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Does artificial intelligence make students of French as foreign language more autonomous or more dependent? A case study in an Algerian context

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Abstract:

The integration of generative artificial intelligence (AI) into higher education has presented universities with an unprecedented situation. In the context of written production, this change affects the very nature of the teaching situation. This article aims to examine the impact of the spontaneous use of AI tools on language skills, autonomy and cognitive effort. To this end, learning practices must be rethought. Using a mixed-methods approach, our research combines a questionnaire distributed to 92 students, a comparative writing task (with and without AI), and direct observation of practices carried out with a subsample (n=5). Through a cross-analysis of these declarative, behavioural and performance data, this study aims to examine the actual benefits of technological mediation. The objective of this research is to determine whether these new tools constitute a genuine lever for learning that promotes autonomy, or whether, on the contrary, they lead to a passive delegation of intellectual effort and a dependence on software in language classrooms.

Keywords: Generative Artificial Intelligence, Written production, Learner autonomy, Cognitive effort.

Introduction

The increasing integration of Information and Communication Technologies (ICT) over the last decade has brought about significant changes in the field of teaching and learning French as a foreign language (Guichon, 2012; Mangenot, 2017). However, the spectacular advent of generative artificial intelligence (AI) has revolutionised this sector in every respect (Karsenti, 2023; UNESCO, 2023). Higher education is no exception to this trend, and as a result, new practices are emerging. Artificial intelligence—which we define in the context of this research as the range of large generative and conversational language models (such as ChatGPT, Gemini or Claude) as well as advanced text-editing assistants (such as DeepL Write or QuillBot)—is now becoming part of students' daily lives. These tools are challenging traditional learning methods and are no longer limited to simple documentary research: they are becoming genuine writing assistants (Cotton et al., 2024; Lo, 2023).

These changes are affecting all levels of higher education. Learners, who are supposed to be at the centre of the teaching process, are embracing these new tools on a massive scale to compensate for their language shortcomings.

In the Algerian university context, writing is still perceived as a source of difficulty (Belguedj, 2019; Himeur, 2015). Profound changes have affected the student's relationship with language, imposing a new paradigm in which technology intervenes directly in the process of conceptualisation and production.

It is within this context of accelerated digitalisation that our research is situated. It is now widely accepted that the emergence of such technologies in language classrooms raises profound pedagogical and institutional questions (Bouaid, 2025). On the one hand, the literature highlights the learner-centred approach: AI promotes the individualisation of learning and motivates the acquisition process (Baktache-Bouchoucha, 2024; Bouzeria & Boukef, 2024). On the other hand, our focus is on the limitations of this practice, as the cognitive effort essential to the acquisition of a foreign language risks being completely bypassed by the machine (Menouer & Moumen, 2025). Our research follows this line of inquiry. It aims to describe the actual use of these tools and the impact this has on learners' performance in writing tasks.

These findings lead us to frame our research question around a central issue: namely, to determine the extent to which the use of generative artificial intelligence by Algerian students learning French as a foreign language influences their language skills and autonomy. To explore this dynamic, we put forward three hypotheses. Firstly, we suppose that the use of generative AI significantly improves the formal and linguistic quality of our learners' written work, by providing

them with immediate adaptive resources and targeted feedback. Secondly, regular use of these conversational agents outside the classroom is thought to encourage self-directed learning, with students breaking free from the traditional framework to become the main drivers of their own learning journey. Finally, our third hypothesis posits that this unsupervised technological ubiquity prioritises immediate results at the expense of the process of constructing written text, creating a dependency on software that substitutes the machine for the intellectual effort required for genuine language acquisition.

To address these questions and test these hypotheses, this article is structured around three main strands. The first outlines the conceptual framework of our research, tracing the theoretical evolution of educational technologies from CALL to AI-LL whilst modelling the cognitive constraints inherent in writing

1. Conceptual framework:

1.1. From CALL to MALL to AI-LL: theoretical benchmarks

Computer-assisted language learning (CALL) emerged in the 1970s with structural and behavioral software (Levy, 1997; Warschauer & Healey, 1998). The computer functions as an exercise dispenser: it compares the learner's answers to a preprogrammed model. In the 1980s and 1990s, the influence of communicative approaches and the rise of the Internet made CALL evolve towards more open environments (simulations, authentic exchanges, forums), but the architecture remained closed: the system does not produce unpublished speech adapted to the specific production of the learner (Chapelle, 2001).

With mobile technologies (MALL), learning moves out of the classroom (Kukulska-Hulme & Shield, 2008). In Algeria, where the fixed computer is still not very accessible, the smartphone has become an almost universal language learning tool. However, mobile applications, such as CALL software, broadcast pre-existing content without generating an appropriate response to the student's singular error.

The emergence of large language models (GPT-4, Mistral) constitutes a rupture. Unlike previous systems, these models generate natural language responses adapted to the context of the exchange. A student may request a personalized grammatical explanation, rewording, or help with structuring. This conversational ability changes the nature of didactic interaction.

However, these models remain "black boxes" (Castelvecchi, 2016): the student sees the result but not the rules mobilized. The opacity of the process can hinder metalinguistic awareness, raising a central question: does the immediate improvement of the text correspond to sustainable learning?

1.2. The MALL: learning beyond the classroom

Mobile technologies (smartphones, tablets) appeared in the 2000s and again changed the conditions of learning. Kukulska-Hulme & Shield (2008) point out a simple but decisive fact: with a phone in his pocket, the student can learn on the bus, while waiting in line, or while waiting for a class. Learning becomes fragmented, continuous and disconnected from the institutional place.

Let's take a concrete example in Algeria. A student on the bus takes out his phone to read a vocabulary sheet on the Duolingo app or listen to a podcast excerpt in French (for example, RFI Savoirs). He is not in the classroom, but he is really learning. This is the fundamental contribution of MALL. This practice concretely illustrates the theory of situated learning developed by Lave and Wenger (1991): knowledge is not acquired through abstract transmission, but in the very contexts in which it will be used. Wong & Looi (2011) talk about seamless learning—a seamless learning, which crosses the spaces and moments of everyday life.

In Algeria, the MALL is of particular interest. In many universities, access to a fixed computer remains limited for students. On the other hand, the mobile phone is almost universal. Language applications, automatic translators (Google Translation, DeepL) and platforms like Duolingo or Memrise seem to be massively used, often to compensate for difficulties in French. However, the MALL retains a structural limit. Even the best mobile applications broadcast pre-existing content: lists of words, gap-filled exercises, multiple-choice questions. When a student writes a sentence in Duolingo, the system compares it to an expected answer. If the error is unforeseen, the application doesn't know what to do. The MALL extends several logics of the CALL while transforming the spatio-temporal conditions of learning: it corrects, evaluates, but does not generate unpublished speech in response to the specific production of the learner.

1.3. The emergence of AI-LL: a conversational and generative paradigm

The rise of large language models (LLM) such as GPT-4 or Mistral, deployed in conversational interfaces like ChatGPT or Gemini, constitutes a technical and didactic breakthrough in the field of computer-assisted language learning. Unlike previous systems, based on preprogrammed responses or closed interaction scenarios, these models are able to generate outputs adapted to the immediate context of the exchange, in response to inputs freely formulated in natural language.

Unlike a standard grammar checker (Antidote, Grammarly), an LLM is not limited to highlighting an error by drawing attention to a rule. He can rephrase an entire paragraph, change his language register (from familiar to academic), add examples, or explain why a turn of phrase is heavy. Interaction is becoming truly conversational.

Technically, this difference is based on a probabilistic inference mechanism. Bender et al. (2021) forcefully recall that these models do not understand French in the human sense. They calculate the probability of a sequence of words from billions of training texts. However, the result gives a striking impression of coherence and adaptation.

The didactic implications are concrete. Let's take an example: a student writes "hands he washed". He asks ChatGPT: "Why is that wrong?" The system does not return a prerecorded record. He generates a response that explains the

agreement of the past participle of pronominal verbs, illustrates with "the hands he washed," then proposes a similar sentence: "the teeth he brushed." All in a few seconds, and adapted to the supposed level of the user. This ability changes the relationship between production and reception. With a classic CALL exercise, the student writes, the machine validates or corrects, then the interaction ends. With an LLM, he enters a loop: he writes, reads the generated response, modifies his request, and follows up. This dynamic approaches a real exchange.

However, this power has an epistemological cost. Castelvetti (2016) describes advanced AI systems as "black boxes." When ChatGPT reformulates a clumsy sentence, the student sees the result, but not the rules involved. Did he correct the past participle agreement, change the position of an adverb, or delete a repetition? The opacity of the process makes it difficult to become aware of metalinguistics. This opacity raises a central didactic question: does the immediate improvement of the text correspond to sustainable learning? Will a student who passively accepts a reformulation without understanding the changes made improve his writing skills?

2. Writing in French as a foreign language: cognitive issues and learners' difficulties

2.1. Scriptural competence: an activity of high cognitive level

Writing in a foreign language is an extremely demanding activity. Hayes & Flower (1980) decomposes this process into three interdependent operations: plan, put in text, revise. Planning means: finding ideas, organizing them, setting a goal (informing, convincing, telling). To put into text is to transform these ideas into correct French sentences: choice of time, vocabulary, connectors. Revising, finally, means rereading one's draft with a critical eye to identify inconsistencies and errors.

Kellogg (1996) shows that these three operations make heavy demands on working memory, which has a limited capacity. If the learner must devote most of his resources to tuning verbs or searching for a word, he cannot at the same time improve his argumentative progression or the clarity of his plan. Cornaire & Raymond (1999) observe that this cognitive overload frequently causes anxiety among student of French as a foreign language. The student blocks, goes around in circles, or produces very simple sentences to avoid mistakes. Result: the text is grammatically correct but poor in substance.

The recurring difficulties concern three specific dimensions:

Morphosyntax: subject-verb agreements, past participle agreements, choice of prepositions, mastery of past tenses (past composed / imperfect / more-than-perfect).

Academic vocabulary: students often know the vocabulary of everyday life but struggle with the abstract or technical terms necessary for academic writing (however, consequently, hypothesis, correlation) (Pollet, 2001).

Textual coherence: Charolles (1978) shows that a text is coherent if its sentences are logically linked and if the main theme progresses without a raw break. However, many French as a foreign language learners write lists of juxtaposed sentences rather than an articulated text.

Cuq & Gruca (2005) remind us that the most common grammatical errors in French as a foreign language are not random: they concern specific areas (past participle agreement, use of prepositions...etc).

3. Autonomy, dependence and technological mediation

3.1. The learner's autonomy in a digital context

Holec (1981) defines autonomy as the ability to take charge of one's own learning: set goals, choose methods, evaluate progress. In the field of FLE writing, an independent learner is able to identify his recurring errors, look for suitable resources (an online exercise, a grammar sheet), and revise his text without external help.

With generative AI, this definition needs to be revised. A student who uses an AI is not necessarily passive. If he asks: "Here is my sentence: 'The girls are gone.' Why is that wrong? Explain the rule to me", then compare the answer with his own draft, he exercises a form of reinforced autonomy. The tool becomes an explicit tutor, and the learner remains in control. On the other hand, the student who copies and pastes his sentence receives the corrected version "The girls have left" and inserts it without reading the explanation is not autonomous: he is assisted and permanently dependent. Cognitive activity has changed in nature: it is no longer a matter of producing, but of selecting and validating.

This distinction is essential in the Algerian university context. Many students already use AI tools without understanding the applied rules. Digital uses are progressing faster than the metalinguistic skills necessary for their critical use. Autonomy is no longer measured only by the ability to produce a single text, but by the ability to assess the relevance and reliability of AI responses.

3.2. Dependence on technological tools

Technological dependence appears when the learner permanently delegates to the tool operations that he should master alone. Salomon, Perkins & Globerson (1991) show that some technologies reduce cognitive effort to the point of making the user unable to function without them. In academic writing, this delegation can concern the generation of the plan, the choice of vocabulary or grammatical correction.

The concrete risk is as follows: a student must write an essay. He asks an AI for a detailed plan, then submits each paragraph to him for reformulation. The final text is clear, well structured, and free of errors. The teacher gives him a good grade. But on the exam, on the table, without a phone, the same student produces a confused text, riddled with errors. AI produced a formal improvement, not learning.

The speed of responses makes the problem worse. Lexical research, critical review and manual correction take time, and this time is precisely that of consolidating what has been acquired. When AI provides a solution in three seconds, this

cognitive processing phase disappears. In the Algerian context, pre-existing gaps make this risk particularly acute. AI can become not a medium of learning, but a means of circumventing difficulties. And the more the student avoids effort, the less progress he makes. Dependence sets in. Used without pedagogical mediation, generative AI can therefore weaken scriptural autonomy. This does not mean that it should be prohibited, but that critical, reflective uses must be designed, where the learner retains control and the explicit benefit of what the machine brings them.

4. Methodological approach

This study examines how French undergraduate students use artificial intelligence tools in their writing practices, and what effects these uses have on their language skills. To answer this question, we opted for a mixed approach, articulating quantitative and qualitative data, in order to grasp both the scope of practices and their depth.

4.1. Description of the experimental protocol

The protocol is organized into four complementary steps.

An initial questionnaire (administered through Google forms) first helped to establish the profile of 92 students, their habits of use of AI and their first perceptions of these tools. Then, a subsample of five students wrote a text without any digital help—an essential condition to have a reference level uncontaminated by algorithmic assistance.

In a second step, this same text was used with AI tools for the stated purpose of improving its quality. During this phase, a direct observation was conducted to document the actual behaviors: use of copy and paste, reformulation strategies, types of requests made, methods of interaction with the tool.

The two versions were then compared according to a grid of ten criteria: grammar, lexicon, syntax, overall coherence, cohesion, progression of ideas, thematic relevance, originality, personal reformulation and enunciative coherence.

Finally, a self-assessment questionnaire administered also through Google forms, after the assisted production collected qualitative data on the students' experience: level of autonomy felt, ability to interpret proposed corrections, awareness of the limits of the tool. The intersection of these four data sources—declarative, behavioral, textual, and reflexive—allows us to obtain a more informed and nuanced view of the issue.

5. Data gathering tools :

5.1. The questionnaire

The initial questionnaire had four distinct objectives: to provide a profile of learners (gender, level of education); to document their practices in using AI (frequency, types of activities, contexts of use) ; identify their perception of the impact of these tools on their language skills ; measure their degree of reported dependence.

The main indicators analyzed from this questionnaire are the frequency of use, the level of autonomy, and the overall relationship to AI tools. It combined closed-ended questions—addressed quantitatively—and open-ended questions—analyzed by thematic categorization.

The questionnaire was administered to 92 students (1st Y: n = 2, 2nd Y: n = 18, 3rd Y: n = 72). This tool is the only procedure applied to the complete sample. No level was privileged or excluded a priori: this sample simply reflects the feedback obtained, our initial objective being to cover all levels (1st Y, 2nd Y, 3rd Y).

5.2. The analysis of written productions

Among the 92 students who responded to the questionnaire, a sub-sample of five participants¹ was randomly selected for the experimental phase of analysis of written productions. This choice, guided by logistical constraints and the qualitative nature of this phase, aims to thoroughly document the interaction processes with AI rather than produce generalizable measures. The results of this analysis must therefore be interpreted as illustrative qualitative trends, complementary to the declarative data collected from the entire corpus (N=92).

Each student completed the same writing task in two successive conditions: first without AI, then with AI. This double production allows for a controlled comparison, with identical subjects and writers.

The two versions were evaluated using a multi-criteria grid organized into four axes. Linguistic quality includes grammar, lexis and syntax. The textual organization includes overall coherence, cohesion, and the progression of ideas. Content measures thematic relevance and originality. Cognitive appropriation assesses the personal reformulation and enunciative coherence of the text produced.

5.3. The self-assessment questionnaire

This qualitative questionnaire was administered after the assisted writing session with the same subsample of 5 participants. It explores four areas: the ways in which AI is used during the task; the perceived impact on written production; the degree of autonomy felt; the limitations and difficulties encountered. The responses were subject to a thematic analysis allowing us to categorize usage profiles and associated representations.

5.4. Direct observation

Direct observation aims to document what students actually do—not what they claim to be doing. It focused on four behavioral dimensions: the use of copy and paste (frequency, extent of transferred passages); reformulation strategies (personal rewriting or raw integration); the types of requests made (correction, reformulation, generation, search for ideas) ; the methods of interaction with the tool (number of exchanges, gradual adjustment of prompts). The observation was conducted in real time, without any intervention from the researcher, using a pre-established behavioral observation

¹ We made it up exclusively of third-year students. Indeed, the number of 3rd Y participants in the first questionnaire (72 students) represents 57% of the total 126 enrolled in this year of study.

grid with the same subsample of 5 participants; the data was recorded by structured handwritten notes and anonymized screenshots, with informed consent.

6. Data analysis method

The analysis is based on a dialogue of four complementary methods, each one bringing irreducible light to the others. The statistical analysis of the questionnaires processed quantitative data: usage frequencies, response distributions. The qualitative analysis of self-assessment questionnaires made it possible to access students' representations—their relationship with autonomy, their understanding of corrections, and their awareness of the limitations of the tool. Direct observation provided behavioral data during the assisted session: it alone makes visible what the statements do not reveal, notably the copy and paste practices that students minimize in the questionnaires. The comparative analysis of written productions, conducted on the basis of a criterion-based evaluation grid, concretely measured the impact of AI on the quality of texts—real gain, but also precise limits of this gain.

7. Results

7.1. Questionnaire results

7.1.1. Respondent profile

79% of respondents are women, compared to 21% men. This distribution is consistent with the structural feminization of literary and linguistic courses in Algerian higher education, where women represent about 62% of national numbers and up to 80% in certain specialties.

Of the 92 students who responded to the questionnaire, 72 are in their third year (3rd Y), or 78.26% of the sample, 18 in their second year (2nd Y, 19.57%) and 2 in their first year (1st Y, 2.17%).

7.1.2. Use of AI tools

94% of students use AI tools. Two-thirds report using them often or always. This almost universal adoption rate, achieved in a few years, reflects rapid integration into learning routines – probably promoted by the free and mobile accessibility of these tools.

85% of students use AI outside the formal classroom setting. This figure indicates an autonomous mobilization, not prescribed by teachers—which complicates the idea of easy educational supervision.

Linguistic correction dominates usage (88%), ahead of text comprehension (69%) and the search for ideas (53%). The structuring of ideas is least cited (38%). This hierarchy reveals a mainly compensatory use: AI is used to correct and understand, rarely to build or organize thought. The fact that the most demanding cognitive task is also the least practiced deserves attention.

7.1.3. Perception of linguistic impact

88% of students perceive a positive impact of AI on their level in French. 47% describe it as important, 41% as moderate. Only 12% estimate this impact as low or zero.

The identified areas of progression confirm the formal dominance of this impact: grammatical correction (74%), improvement in writing (53%), understanding of texts (50%), vocabulary enrichment (44%), structuring of ideas (35%). Progress decreases as the task involves deeper cognitive processing.

7.1.4 Dependency indicators

Dependency data reveal structural tension. Nearly 60% of respondents copy and paste responses often or always without modification—a practice that short-circuits cognitive appropriation of content. At the same time, 82% say they often or always check the accuracy of answers, which attests to a preserved metacognitive vigilance.

However, the ability to produce without assistance is the most revealing indicator: only 24% say they are able to write easily without tools, while 70% experience difficulties and 6% have not been able to express an opinion on the issue. This figure contradicts the idea of autonomy enhanced by the use of AI.

59% of students perceive a risk of addiction. They use the tool extensively and simultaneously identify the risks that this use entails.

7.1.5. Interpretative summary of the questionnaire

H1—AI improves linguistic quality: largely confirmed on formal dimensions. 88% perceive a positive impact, focused on grammar (74%) and writing (53%). Complex discursive skills—structuring, originality—remain little affected.

H2—AI promotes autonomy: partially confirmed. Autonomous off-course use (85%) attests to independence of access, but only 24% feel able to write without assistance.

H3—AI leads to dependence and limits cognitive effort: partially confirmed. Systematic copying and pasting (60%) and low use of structuring ideas (38%) indicate a circumvention of cognitive effort. But 82% check the answers and 59% acknowledge the risk.

7.2. Direct observation: analysis of real practices in the use of AI

7.2.1 Direct copy

All the students observed (n=5), without exception, integrated passages directly derived from AI into their production, without rewriting or adaptation. This systematic—not isolated—behavior confirms and goes beyond what the questionnaires suggested. It reveals a representation of the tool as a completed response rather than as a resource to be transformed. It is not the use of technology that poses a problem in itself, but rather the absence of critical distance from what it produces.

7.2.2 Reformulation

None of the five students made a personal reformulation of the AI proposals. The total absence of rewriting indicates a superficial appropriation: selection and insertion, without transformation. This observation is particularly significant from a didactic perspective, reformulation being recognized as a central process in the development of scriptural skills in French as a foreign language.

7.2.3. Types of requests

The observed prompts are characterized by their simplicity and corrective orientation: three students formulated correction requests, one used a simple and generic prompt, only one explicitly requested a reformulation. No detailed, strategic prompts or prompts guided by a precise discursive intention were observed. Students mobilize the tool for occasional tasks without exploiting its potential in a continuous and reflective writing process. This poverty of prompts reveals a low AI literacy—a skill that is not yet taught or evaluated in the relevant curricula.

7.2.4. Interaction with the tool

The number of interactions remains low in four out of five cases:

- C1, C2, C4: Single case²
- C5: 2 to 3 requests
- C3: several successive exchanges

This weak iteration reduces AI to a distributor of immediate responses rather than an interlocutor with whom to gradually build a text. The C3 student, who multiplies exchanges, does not however show any significant personal reformulation.

7.2.5. Interpretative summary of the observation

Direct observation documents an instrumental and not very reflective use: obtain a quick correction, transfer the result, close the interaction. These behaviors converge with the declarative data of the questionnaire and empirically confirm H3: the delegation of cognitive effort is real and observable, not just declared. They also deny H2, the absence of personal reformulation testifying to no reinforced scriptural autonomy. The lack of reformulation and the paucity of prompts point to a need for explicit educational support—not to reduce the use of AI, but to transform this use into the practice of reflective writing.

7.3. Results of the self-assessment

7.3.1. Axis 1: Use of tools Three out of five students report having slightly modified the AI responses, one did not modify them, and one reworked them in a more substantial way. Three students admit to having copied certain passages directly—confirmation that aligns with direct observation, although the statements tend to minimize behavioral reality.

7.3.2. Axis 2: Linguistic impact Three students believe that AI has improved their written production; two mention a more moderate effect. But only two say they fully understand the corrections received, while three have only a partial understanding. This gap between perceived improvement and actual understanding is central: a text can be formally better without the student having acquired the rule that underlies correction. Formal improvement and sustainable learning are two distinct phenomena that AI easily conflates.

7.3.3. Axis 3: Autonomy Three students claim to be able to write without AI, but with difficulty. Two believe they can do it more easily. Students with targeted and limited use of the tool report greater confidence in their own writing skills. This finding suggests that it is the regulation of use—not the use itself—that determines the development or erosion of autonomy.

7.3.4. Axis 4 : Limits and dependence: Three students perceive AI as a useful support tool. Two express explicit reservations related to dependence, creative impoverishment, or the temptation not to think for oneself. This significant minority formulates precisely what the research documents: algorithmic assistance can substitute for, rather than support, cognitive activity.

7.3.5. Interpretative summary of the self-assessment

H2—autonomy: three respondents report being able to write without AI but with difficulty. This observation is similar to that of the initial questionnaire, where 70% of the 92 respondents stated that writing without using an AI tool was difficult. Targeted use preserves trust better than heavy use. Autonomy does not depend on the AI itself, but on how the student regulates his relationship to this tool.

H3—dependency: confirmed by the declarations themselves. Three students admit to direct copying, three only partially understand the corrections, and several testimonies explicitly mention an addiction perceived as harmful to academic performance. These elements validate the hypothesis of a partial substitution of cognitive activity by algorithmic assistance.

7.4. Analysis of written productions:

7.4.1 Presentation of the approach

This subsurvey has an exploratory and qualitative status: it aims to finely document the processes of interaction with AI and observable textual transformations, not to produce generalizable measures. The findings that follow are therefore illustrative and call for confirmation by subsequent quantitative studies.

Each student completed an identical writing task under two successive conditions: first without AI, then with AI. The two versions were compared according to a criterion grid with ten indicators, organized into four areas: linguistic quality (grammar, lexicon, syntax), textual organization (coherence, cohesion, progression of ideas), content (thematic relevance,

² To remain objective, we coded the 5 copies of C1 to C5

originality), cognitive appropriation (personal reformulation, enunciative coherence). The results are presented below in the form of descriptive qualitative observations, without numerical notation given the exploratory nature of this phase.

7.4.2. Results of comparative analysis by axis

Linguistic quality (grammar, lexicon, syntax)

Without AI, the texts of the five students show recurring morphosyntactic gaps: faulty subject-verb agreements, time confusion, preposition errors. The assisted version shows a marked improvement in surface correction. However, in two students (C2 and C4), the syntax remains simplified even after correction, suggesting a partial integration of the AI proposals.

Textual organization (coherence, cohesion, progression of ideas)

Without AI, texts remain comprehensible overall but suffer from weak cohesion: absence of logical connectors, insufficient punctuation, abrupt sequences between sentences or paragraphs. With AI, the overall structure improves significantly. The C3 student, who has multiplied exchanges with the tool, obtains a text that is smoother and better articulated than the others. However, local cohesion (at the sentence level) remains fragile in four out of five cases.

Content (thematic relevance, originality)

Thematic relevance advances with AI: the assisted texts remain better anchored in the requested subject. On the other hand, originality does not vary between the two conditions. No new ideas, no singular personal point of view appears in the assisted versions that were not included in the initial versions. AI homogenized the formulation without enriching the content conceptually.

Cognitive appropriation (personal reformulation, enunciative coherence)

This is the axis where the observations are most striking. The corrections and reformulations have been incorporated as is, by copy-pasting, without any stylistic transformation or adaptation.

7.4.3 Interpretative summary of observations

H1 – Language improvement: confirmed, but limited to formal dimensions. Grammar, syntax, and overall coherence are improving significantly. Originality, on the other hand, does not vary.

H2 – Autonomy: invalidated. None of the five students made a significant personal reformulation. AI is used as an automatic corrector, not as a tool for appropriation.

H3 – Dependence and limitation of cognitive effort: confirmed. The absence of rewriting, systematic copying and pasting, and the stagnation of enunciative appropriation attest to an effective cognitive delegation. Content (thematic relevance, originality)

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H3 – Dependence and limitation of cognitive effort: confirmed. The absence of rewriting, systematic copying and pasting, and the stagnation of enunciative appropriation testify to an effective cognitive delegation.

8. Conclusion

This study aimed to understand how AI tools influence writing practices and the development of language skills among FFL students in Algeria—and to determine whether these tools constitute a lever for improvement, a factor of autonomy or a source of dependence.

The protocol put in place—questionnaire, double written production, direct observation, self-assessment—made it possible to cross declarative, behavioral, and textual data, offering an analysis that is not limited to any of these sources taken in isolation.

H1—on language improvement: confirmed, but limited to formal dimensions. Grammar, syntax and textual organization are progressing significantly. Originality, personal reformulation and enunciative appropriation do not evolve. AI produces better texts; it does not automatically produce better writers.

H2 – on autonomy: not confirmed. Students use AI independently (85% outside of class), but this autonomy of access does not translate into scriptural autonomy. 70% have difficulty writing without assistance, and none of the five case study participants made any significant personal rewording. The spontaneous use of AI tends to substitute the machine for, rather than support, the appropriation effort.

H3—on the dependence and limitation of cognitive effort: empirically confirmed, both by direct observation and by the statements of the students themselves. The systematic copy and paste, the absence of reformulation, the poverty of

prompts, and the partial understanding of corrections indicate a delegating rather than learning use. Awareness of this risk, expressed by 59% of students, is the only pedagogical lever immediately available.

The central paradox that this research highlights is as follows: AI improves texts without guaranteeing learning. It corrects without necessarily making others understand. It produces form without mobilizing the thought that should underpin it. This study presents several methodological limitations to be considered in the interpretation of the results: the analysis phase of written productions is based on a subsample of 5 participants, which gives these results an exploratory and qualitative status; the absence of inter-judges for the coding of observations limit the reproducibility of this phase; the overall sample, although reflecting the reality of the feedback obtained, shows an overrepresentation of 3rd Y students. Despite these limitations, the triangulation of the data (declarative, behavioral, textual, reflexive) reinforces the validity of the conclusions, particularly regarding the cognitive delegation observed. Future research would benefit from exploring educational systems capable of transforming this observation into an opportunity: constrained reformulation after use of AI, structured alternation between free production and assisted production, explicit metalinguistic reflection on the corrections received, development of prompt literacy as a full-fledged skill.

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