Abstract Error Analysis in Written Production among Deaf Learners in Secondary Education: A Linguistic-Pedagogical Study in Teaching French as a Foreign Language



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Abstract:

Written production is one of the most complex skills in foreign language learning. This complexity increases for learners with hearing impairment due to the specific features of their linguistic and cognitive development. This study examines the nature of errors in French written production among deaf secondary school students. It identifies recurrent patterns and relates them to linguistic and pedagogical factors within inclusive education.

The research follows a descriptive-analytical approach with an applied dimension. It combines a questionnaire for French teachers with an analysis of students' written texts. Results show frequent structural, argumentative, and linguistic difficulties. These errors are linked to limited pedagogical adaptation, insufficient specialized training, and inadequate communication methods. The study concludes that such errors reflect systemic educational factors rather than purely individual deficiencies.

key words: error analysis, written production, deafness, teaching French as a foreign language, inclusive education.

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1. Introduction

Inclusive education represents a structural transformation in contemporary educational thought, redefining the school as a space that accommodates learner diversity and adapts its pedagogical practices accordingly (UNESCO, 2020). Within this framework, written production in foreign language education occupies a central position due to the complex cognitive and linguistic processes it mobilizes—processes whose difficulty is amplified for deaf learners.

In this perspective, writing errors are no longer viewed merely as normative deviations but as diagnostic tools that reveal the structure and mechanisms of learning **(Abdelhamid, 2021).** The present study aims to analyze the nature of errors in French written production among deaf secondary school students. It seeks to identify their patterns and relate them to linguistic and pedagogical factors within the context of inclusive education. The significance of this research lies in deepening the linguistic–pedagogical understanding of writing difficulties and in informing the development of more appropriate and effective instructional strategies.

2. Research Problem

This study addresses the nature of writing errors in the written production of deaf secondary school learners and the factors underlying them, given the complexity and multidimensional character of this domain. Contemporary scholarship emphasizes that writing among deaf learners constitutes a highly complex system in which linguistic, cognitive, and pedagogical factors interact in intricate ways **(Marschark. M. & Spencer. P, 2022)**. Research has demonstrated that limited access to spoken language affects not only lexical development but also syntactic construction, textual organization, and the development of metalinguistic awareness **(Mayer & Trezek, 2020).** Accordingly, writing errors cannot be reduced to linguistic deficiency; rather, they must be understood through the interaction between visual cognitive characteristics and instructional practices **(Graham, 2019)**.

In inclusive settings, the problem intensifies in the absence of systematic didactic adaptation and structured visual support **(Knoors. H. & Marschark. M., 2018**). The study therefore adopts an explanatory approach that analyzes errors in light of these interrelated determinants, with the aim of generating deeper insights capable of guiding pedagogical practices more responsive to the specificities of deaf learners.

Central Research Question:

What is the nature of writing errors in the written production of deaf secondary school learners, and what linguistic and pedagogical factors explain them?

The importance of this inquiry lies in moving beyond superficial error description toward an interpretation grounded in learning processes and educational context, thereby contributing to the construction of didactic knowledge that supports the improvement of writing instruction in inclusive education. The study also gains relevance from the relative scarcity of Arab research addressing deaf learners' writing from an integrated linguistic–pedagogical perspective.

Objectives of the Study

1. To identify patterns of writing errors.
2. To interpret these errors in light of linguistic and pedagogical factors.
3. To relate teachers' findings to students' performance.
4. To propose practical instructional recommendations.

3. Theoretical Framework

3.1 Hearing Impairment and Written Language

The relationship between hearing impairment and written language constitutes a central concern in contemporary linguistic–educational research, as it reveals the complex interaction between cognitive, linguistic, and perceptual dimensions. Hearing impairment is no longer conceptualized merely as a sensory deficit but as a structural variable influencing language development and communicative competence **(Marschark. M. & Spencer. P, 2022).**

Since spoken language typically forms the foundation for phonological representations and syntactic intuition, limited access to auditory input fundamentally alters language acquisition pathways. Written language is therefore often acquired through alternative routes that rely more heavily on visual processing and symbolic mediation **(Mayer. C. & Trezek. B, 2020).**

This shift produces distinctive linguistic characteristics in written production that cannot be interpreted through a deficit framework. Limited exposure to natural spoken structures may affect syntactic acquisition, resulting in agreement errors, word order disruptions, and difficulties with functional markers **(Graham, 2019).**

Control over discourse connectors and logical relations may also be affected, leading to linear or enumerative discourse structures with weaker causal and argumentative links **(Knoors. H. & Marschark. M., 2018).**

At the level of textual coherence, learners may demonstrate control over isolated linguistic units while experiencing difficulty in achieving global textual cohesion—skills associated with accumulated linguistic experience and discourse processing patterns **(Mayer. C. & Trezek. B, 2020)**

Metalinguistic awareness, crucial for monitoring and revising written production, may follow a differently organized developmental trajectory without implying cognitive deficit **(Humphries et al, 2019).**

Importantly, deaf learners often develop compensatory visual cognitive strategies that influence idea organization and written expression, potentially explaining relative strengths in lexical or orthographic domains alongside persistent syntactic and discourse-level challenges (Marschark & Spencer, 2022).

Contemporary literature thus shifts away from the medical model of disability toward a socio-pedagogical model linking performance to educational context (Knoors. H. & Marschark. M., 2018). Writing difficulties are shaped by instructional methods, quality of visual scaffolding, explicit teaching practices, teacher preparation, and classroom environment.

Within this perspective, error analysis acquires dual interpretive value: it reveals linguistic representations and acquisition pathways while simultaneously reflecting the impact of the educational environment **(Graham, 2019)**. Writing development among deaf learners is therefore a complex systemic phenomenon requiring an integrative approach that combines linguistics, educational psychology, language didactics, and inclusive education, emphasizing explicit instruction, structured visual support, and error pedagogy as a learning lever **(Marschark. M. & Spencer. P, 2022).**

3.2 Hearing Impairment and Argumentative Writing

Argumentative writing represents one of the most complex forms of written production, as it involves higher-order linguistic and cognitive processes such as thesis construction, argument deployment, and regulation of logical relations **(Graham, 2019).** It requires integrated linguistic, rhetorical, and logical competencies.

Its study among deaf learners is particularly significant, as argumentative texts rely on precise discourse structures involving problem framing and inferential relations **(Knoors. H. & Marschark. M., 2018)**. Limited access to spoken language may hinder the acquisition of logical connectors typically developed through oral interaction, resulting in less organized argumentative structures and more linear or enumerative discourse patterns **(Marschark. M. & Spencer. P, 2022).**

These challenges intersect with visual cognitive processing patterns **(Mayer. C. & Trezek. B, 2020)** and with the development of metalinguistic awareness essential for planning and coherence monitoring **(Humphries et al, 2019)**.

However, contemporary scholarship cautions against deficit interpretations and instead advocates pedagogical approaches that treat argumentative competence as constructible and developable. Explicit instruction in argumentative structure and visual scaffolding of logical relations emerge as key strategies for improving performance, while error analysis serves as a cognitive entry point for guiding pedagogical intervention within inclusive education **(Graham, 2019); (Marschark. M. & Spencer. P, 2022)**.

3.3 Written Production in Teaching French as a Foreign Language: Didactic Challenges

In the didactics of French as a Foreign Language (FFL), written production is a central and complex competence. Writing is not merely a technical skill but a cognitive–discursive activity mobilizing linguistic and metacognitive processes **(Graham, 2019).**

Within this framework, writing constitutes:

1. A problem-solving activity.
2. A process of meaning construction.
3. A tool for thinking and organizing.
4. A deferred communicative practice.

Mastery of written production requires precise control of linguistic structures, discourse organization, and logical connectors. At the secondary level, instruction aims to develop expressive autonomy through planning, drafting, and revising processes.

For deaf learners, however, these requirements become more complex due to the intersection of foreign language learning challenges with specific language acquisition pathways. Consequently, writing error analysis becomes a central didactic entry point for understanding learning difficulties and adapting instructional practices to learners' cognitive–linguistic characteristics.

4. Methodology

4.1 Research Design The study adopted a descriptive–analytical approach with an applied dimension, given its suitability to the nature of the research problem and its capacity to systematically describe and analyze the linguistic phenomenon under investigation. This methodological choice goes beyond merely identifying error patterns in written production; it seeks to interpret their structure and relate them to linguistic and pedagogical factors as well as classroom

practices. Moreover, the approach aligns with the exploratory nature of the study, particularly within a context characterized by the rarity of cases and limited access to large samples.

4.2 Field of Study The provinces of Djelfa and Chlef were selected based on methodological considerations related to the scarcity of deaf students in secondary education, thereby ensuring the possibility of collecting analytically meaningful data. This selection aimed to achieve a minimum level of diversity in the linguistic corpus in order to identify more stable error patterns. The geographical distribution also reinforced the exploratory dimension of the study by examining the phenomenon across relatively different educational contexts. This orientation does not aim at statistical comparison, but rather at enriching qualitative analysis and deepening interpretive understanding. It is consistent with the nature of special education research, which relies on limited samples analyzed in depth.

4.3 Sample Given the nature of the research problem and the specific context of inclusive education, a purposive qualitative sample was adopted, consistent with the analytical objectives of the study. The research does not aim at statistical generalization but at developing an in-depth interpretive understanding of the regularity of errors in the written production of deaf learners. This choice is grounded in methodological considerations common to special education research, where the rarity of cases and limited access to broader populations constitute practical constraints on research design. The sample consisted of two interrelated groups:

First –Student Sample: The study included three cases of deaf students integrated into secondary education (third-year secondary level). They were selected according to precise methodological criteria:

1. Official diagnosis of hearing impairment.
2. Enrollment in inclusive educational institutions.
3. Participation in a written production task in French.

This selection reflects the logic of qualitative research, which prioritizes structural depth of analysis over numerical breadth. The limited sample size is therefore not viewed as a methodological weakness, but as a coherent choice aligned with analytical studies conducted in contexts of low-incidence disabilities.

Second – Teacher Sample: The teacher sample consisted of eight (08) French language teachers. This number was determined based on methodological considerations related to the applied context of the study. The rarity of deaf

students integrated into secondary education objectively limits the number of teachers directly involved in instructing this population, making sample expansion practically unfeasible. Nevertheless, within the adopted qualitative–interpretive framework, this number is sufficient to provide acceptable diversity in professional experience, classroom practices, and didactic adaptation strategies. Since the study does not aim at statistical generalization but at constructing an in-depth analytical understanding of the pedagogical factors underlying written errors, the sample size is understood as a methodological choice consistent with the exploratory and interpretive nature of the research.

5. Research Instruments The study relied on three complementary research instruments to ensure a systematic and coherent analysis of the phenomenon under investigation:

1. **Teachers' Questionnaire:** A questionnaire administered to French language teachers to collect data related to their professional background, pedagogical practices, and perceptions of the written production of deaf learners.

2. **Analysis of Written Productions:** A corpus of written texts produced by deaf students was collected and analyzed in order to identify recurrent structural, argumentative, and linguistic error patterns.

3. **Error Analysis Grid:** A structured analytical framework designed to examine errors across interconnected levels—structural, argumentative, and linguistic—thus enabling a transition from descriptive observation to interpretive analysis of error regularities

Table (1): Results of the Teacher Questionnaire- Summary Table of Research Instruments and Analysis Grid

Instrument	Objective	Adopted Indicators	Function of the Results
Teachers' Questionnaire	Describe the pedagogical context	Professional background, classroom practices, assessment of students' level	Interpret the regularity of errors and relate them to instructional practices
Written Production Task	Build a corpus for analysis	Text structure, organization of arguments, coherence, linguistic accuracy	Diagnose structural, argumentative, and linguistic error patterns
Error Analysis Grid	Ensure systematic analysis	Structural, argumentative, and linguistic levels (presence/absence)	Move from descriptive identification to structural interpretation

The findings revealed that errors in written production are not merely incidental individual slips, but rather structural regularities carrying cognitive and linguistic significance. They reflect a dynamic interaction between the specific pathways of language acquisition among deaf learners, the structural complexity of the French linguistic system, and the nature of prevailing classroom practices

Table (2): Professional Characteristics, Experience, and Training

Question	Indicator	Numerical Results	Percentage	Concise Analytical Interpretation
Gender	Female	5	62.5%	Female predominance in the sample
	Male	3	37.5%	—
Academic Qualification	PES (Bac+5)	5	62.5%	Good academic qualification level
	Master's Degree	2	25%	—
	Bachelor's Degree (Licence)	1	12.5%	—
Previous Experience with Deaf Students	Yes	0	0%	Absence of prior experience
	No	8	100%	Lack of previous contact with this group
Specialized Training in Deaf Education	Yes	2	25%	Limited training
	No	6	75%	Weak specialized qualification

The findings indicate that none of the teachers had prior experience working with deaf students before their current assignment, and that 75% of them had not received specialized training in deaf education. This situation helps explain part of the subsequent pedagogical difficulties observed in classroom practice.

Table (3): Summary of Classroom Practices and Communication Methods

Dimension	Main Result	Percentage	Analytical Interpretation
Adoption of adapted methods for deaf students	No adapted methods are implemented	75%	Weak pedagogical adaptation
Perception of teaching difficulty	Considered difficult/exhausting (62.5% difficulty – 37.5% exhausting)	100%	High perceived difficulty of instruction
Primary means of communication	Lip-reading	87.5%	Almost exclusive reliance on visual–oral communication
Use of sign language	Not used	0%	Lack of diversification in communication tools
Use of instructional materials	Reliance on the textbook	62.5%	Traditional approach to didactic support
Provision of assistive hearing devices	Not equipped	100%	Absence of technical assistive support

The findings reveal a classroom environment largely characterized by traditional practices, with limited pedagogical adaptation and insufficient diversification of communication methods. This context is consistent with the recurring writing difficulties identified in students' productions. The study further highlights that teaching written production to deaf learners presents significant challenges, primarily linked to the lack of specialized training in hearing impairment. The data also point to insufficient understanding of the linguistic and cognitive specificities of this group, which negatively affects the effectiveness of the instructional strategies employed. The applied activity—writing an

argumentative text—enabled the identification of recurrent errors affecting text structure and linguistic organization. Overall, the results underscore the need for specialized professional training, appropriate didactic support, and more flexible pedagogical practices that take into account the visual processing characteristics of deaf learners.

Analysis of Written Productions among Deaf Students (Argumentative Text)

Table (4): Main Recorded Writing Errors

Level	Type of Error	Recurring Manifestations	Approximate Frequency
Structural	Failure to respect the argumentative plan	General introduction without a clear problem statement – weak or absent conclusion	66%
Structural	Absence of a clear problem statement	Presentation of the topic without formulating a guiding question	66%
Argumentative	Linear presentation of ideas	Listing advantages and disadvantages without dialectical confrontation	100%
Argumentative	Weak support of arguments	Lack of examples or sufficient justification	66%
Linguistic	Weak use of logical connectors	Limited use of connectors such as “but,” “however,” “despite,” etc.	66%
Linguistic	Grammatical and syntactic errors	Agreement errors, morphological inaccuracies, sentence structure issues	Recurrent
Linguistic	Weak textual cohesion	Abrupt transitions between ideas	Recurrent
Expressive	Lack of clear personal stance	Absence of explicit opinion in the conclusion	66%

The recorded errors display a systematic pattern that reveals structural difficulties in mastering the argumentative text as a linguistic practice within a second-language context, rather than indicating cognitive deficits among learners. The students are capable of generating ideas; however, they encounter challenges in organizing them logically, substantiating them convincingly, and linking them linguistically within a coherent argumentative framework.

These difficulties can be explained by the specific pathways through which deaf learners acquire written language, their limited exposure to oral argumentative models, insufficient systematic training in constructing argumentative texts, and the need for more structured visual and organizational support in the classroom. Accordingly, improving the quality of written production requires explicit instruction in argumentative text structure, intensified practice with discourse organizers, and the implementation of gradual assessment grounded in error pedagogy as an effective learning tool.

Table (5): Interpretive Analysis of the Causes of Errors

Type of Error	Possible Causes	Pedagogical Interpretation
Weak argumentative structure	Limited awareness of the structure of argumentative texts	Need for explicit instruction on the debate/argumentative framework
Absence of a problem statement	Difficulty formulating a central guiding question	Weak abstract thinking skills
Linear presentation of ideas	Adoption of a narrative rather than a dialectical style	Insufficient training in comparison and argumentative confrontation
Weak use of examples	Limited linguistic and expressive repertoire	Need for procedural modeling of argument construction
Limited use of connectors	Weak control of discourse organizers	Necessity of intensive training on logical connectors
Grammatical errors	Difficulty acquiring French morphological structures	Impact of limited access to spoken language
Weak textual cohesion	Fragmented cognitive processing of ideas	Need for visual support in text organization
Absence of personal stance	Hesitation in adopting an explicit position	Insufficient training in self-expression

this table provides an interpretive framework linking the observed writing errors to their potential cognitive, linguistic, and pedagogical causes, thereby supporting a structured understanding of the difficulties encountered in argumentative written production among deaf learners.

Table (6): Analytical Link between Teachers' Results and Students' Performance

Teachers' Findings	Observed Student Performance	Analytical Interpretation
75% lack specialized training in deaf education	Weak control of argumentative structure and linguistic organization	Limited teacher preparation affects the quality of explicit writing instruction
100% have no prior experience with deaf students	Recurrent structural and argumentative errors	Lack of prior exposure reduces teachers' ability to anticipate and address specific learning needs
Predominant reliance on lip-reading (87.5%)	Weak textual cohesion and limited use of logical connectors	Restricted communication channels hinder the development of discursive competence

Absence of sign language use (0%)	Linear and enumerative presentation of ideas	Insufficient visual-linguistic mediation impacts argumentative organization
75% do not adopt adapted teaching methods	Recurring grammatical and syntactic errors	Weak pedagogical adaptation limits differentiated support
Reliance on traditional instructional materials	Lack of structured planning and weak conclusion formulation	Insufficient scaffolding for argumentative text construction

This table demonstrates a coherent analytical relationship between the pedagogical context reported by teachers and the structural, argumentative, and linguistic difficulties observed in students' written productions, highlighting the systemic interaction between instructional practices and learning outcomes.

Discussion of Findings

This study is situated within the field of Teaching French as a Foreign Language (FFL) and seeks to develop an in-depth analytical understanding of errors in argumentative written production among deaf secondary school students, moving beyond reductive normative interpretations.

The findings indicate that the observed errors do not constitute isolated linguistic deviations but rather structured patterns of cognitive and linguistic significance. These patterns reflect the complex interaction between the specific pathways of language acquisition among deaf learners, the structural complexity of the French linguistic system, and prevailing classroom practices.

At the structural level, the analysis revealed a marked weakness in adhering to the argumentative schema, particularly in formulating the problem statement, constructing the dialectical relationship between thesis and antithesis, and organizing the conclusion as a moment of synthesis. Sequential narrative exposition tended to prevail over progressive inferential reasoning, thereby weakening the persuasive force of the texts.

At the argumentative level, supporting and opposing ideas were present; however, they remained general and insufficiently substantiated by explicit justification or precise illustrative examples, with limited use of inferential connectors.

Linguistically, a high density of grammatical, morphological, and syntactic errors was observed, alongside weak deployment of logical connectors and discourse organizers, negatively affecting textual cohesion and semantic coherence. This finding is particularly significant in the context of French as a foreign language, which requires precise control of agreement systems, verb

tenses, subordinate structures, and discourse organization grounded in logical progression.

Linguistic–educational research further suggests that limited access to spoken language impacts the acquisition of syntactic and discourse structures, thereby explaining sentence construction instability and reduced control over logical relations among deaf learners. Consequently, deficiencies in the argumentative schema should not be interpreted as superficial formal shortcomings but as indicators of deeper challenges in meaning organization and inferential structuring within written discourse.

Moreover, correlating textual analysis with data from teachers' questionnaires strengthened the explanatory weight of pedagogical factors, particularly limited specialized training, insufficient didactic adaptation, and the persistence of traditional instructional practices that fail to account for the cognitive–linguistic specificities of deaf learners.

Written performance must therefore be understood as the outcome of a dynamic interaction among learner characteristics, linguistic structure, and educational context.

Accordingly, the study underscores the necessity of an integrative approach that links error analysis to the development of more responsive and effective pedagogical practice.

Conclusion

Written error is conceptualized as a cognitive–linguistic indicator of learning in progress rather than a mere normative deviation, making error pedagogy both a diagnostic and formative tool that enables structural interpretation and more effective instructional intervention.

Accordingly, the study recommends explicit and systematic instruction in argumentative writing, with emphasis on planning, structuring theses and arguments, and intensive training in logical connectors, supported by visual tools such as graphic organizers and mind maps to enhance coherence and reduce linearity. It further stresses the need to integrate specialized training in hearing impairment psychology and adapted writing didactics, strengthen visual and differentiated instructional competencies, and implement supportive institutional policies, including adapted assessment mechanisms.

Ultimately, the study affirms that written performance among deaf learners emerges from the dynamic interaction of linguistic, cognitive, and pedagogical factors; thus, its improvement constitutes a systemic educational responsibility

and calls for an integrated, inclusive framework that links learner characteristics, language structure, and educational context while opening avenues for further specialized research.

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