2. Methodology**

### **2.1 Research Design**

This study represents descriptive-correlational research that employs a quantitative method for answering the research questions and testing hypotheses. An ex-post facto design was employed for disclosing the level of association between the observed variables, as the present researchers



did not take any active role in manipulating the classroom settings or the teaching-learning variables tackled in the analysis. The purpose of the research method is to explore the statistical distributions with which syntactic complexity occurs in the spontaneous discourse of EFL students. It aims also to gauge the correlation that may exist between distinct categories of pedagogical questions and the level of complexity that would be consequently exhibited in students' language production. The ex-post facto design was adopted because both the independent variables (teachers' questions) and the dependent variable (students' responses) were naturally-occurring without the need for an intervention from the researchers. Moreover, purposive-convenience sampling was used for selecting participants due to the impossibility of carrying out a random sampling procedure. Yet, six samples from two academic institutions in Algeria were used to increase the representativeness of the findings in relation to the local context. Both descriptive and inferential statistics were used in the analysis of data.

## **2.2. Data Collection and Analysis Procedures**

The process of collecting data involved classroom observations of six EFL lessons targeted at third-grade students. It was carried out at the departments of English of two Algerian universities, namely : the University of El Chadli Ben Djedid-El Tarf and the University of Badji Mokhtar-Annaba. The participants were comprised of six different EFL lecturers and 108 students. Access to the two academic sites was approved by the administrative staff of the two universities as well as the concerned participants. The retrieval of data was maintained through the use of audio recordings echoing the procession of classroom discourse throughout the observed courses. Audio tapes were subsequently used as a tool based on which the transcriptions, corresponding approximately to six hours of classroom interaction, were formulated.

Epistemic questions were classified drawing on Long and Sato's (1983) definition of display and referential questions, and complexity levels were coded with respect to the revised D-level scale devised by Convington et al. (2006). IBM SPSS version 28 was used for the statistical analysis of data, as a chi-square test was applied for measuring the significance of the assumed association between the two categories of questioning strategies and the consequent syntactic complexity exhibited in students' answers. An alpha level of significance was set at .05 ( $p\text{-value} < 0.05$ ) for rejecting the null hypothesis. Effect sizes were also calculated for the sake of determining the magnitude and the substantiality of the findings.

### 2.3. Data Coding

Functional epistemic questions were coded whenever teachers issued an utterance through which a response was elicited from students (see Hu & li, 2017). All students’ turns that immediately followed epistemic questions were considered in the analysis of complexity. Once the teacher issued a follow-up/feedback move, the present researchers considered the questioning episodes to be over, and the process of coding utterances ceased to operate. It is fundamental to stress that the term epistemic questions is used in this study to refer to display and referential questions only. Expressive and rhetorical questions were not addressed in the analysis of data. The next table illustrates the used D-level scale along with some examples of sentential and phrasal complexity derived from the database of this study :

Table 1. An adaptation of Convington et al.’s (2006) revised D-level scale with exemplary syntactic variants from Algerian EFL classrooms

Level	Description	Example
Level 0	-Simple sentences including questions -Sentences with auxiliaries and semi-auxiliaries -Simple elliptical (incomplete) sentences	- <i>They become ignorant ; Creating new companies ?</i> - <i>You have the experience.</i> - <i>The mother tongue ! ; Your nature and attitude.</i>
Level 1	-Infinitive or <i>-ing</i> complement with the same subject as the main clause	- <i>They have to obtain legislation They start acquiring grammar.</i>
Level 2	-Conjoined noun phrases in the subject position -Sentences conjoined with a coordinating conjunction. -Conjoined verbal, adjectival, or adverbial constructions	- <i>Companies and small businesses were eliminated.</i> - <i>The first happened in Britain and the second happened in America.</i> - <i>People suffered and lived in poverty.</i>
Level 3	-Relative (or appositional) clause modifying the object of the main verb -Nominalization in object position -Finite clause as object of the main verb -Subject extraposition -Raising	- <i>It involves the formation that we had in a particular or many domains.</i> - <i>The second industrial revolution witnessed the invention of what ?</i> - <i>We prove that it is so.</i> - <i>It is not because of them that Americans suffered.</i> - <i>The revolution was thought to be a gilded age.</i>

Level 4	-Non-finite Complement with its own understood subject -Comparative with an object of comparison	-We have ideas <i>connected with each other</i> . - Their wealth is <i>more than one billion</i> .
Level 5	-Sentences joined by a subordinating conjunction -Non-finite clauses in adjunct (not complement) positions	-They can learn it, <i>if they study hard enough</i> . - They will not be in ease <i>when using it</i> .
Level 6	-Relative (or appositional) clause modifying the subject of the main verb -Embedded clause serving as the subject of the main verb -Nominalization serving as the subject of the main verb	- People <i>who own corporation</i> are stockholders. - <i>Producing products</i> was facilitated ; <i>Learning separated words</i> will help students... - <i>Learners' acquisition of language</i> requires a lot of efforts.
Level 7	-More than one level of embedding in a single sentence	- Like something <i>which is painted from the outside but in the inside</i> who knows ; You would just like <i>to apply if someone was fired or something</i> ; <i>If I am asked to count twenty three and twenty four, I take the twenties together and add three and four</i> .

### 3. Results

To answer the first research question, the sentences produced following epistemic questions were analyzed. Such generic results can give an overall outlook into the complexity of students' spontaneous production irrespective of the categories subsumed under the epistemic type of questions. The attained total mean score reflects the average complexity level of students' language spontaneous output across lessons and the overall average of complexity (Av.score = 0.76), based on the examination of 506 sentences. The percentage frequency distributions of the generated sentential units per level of syntactic complexity were also calculated. The results indicate that 82.02 % of students' responses pertained to the lowest rank on the D-level scale (level 0). The findings are illustrated in table 2 below :

Table 2. Epistemic questions and students' language output syntactic complexity

Level/Class	L0	L1	L2	L3	L4	L5	L6	L7	Total sentences	Av. scores
Class A	91	4	3	2	3	3	0	9	115	0.92
Class B	60	2	1	1	3	2	0	5	74	0.86
Class C	61	2	2	5	1	3	0	1	75	0.63
Class D	94	4	3	2	1	5	1	5	115	0.74
Class E	73	2	0	2	0	1	2	3	83	0.55
Class F	36	0	1	2	1	3	0	1	44	0.77
Total	415	14	10	14	9	17	3	24	506	0.76
Pct (%)	82.02	2.77	1.98	2.77	1.78	3.36	0.59	4.74	100	

For the sake of answering the second research question, the researchers sought to find out whether there are numerical differences between the average scores of complexity elicited by referential and display questions across EFL classes. For attaining this purpose, each sub-category of epistemic questions was examined separately. The findings concerning referential questions showed a higher average complexity level (Av.score = 1.30) than the obtained mean score of the epistemic type (Av.score = 0.76), in spite of the existence of a very low outlier within the dataset (class C ; Av. score = 0.2). The results are demonstrated in Table 3 :

Table 3. Referential questions and students' language output syntactic complexity

Level/Class	L0	L1	L2	L3	L4	L5	L6	L7	Total Sent.	Av. scores
Class A	36	1	2	0	1	1	0	5	46	1.07
Class B	11	0	0	0	0	2	0	3	16	1.94
Class C	9	0	1	0	0	0	0	0	10	0.2
Class D	17	2	0	0	1	3	0	3	26	1.62
Class E	13	1	0	2	0	1	0	2	19	1.37
Class F	7	0	1	1	1	0	0	1	11	1.45
Total	93	4	4	3	3	7	0	14	128	1.30
Pct (%)	72.66	3.13	3.13	2.34	2.34	5.47	0	10.94	100	

The same procedure was employed for the analysis of 378 sentences generated in response to display questions. The results showed that the overall mean complexity score of display questions (Av.score = 0.57) was lower than the obtained score of spontaneous production, which can be reflected by the average complexity score of epistemic questions (Av.score = 0.76). It is worth noting that only students of class A tended to produce language forms that are higher in complexity (Av.score = 0.83) than the reported generic average (Av.score = 0.76). Results are displayed in the next table :

Table 4. Display questions and students' language output syntactic complexity

Level/Class	L0	L1	L2	L3	L4	L5	L6	L7	Total sent.	Av. scores
Class A	55	3	1	2	2	2	0	4	69	0.83
Class B	49	2	1	1	3	0	0	2	58	0.57
Class C	52	2	1	5	1	3	0	1	65	0.69
Class D	77	2	3	2	0	2	1	2	89	0.49
Class E	60	1	0	0	0	0	2	1	64	0.31
Class F	29	0	0	1	0	3	0	0	33	0.55
Total	322	10	6	11	6	10	3	10	378	0.57
Pct (%)	85.19	2.65	1.59	2.91	1.59	2.65	.79	2.65	100	

The cross-tabulation below shows that, in most cases, referential questions seemed to elicit higher complexity utterances as can be inferred from the comparison of the actual counts and expected counts of complexity with the exceptions of sentences pertaining to level 0, level 3, and level 6 (see table 5). Here, it is important to note that the low frequency of level 0 is better for learning outcomes based on the premise of the language output hypothesis.

Table 5. Crosstabulation of sentential complexity according to the epistemic categories of questions

		Epistemic Questions		Total	
		Referential	Display		
Syntactic Complexity	Level 0	Count	93	322	415
		Expected Count	105.0	310.0	415.0
	Level 1	Count	4	10	14
		Expected Count	3.5	10.5	14.0
	Level 2	Count	4	6	10
		Expected Count	2.5	7.5	10.0

Syntactic Complexity	Level 3	Count	3	11	14
		Expected Count	3.5	10.5	14.0
	Level 4	Count	3	6	9
		Expected Count	2.3	6.7	9.0
	Level 5	Count	7	10	17
		Expected Count	4.3	12.7	17.0
	Level 6	Count	0	3	3
		Expected Count	.8	2.2	3.0
	Level 7	Count	14	10	24
		Expected Count	6.1	17.9	24.0
	Total	Count	128	378	506
		Expected Count	128.0	378.0	506.0

As it is shown by previous descriptive statistics (tables 3 and 4), there is a numerical difference between the mean complexity scores of referential (Av. score = 1.30) and display questions (Av. score = 0.57). The aforementioned results suggest that the syntactic complexity of students’ oral production can be influenced by the functional nature of epistemic questions, which answers the second research question.

Hence, a chi-square test was used for exploring the significance of the association between the two categories of epistemic questions and the corresponding syntactic complexity. Variables in the dataset (see Appendix A) were weighted according to the frequencies of sentences belonging to each questioning category. Since more than 20 % of cells (43.8 %) in the crosstabulation (table 5) included expected counts lesser than five, results from Fisher-Freeman-Halton exact test were adopted (see Kim, 2017). The test establishes the foundation for accepting or rejecting the null hypothesis. The findings indicate the existence of a significant association between the functional nature of epistemic questions and the complexity of language output [ $\chi^2 = 18.69, p = .005$ ]. Thus, the null hypothesis is therefore rejected in favour of the alternative hypothesis. The results are displayed in the next table :

Table 6. Chi-square tests

	Value	df	Asymptotic Significance (2-sided)	Exact Sig. (2-sided)	Exact Sig. (1-sided)	Point Probability
Pearson Chi-Square	20.618	7	.004	.004		
Likelihood Ratio	18.906	7	.008	.014		

Fisher-Freeman-Halton Exact Test	18.689			.005		
Linear-by-Linear Association	14.473 <sup>b</sup>	1	<.001	<.001	<.001	.000
N of Valid Cases	506					

Moreover, the effect size was also calculated for measuring the strength of the obtained results. Cramer's V was utilized owing to the nature of cross-tabulation (8x2) of categorical variables (Fritz et al, 2012). Statistical findings indicated the existence of a moderate effect size (Cramer's V = .202). Complementary effects sizes are provided in Appendix B :

Table 7. Cramer's V symmetric measure of effect size

Variable	Effect Size	Value	Approximate Significance	Exact Significance
Nominal by Ordinal Categorical Variables	Cramer's V	.202	.004	.004
N of Valid Cases		506		

## Discussion

The fact that display questions score higher counts of level 0 than what is statistically expected indicates that they tend to elicit lesser complex utterances than referential questions. This can imply the superiority of the latter in diminishing the relative frequency of such language forms. Sentences that pertain to level 0 are perceived to be problematic because they constituted the majority of utterances generated after epistemic questions (L0.N = 415 ; 82.02 %). Yet, it should be noted that referential questions slightly diminished the proportion of such poor syntactic formations (L0.N = 93 ; 72.66 %) if compared to display questions (L0.N = 322 ; 85.19 %). The findings clearly imply that the syntactic level of students' spontaneous oral production was low because of being mostly restricted to brief utterances lacking the sophisticated use of grammatical patterns. The length of output is mentioned drawing on the defining criteria of coding level 0, and the frequently claimed argument that producing more language output usually entails the generation of more complex forms (Foster et al, 2000 ; Inoue, 2016). Yet, it is important to note that there might be some external or internal factors that withheld students from extending their output like the socio-cultural context of education or the attitude and background of students.

The findings attained in this research can consolidate the claim held by some Algerian teachers regarding the deficiency of students' communicative

and linguistic ability (Idri, 2014). Also, they fall in line with results from other studies found in literature and the frequently echoed assumption suggesting that referential questions are more efficient in stimulating complex responses (Brock, 1986 ; Nunan, 1989 ; Wright, 2016). The correlation existing between questioning strategies and the complexity of forms was statistically significant ( $p = .005$ ), as the moderate strength ( see Kotrlik, William & Jabor, 2014) of the disclosed association (Cramer's  $V = .202$ ) is perceived to be meaningful, which further consolidates the claim about syntactic complexity as being contingent on the nature of questions. There is an implication that the proficiency level of students, related to the use of sophisticated syntactic variants, is very concerning. The claim can be easily put forward considering that the used D-level scale was established drawing on the linear developmental trajectories of language learning and the corresponding forms of complexity expected to be emerging at the lowest and highest levels of language proficiency. Nevertheless, it is also quite reasonable to highlight that the use of syntactic complexity metrics (e.g. D-level scale) cannot be used as absolute determinants of competence or ability in the target language, given that the existence of sophisticated patterns may attest to the developed use of the target linguistic code, but not always signal a better language use by necessity (Ortega, 2003). As previously argued, there might be other factors that minimised the students' engagement in classroom discussions and prohibited them from stretching their production in the target language.

## Conclusion

The aim of this research paper is to explore the complexity of students' spontaneous production in Algerian EFL classrooms. The findings are based on the examination of teachers' questions and the syntactic variants manifested in students' responses. The results showed that most of the responses were not embedded with advanced syntactic forms and that referential questions had a relatively higher potential of promoting more complex language output than their evaluative counterparts. Further research with larger samples is still needed within the local context to establish a solid conception about the correlation between the examined variables and the practical implications of the findings. We encourage other researchers to replicate the study in order to track the syntactic changes that may occur in the oral production of more advanced EFL students.



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**Appendix A : Statistical Dataset**

Epistemic Questions	Syntactic Complexity	Frequency
Referential	Level 0	93
Referential	Level 1	4
Referential	Level 2	4
Referential	Level 3	3
Referential	Level 4	3
Referential	Level 5	7
Referential	Level 6	0
Referential	Level 7	14
Display	Level 0	322
Display	Level 1	10
Display	Level 2	6
Display	Level 3	11
Display	Level 4	6
Display	Level 5	10
Display	Level 6	3
Display	Level 7	10

**Appendix B : Complementary Effect Sizes**

Variables		Value	Approximate Significance	Exact Significance
Nominal by Ordinal	Phi	.202	.004	.004
	Contingency Coefficient	.198	.004	.004
N of Valid Cases		506		

## Abstract

This study aims to examine the effects of teachers' display and referential questions on the syntactic complexity of students' language output. It employs a descriptive correlational method and an ex-post facto design to attain the research objectives. The data collection procedure involved a classroom observation of six EFL lessons at two Algerian universities. The dichotomy of epistemic questions (display/referential) along with the revised D-level scale of complexity were employed as coding frameworks. The analysis was based on the examination of 506 utterances embedded in students' responses to epistemic questions.

The major findings showed that most of the students' responses were not entrenched with sophisticated syntactic forms since the majority of utterances pertained to level 0 (82.02 %) of the adopted D-level scale. The functional nature of epistemic questions was found to have a significant association ( $p = .005$ ) with the elicited level of syntactic complexity embedded in students' oral production. The attained results were estimated to have a moderate effect size (Cramer's  $V = .202$ ). Further research is needed in the local context of Algeria to reach more robust conclusions.

## Keywords

Syntactic complexity, epistemic questions, language output, referential questions, display questions

## مستخلص

تهدف هذه الدراسة إلى فحص تأثير أسئلة الأساتذة التقييمية و المرجعية على التعقيد النحوي لمخرجات اللغة لدى الطلبة. تم استخدام أسلوب بحث ارتباطي-وصفي مع تبني تصميم منهجي بأثر رجعي (ex-post facto design) لتحقيق أهداف الدراسة الحالية. تضمن جمع البيانات معاينة ستة دروس لتعليم اللغة الإنجليزية كلغة أجنبية في جامعتين جزائريتين. تم استخدام التصنيف الثنائي للأسئلة المعرفية (أسئلة تقييمية/ مرجعية) جنبًا إلى جنب مع مقياس التعقيد المنقح D-level scale كأطر لترميز البيانات. اعتمد التحليل على فحص 506 من المخرجات اللغوية للطلبة في ردودهم على الأسئلة المعرفية.

أظهرت النتائج الرئيسية أن معظم اجابات الطلاب كانت ذات تعقيد نحوي منخفض نظرًا لأن غالبية المخرجات اللغوية كانت تنتمي للمستوى 0 (82.02 %) من مقياس التعقيد النحوي المعتمد. أشارت النتائج الى أن الطبيعة الوظيفية للأسئلة المعرفية كان لها ارتباط ذو دلالة احصائية جد معتبرة ( $p = .005$ ) مع مستوى التعقيد النحوي المرصود في الإنتاج اللغوي للطلبة، كما تم تقدير أن النتائج المتحصل عليها كانت ذات حجم تأثير معتدل (Cramer's  $V = .202$ ). هناك حاجة ماسة للقيام بالمزيد من الدراسات في السياق المحلي للوصول إلى نتائج أكثر شمولاً.

## Résumé

Cette étude vise à examiner les effets des questions évaluatives et référentielles des enseignants sur la complexité syntaxique de la production langagière des étudiants. Il utilise une méthode corrélacionnelle descriptive et une conception ex post facto pour atteindre les objectifs de recherche. La procédure de collecte de données impliquait une observation en classe de six cours d'EFL dans deux universités algériennes. La dichotomie des questions épistémiques fonctionnelles (évaluatives/ référentielles) ainsi que l'échelle de complexité de niveau D révisée ont été utilisées comme cadres de codage. L'analyse a été basée sur l'examen de 506 énoncés intégrés dans les réponses des étudiants à des questions épistémiques.

Les principaux résultats ont montré que la plupart des réponses des étudiants n'étaient pas ancrées avec des formes syntaxiques sophistiquées puisque la majorité des énoncés appartenaient au niveau 0 (82,02 %) de l'échelle D adoptée. La nature fonctionnelle des questions épistémiques s'est avérée avoir une association significative ( $p = 0,005$ ) avec le niveau de complexité syntaxique intégré dans la production orale des étudiants. Les résultats obtenus ont été estimés avoir une taille d'effet modérée (V de Cramer = 0,202). Des recherches supplémentaires sont nécessaires dans le contexte local de l'Algérie pour parvenir à des conclusions plus robustes.

## Mots-clés

Complexité syntaxique, questions épistémiques, production langagière, questions évaluatives, questions référentielles