TECHNOLOGICAL TRANSITIONS: AI IN LANGUAGE TEACHING AND LEARNING, L2 WRITTEN PRODUCTIONS AND AI GENERATED TEXTS

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Abstract: This exploratory study enquired into AI-generated productions compared to L2 student-written productions within the context of English Language Learning. Initiated within a broader pedagogical shift from handwritten to typed productions, and coinciding with the democratisation of AI tools such as ChatGPT, the study examined challenges related to AI in language teaching and learning, underscoring the importance of understanding and framing the interaction with AI tools in light of these challenges. Within this context, the study explored the connections between the teacher and reinforcement learning in AI and revealed notable issues related to AI biases and explainability. The study drew on data from 58 French university students enrolled in an intermediate-level English course, where the students were tasked with composing written syntheses in typed form. Their texts were compared with AI-generated texts produced in response to the same prompts. A mixed-methods approach, combining both quantitative and qualitative analysis, was used to examine linguistic, discursive, and structural features across the two corpora. Findings revealed notable differences in stylistic complexity. The study aimed to propose a reflection on the pedagogical implications of integrating AI tools into language learning, exploring how AI tools may support the needs of English language learners in a technological landscape that demands a balanced approach between awareness and adaptation to changes in written production.

Keywords: AI-generated productions, reinforcement learning, student productions, stylistic phenomena, written production

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1. Introduction

1.1 Study Background

The democratisation of AI-based language generators created debate within the academic sphere. While many education practitioners and students erred on the side of caution and did not engage with AI tools at all, a significant number of students engaged with AI-based language generators, raising the question of how education practitioners could respond. As expressed in a recent article (Vetter et al., 2024), writing instructors were urged to consider that at least a portion of their students would experiment with AI-powered text generation tools. Whether the use of these tools was explicitly addressed in classrooms or not, it was presented as "actively participating in the creation of a local ethic governing the use of AI" (Vetter et al., 2024, p. 2).

In 2023, ChatGPT was repeatedly presented as a useful tool for generating ideas and inspiration. While some of those promises appeared plausible, evident concerns persisted within the academic sphere, particularly in relation to non-ethical uses. In the present enquiry, the stated benefits and noted concerns of AI-based language generators were investigated within the framework of language teaching and learning. Several perspectives were taken into account, including those of AI specialists, academic institutions, developers, and education practitioners. To better position both education practitioners and students, engagement in the exploration of theoretical and practical aspects of AI was explored in the present study.

1.2 Problem Statement and Research Question

While existing literature has acknowledged the increasing presence of AI in academic settings, fewer empirical studies have examined the pedagogical affordances and limitations of AI-generated texts and student-generated texts in L2 contexts. This gap was addressed by enquiring into the use of AI-generated texts as potential pedagogical tools within English L2 writing instruction. Specifically, it was investigated whether such texts could serve as effective reference versions, guiding students towards metacognitive writing practices.

The research question that framed the study was: To what extent can AI-generated texts, specifically those produced by ChatGPT, be used as pedagogically viable reference versions for L2 learners' written productions in English? This research question entailed enquiries related to the task environment within which AI has been used and the constraints of AI-generated texts, using the teacher-learner dynamic as the point of reference.

The study's significance lay in its examination of AI-generated texts as potential reference versions for English L2 learners, an approach that, in addition to monitoring the use of AI in academia, focused on understanding and leveraging it within this context. This study aimed to contributed to ongoing discussions on the role of AI in academic settings. It aimed to provide insight into the stylistic and structural characteristics of AI-generated texts in comparison to those written by L2 learners, exploring how such tools may support, enhance, or potentially hinder the writing process. It also aimed to encourage education practitioners to develop AI literacy whenever relevant in order to guide learners in ethically and effectively using such tools.

2. Literature Review

To begin enquiring into the research question, the study investigated AI task environments and how they related the teacher-learner dynamic. In the context of AI and written expression within language acquisition, connections and constraints between the role of the teacher and reinforcement learning (henceforth, RL) were drawn.

*2.1 Links between Reinforcement Learning and the Teacher*

In AI, RL enables models to train without prior knowledge of the "world" (Thomas & Akplogan, 2009, pp. 82-85). The term "world" refers to the environment in which interaction occurs. RL operates on the principle of exploration, allowing the model to function and train without comprehensive knowledge of the environment at the outset, thereby, learning through iterative engagement.

The RL model is structured around the principle of positive reinforcement, derived from Pavlov's reinforcement experimentation (Pavlov, 1928, p. 73-82). It is designed to strike a balance between exploring elements within the environment and exploiting the discoveries made throughout the exploration process.

Several parallels may be drawn between the reinforcement of the teacher and that of AI. The first one is feedback (Osterbur et al., 2015, p. 1). In language teaching, the teacher ideally provides immediate and adaptive feedback within the environment co-constructed with the learner, as illustrated in Figure 1 below.

Figure 1.

Teacher and Learner
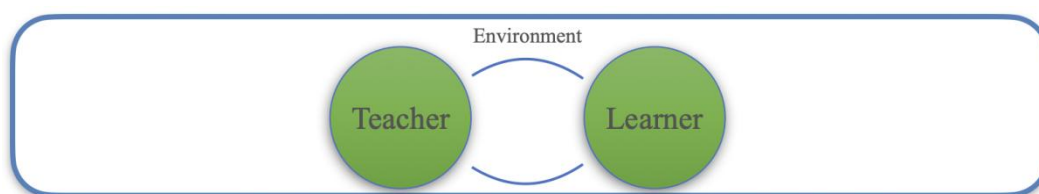
Albeit, within the configuration of feedback, there is an aspect for the teacher that may not be systematically built into RL: the choice between prioritising learner autonomy or opting to impose a pedagogical orientation in the feedback given. While an AI model offers the feedback that is requested of it, the teacher may provide feedback that is either solicited or unsolicited, based on an estimation of pedagogical priorities or linguistic needs. Within the context of AI models, reinforcement is initially established by the user based on the "world" that he/she creates. This environment is then continuously shaped and reinforced by the user's interaction with the model's feedback. User feedback enables the AI model to adapt over time, potentially enhancing personalised learning experiences. Nevertheless, the effectiveness of RL environments remains challenged by the complexity of their engineering, their heavy reliance on substantial amounts of user feedback, and the persistent risks of algorithmic bias.

Another link is found in the learning environment. In modern philosophies of the teacher-learner environment, the teacher is not the sole decision-maker regarding knowledge and its dissemination (Nunan, 2004, pp. 14-16). Within this paradigm shift, Nunan cited Breen's characterisation of three main roles of the teacher: to facilitate the communicative process, to act as a participant in the learning exchange, and to function as an observer and learner. From this perspective, RL similarly reflects these roles, promoting active user participation, much like the teacher in a task-based learning environment. The parallels are represented in Table 1 below.

Table 1.

Teacher and RL

	Teacher	RL
1	Facilitate - Set goals in the communicative process that determine intention	The State
2	Act - Participate in the construction of knowledge via interactions with the learner	The Actions
3	Act - Observe in a dynamic context to adapt and adjust	The observation of feedback in order to re-evaluate subsequent Actions

Where the teacher facilitates the communicative process by setting goals that shape the intention of language production, RL functions similarly under the condition that the user defines both the task environment and the objectives embedded within the query, or prompt. This corresponds to the "State" established in RL. Where the teacher co-constructs knowledge with the learner, RL responds by recognising and executing the "Actions" specified by the user, thereby enabling him/her to construct knowledge. Where the teacher observes learner production to adapt future interaction, RL observes the user's interaction with the feedback that it generates in order to evaluate and adapt subsequent "Actions".

When discussing RL, as implemented in AI interfaces such as ChatGPT, the phenomenon of feedback emerges as a key dynamic. In any interaction with an AI model, user input constitutes a form of reinforcement, functioning as iterative feedback that influences subsequent output. The user submits queries to the AI according to his/her constraints, to which the AI responds, generating output shaped by both user prompts and internal model parameters. For instance, on the back end of RL, the engineer notes "good" or "not good" during the training phase, contributing to the iterative construction of the environment. Equally, on the front end, the user also indicates satisfaction or dissatisfaction with the generated response, serving as feedback for the AI model and reinforcing or redirecting the AI's subsequent behaviour. User-driven RL is also becoming more adaptive via personalised AI, i.e., several features that are currently in testing phases offered by Gmail (Fernández de Lara, 2023; Josifovsk, 2023), Memory features currently being deployed by ChatGPT. A heightened degree of personalisation offers the user the possibility to further master the environment that he/she solicits via an AI model.

Figure 2.

Teacher, Learner, and ChatGPT
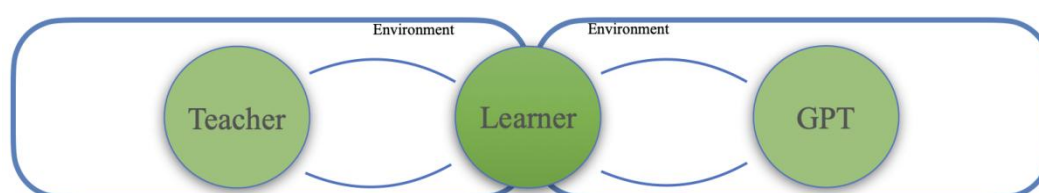
When examining task environments, if students' experiments with ChatGPT are considered, it is possible to assume that the AI's environment plays a role in learning. It is also possible to assume that this environment plays this role in addition to the teacher-learner dynamic, as depicted in Figure 2.

While one environment is co-constructed between the teacher and the learner, another is simultaneously designed between the learner and the AI model. The learner is the common point between both environments, however, these two environments remain two distinct environments. This frames the associated considerations of biases, from which no designed tool or model fully escapes.

2.2 AI Challenges

The challenges posed by the use of AI in the context of language teaching and learning are multiple and can be summarised in three axes: biases, explainability, and equity, as illustrated in Figure 3 below.

Figure 3.

   AI Challenges
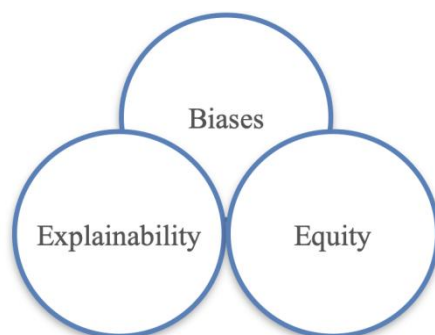
2.2.1. Biases

Biases in AI systems reflect biases in society (Akplogan, 2023). This raises critical questions regarding AI governance, which must be approached not only as a technical challenge but also as a societal responsibility. In such, AI models should incorporate diverse perspectives during development. Biases may occur due to inadequately collected data or may arise from cultural phenomena. In terms of cultural phenomena, in French, for example, the inclusive pronoun "iel" remains relatively uncommon in literature and underrepresented in training datasets. As a result, general AI models may not generate this pronoun by default. It can, however, be elicited through explicit query formulation by the user, and can also be fine-tuned into the AI model by the engineer at any time that a new linguistic, cultural, political, or other bias is identified.

More broadly, in order to counteract biases, it is essential to ensure balanced and representative datasets, which signposts the importance of knowing one's environment, or understanding the environment from which the data is drawn. Coincidentally, there are, within varying business and industrial sectors, new professions that have been created to assess and ensure the representativeness of data, reflecting the growing demand for diverse and inclusive AI development.

2.2.2. Explainability

Early AI models were built upon inference engines that operated according to logical principles, making it, thereby, possible to retrace and understand the reasoning behind

specific inferences (Akplogan & Adjovi, 2023). Today, the concept of an explainable AI refers distinctly to a model that explains the rationale behind its output. However, this behaviour is not inherently embedded in many recent AI models. For example, while grammatical corrections may be successfully generated by AI systems, the explanation of the applied grammatical rules is often absent unless explicitly requested. In such cases, the explanatory function is typically managed by a secondary model designed to interpret the output of the primary model.

Empirical tests involving grammatical corrections of student texts using ChatGPT, Bard-Gemini, and Perplexity revealed that none of the models provided automatic explanations upon initial queries, without being prompted successively. However, subsequent interactions indicated that Gemini offered the closest alternative to an explanatory model because if prompted to make a grammatical correction, it systematically generated three drafts of the correction. In addition, after a few queries, it began systematically including an explanation of the corrections made, line by line. Albeit, it remains important to consider the influence of the grammatical framework used to design the AI model and how that aligns with the target grammatical framework; this can inadvertently be a subject of linguistic biases.

Another issue with explainability is the inherent constraint in generative models to produce output regardless of confidence levels. Whether the model generates a response that is 100% correct, 50% correct, or 5% correct, it has a constraint to generate. The model does not abstain from responding; it is designed to generate. Without comprehensive knowledge of the model's training datasets, it becomes difficult, if not impossible, for users to gauge the accuracy percentage of a given response. This can be mitigated, however, by setting the model's randomness temperature to zero, thereby, instructing the AI model to make the outputs more predictable. It is noteworthy that higher temperature values, oppositely, make the model's output more creative. The user must, therefore, choose the randomness temperature according to his/her desired output.

Finally, explainability extends beyond the model itself. It also involves the user, who bears responsibility for how AI-generated content is utilised. While it is important for the model to explain itself, it is also important for the user to explain his/her use of what the model generates. That refers directly to the user's authentication of any information that he/she draws from an AI model vis-a-vis what would be considered a non-ethical use of textual generation.

2.2.2. Equity

The issue of equity is closely linked to that of bias, notwithstanding, it remains an independent constraint. Depending on the datasets, AI may reproduce or amplify existing biases in decision-making processes. This becomes important when considering the use of AI models for marking. For instance, if an AI model is trained on data reflecting that: 1) girls have outperformed boys in reading by almost 30 score points, as opposed to mathematics, on average across OECD countries (OECD, 2019, p. 47) and 2) 70% of language students are women (HESA, 2022), then any evaluative task involving learner meta-data, such as gender, could inadvertently introduce biased scoring outcomes.

Another equity-related concern stems from the lack of standardisation in the design. It is important to highlight that there is a deficit in standardisation in the design, development, and deployment of AI, making it challenging to ensure consistent equity across different cultural contexts (Akplogan, 2023). The generative responses of AI models are invariably shaped by the societal values embedded in their reinforcement learning environments. Without a knowledge of training datasets, it becomes difficult to trust the model to make culturally appropriate or equitable decisions. Furthermore, if one does not know the environment, there

is a risk of experiencing biases from the entire set of user feedback: socio-cultural, linguistic, etc. This has consequences on the relevance of the information received. Thus, the importance of mastering, or ideally configuring, the model's environment to align with pedagogical and ethical aims.

In spite of the challenges associated with biases, explainability, and equity in AI models, the average user is not rendered powerless. To counteract the former, an informed and specific use is necessary. This involves guiding the AI model concerning all of the contextual elements including who the user wants it to represent, considering that an AI model does not represent a single voice, but the amalgamation of many voices. The AI model aggregates a multitude of perspectives as a generative model, including, on the one hand, the near certainty of inherited biases from the entire user feedback dataset, and on the other hand, the potential for inclusivity and plurality from the feedback datasets, depending on the environment that is solicited by the user.

Initially, concerns prevailed regarding the impact of AI generation on linguistic and cultural variety, multilingualism, norms, sociolinguistic variations, and in general, standardisation and language normalisation, due to a fixation on general outputs. After several tests with student generations, it appeared that AI models could present an opportunity to explore the plurality of voices from the feedback datasets. To achieve this, however, specificity is key; it is necessary to specify within the query the most comprehensive description possible of the environment within which the model is to operate.

2.3 Students and AI-based Language Generators

The data used for the comparisons in the present study was of two natures: student productions and AI generations produced by ChatGPT. The collection of student productions was done in November of 2019. The exploratory basis of this paper was a natural consequence of two determinant events that took place at nearly the same time. The first event was the series of lockdowns that altered the way that universities and schools taught and assessed written expression over the course of the following years. The second event was the release and democratisation of AI-based language generators, such as ChatGPT. These two events were of contextual interest due to the fact that the lockdowns drove everyone online, suddenly confining students to use the keyboard for their written production submissions, while technologies such as ChatGPT, gave students an alternative to the writing process by generating an entire text. Using student typed productions produced in a pre-lockdown and pre-ChatGPT setting was informative in the present enquiry for the purpose of investigating the pedagogical potential of the AI model, ChatGPT, based on real student productions prior to the use of AI models.

In March 2023, ChatGPT was rivalled by similar technologies such as Bing Chat, The Information, Perplexity, to name a few. Between its release in November 2022 and March 2023, ChatGPT was evaluated on several standardised academic examinations. These included all three parts of the United States Medical Licensing Exam as well as four Law exams in courses at the University of Minnesota and the University of Pennsylvania's Wharton School of Business (Varanasi, 2023-b). All of the exam responses generated by ChatGPT were marked according to the standard marking procedure and ChatGPT produced passing responses for each one.

To align with the academic level of the university student population involved in the present study, performance data from the Graduate Record Examinations (GRE) was considered. In March 2023, the ChatGPT 4 performance in the verbal section of the GRE increased to the 99th percentile, an increase from the 63rd percentile in the ChatGPT 3.5 version. Similarly, the quantitative section showed improvement, rising from the 25th

percentile in version 3.5, to the 80th percentile in ChatGPT 4. The section that did not show any improvement, however, was the writing section. ChatGPT's 3.5 performance was in the 54th percentile and ChatGPT's 4 performance was also in the 54th percentile (Varanasi, 2023-a) despite being, in principle, a language generator. While this demonstrated the very difficulty of written expression, it furthered the present enquiry's interest in investigating how ChatGPT, specifically, could be used as a pedagogical tool in written expression.

In fine, ChatGPT had an average performance in a medical exam, an above average performance in a legal exam and an average performance in the GRE. The exams in question were designed for students and candidates in a native-speaking context, having a native or native-like mastery of the English language. In light of this, the present study sought to explore how ChatGPT-generated texts would be informative to non-native English language learners enrolled in an immersive English course at a French university, examining whether, and how, AI models, such as ChatGPT, might support the needs of English language learners and foster learner autonomy in an evolving technological landscape.

2.4 A Potential Use of ChatGPT as a Pedagogical Tool

In exploring the potential of AI-based language generators as pedagogical tools for written expression among English language learners, one avenue of investigation was the use of ChatGPT as a reference version for a writing task (or what is referred to as a "corrigé" in French). Considering the constraints mentioned prior, this enquiry was explorable due to the relevance of the language model sources used within ChatGPT, among which were the American Psychology Association writing style referencing, which was also the required citation and formatting standard for the student submissions. On this basis, the study examined whether a generation produced by ChatGPT could operate as a reference version of a written production, while questioning if a student could benefit from such a use as a pedagogical tool.

The principal suggestion of the exploration is, hereafter, based on the premise that students could use a ChatGPT generation to operate as a reference version in order to compare aspects of their pre-written production. The former necessarily supposes that English language learners possess the language level required to identify the, at times subtle, differences between their production and a ChatGPT generation. This approach also imposes that students do not use ChatGPT to produce their written production, but rather, use ChatGPT to create a reference version, against which they examine their productions. This approach equally assumes that the student undergoes the full writing process without using ChatGPT to generate any part, slight or consequent, of their written production. The proposed use is strictly based, therefore, on the following series of prerequisites: the student writes his/her own text; the student then uses ChatGPT, in this case model generation 4, to create a reference version. For the ChatGPT 4 prompt, the student presents a description of the task environment within which he/she would like to work, in as much detail as possible, and then generates a reference version. Once the version is generated, the student uses a comparative approach to review ChatGPT 4's generation against his/her text. Assuming that the former constraints are met and respected by the student, the goal of this approach is to test the potential of ChatGPT 4's generation within the framework of building an autonomous and meta-cognitive approach to written expression improvement, alongside the reinforcement offered by the student's instructor.

3. Methodology

3.1 Data Collection Context of Student Productions

The student productions were collected from 58 student participants at a public, French university. The students were enrolled in a B2 course (CEFR) at the University of Paris Nanterre (UPN). The students pursued a course of study within the department of Sciences Psychologiques et Sciences de l'Education (SPSE). Participants included third-year psychology students and second and third-year education students.

The participants were asked to listen to their classmates conduct presentations and produce a typed synthesis of the presentations. The topics of the presentations were: 1) Mindset, motivation & self-esteem, 2) Reflective thinking & emotions, 3) The impact of using foreign language on learning. The presentation topics reflected the themes of the course curriculum, and therefore, ensured that the students were exposed to the course content within an instructional setting as well as within their classmates' presentation setting. The writing task required the students to type their written production using a Moodle assignment interface, having all assistive and corrective tools disabled. They were given 20 minutes to complete their written production.

3.2 Student Production Dataset

The final corpus of student productions consisted of primary data collected from each participant. The corpus was monolingual and included various L1s. The predominant L1 was French, representing 46 out of the 58 participants. There were 3 native English speakers, 2 native Portuguese speakers, and one native speaker of each the following languages: Arabic, German, Dutch, Hungarian, Indonesian, Creole, Spanish, and Tamil. The dataset represented a total of 14,017 words.

3.3 ChatGPT 4 prompt to generate a reference version

To generate a reference version using ChatGPT 4, a number of parameters were established in order to replicate, as closely as possible, the experimental conditions under which the original student data was collected. This process involved submitting a structured prompt to ChatGPT 4 that included two key components: (1) the contextual elements of the writing task and (2) the content from the students' PowerPoint presentations, including any original orthographic inaccuracies.

The prompt submitted was as follows:

> Imagine that you are an ESL Psychology for Education student in France enrolled in an intermediate English course. You have just listened to presentations made by your classmates about the link between mindset, motivation and self-esteem. The outline of the presentations is below. Write a synthesis of 241 words of the presentations as a Psychology for Education student. (Note to reader: 241 words represented the average number of words per student production).

Title: Mindset - Motivation and self-esteem - Reset your mind

Plan:

− Introduction: definitions

− The role of motivation and of self-esteem in an educationnal environment

− How to improve motivation and self-esteem

− Conclusion

Introduction

- Success has many determinants, Two of them:
- 1) Motivation: "the psychological force that reinforces an action towards a desired goal" Schacter et al. (2010).
- 2) Self-esteem: "value that people attach to their self-descriptions" Harter (1983).

Role of self-esteem: Gives children many abilities:

- Critical thinking
- Perserverance
- Learning from mistakes
- Innovation
- Better concentration
- Very important to succeed academically,
- However: very low self-esteem in France and UK

Role of motivation:

- Boosts and directs a student behavior
- Gives him satisfaction and happiness
- Lack of motivation can hinder the process of learning
- Essential to academic success

How to improve self-esteem:

- Give positive feedback and encouragement
- Display their best work
- Make them feel important
- Organize group activities and watch out for bullying
- Help them deal with mistakes
- Have realistic expectations: differentiated instructions

How to improve motivation:

- Share your enthutiasm
- Give them a sense of control
- Give positive reinforcement
- Make your lessons fun (change of scenery, hands on lessons…)
- Offer rewards; Give them responsibility
- Help them find intrinsic motivation

Conclusion: Developing self-esteem and motivation is crucial for school

But also for everyday life, it makes them:

- Stand up for their values

- More resilient
- More responsible
- Ambitious
- Feel fulfilled and happy

3.4 Analysis of the Reference Version

Three stylistic comparisons were conducted between the student productions and the ChatGPT 4 generations: textual structuring, textual genre, and informational value. The first aspect under consideration was the textual structuring, which examined namely the paragraphic segmentation and structural coherence of the texts.

The second stylistic enquiry was textual genre. Drawing on the MF/MD framework established by Biber (1989), the Multidimensional Analysis Tagger (MAT), developed by Nini (2015), was employed to assess genre classification: the MAT programme tags and tallied the frequency of linguistic features in a text in order to determine its genre according to Biber's classification. The choice of MAT was attributed to its ability to produce the algorithmic analyses performed in the original MF/MD methodology. Via the MAT genre classification, the linguistic characteristics of the AI-generated production were explored and compared with those found in the student-written texts.

The third stylistic analysis was informational value via an assessment of nominals. Nominals were selected as the variable to assess informational value on the following basis within the MF/MD framework: "Nouns are the primary bearers of referential meaning in a text, and a high frequency of nouns thus indicates great density of information." (Biber, 1991, p. 104). The former was adopted for the present framework with an extention made to include nominalisations and gerunds due to their likeness to the noun in syntactic function.

The nominal is a part of speech that has the ability of occupying several syntactic places within an enunciation, whether a simple noun, noun phrase, proper noun, common noun, etc., and holds great importance in descriptive grammars. For example, in the enunciative grammar, when the subject is a noun its importance to the enunciation is marked by the fact that it is referred to as the point of departure. Borrowing from this approach, the noun operates as the starting point of a predicative analysis, largely contributing the construction of meaning of the predicate clause. Nouns are also often found in the object position and in like manner, they inform the interlocutor directly concerning the verb in meaning construction. The nominal can be used in various syntactic places in a phrase, however, regardless of its place, the nominal inherently possess a richer informational meaning construction compared to other part of speech categories. When a noun is employed, there is already a construction of what the notion is and what it is not. Naturally, the more specific the noun, the more defined the parameters of the notion. Irrespective, however, of the level of specificity, nouns possess an intrinsic informational value that surpasses that of any other part of speech category when considered independently.

4. Findings

The three stylistic phenomena chosen for the present analysis are presented in the following order: textual structuring, textual genre, and informational value. The results are presented firstly via a characterisation of the student productions, followed by a comparative analysis of the former and the ChatGPT 4 production.

4.1 Textual structuring

In Table 2 below, an example of a student production can be seen on the left. It was taken from the median student production. In the same table can also be seen on the right the production from the ChatGPT 4 generation.

Table 2.

Comparison of median student production and ChatGPT 4 production - Textual structuring

Median student production: PN.C1.2019.11.FRN.2	ChatGPT 4

Self Esteem and motivation are a part of everybody's life. But what are self esteem ? What are the motivation ? And what are the consequence on the daily life?

Motivation is a persistant of a task and the energy we use for it. Then self esteem result to a constant evaluation and it's summary jugement of everything a person can asses about himself or herself.

We all have our own idea about what are those but what is important to add is that they both worked together: for exemple, low self esteem will affect motivation. We have two types of motivation. The intrinsic is the idea of going something because of personal accomplishment and a extrinsic motivation which reward of punishment. W

We know that low self esteem can have an impact on the motivation. Even if a self esteem is not "black or white" as it was said on a study, low/ impaired self esteem have many consequences. Social media are one of the main reason of low self estime and to put it in a nutshell 60 % of people using it reported that it has an impact on their self esteem in a negative way.

If people have a low self esteem, they will automatically loose they motivation. One aspect lead to the others.

To concluded, what is important to increase self estime and motivation is the importance of letting people express themselves and even making mistakes and to improve the desire of a student to learn something teachers needs te let them do it.

The presentations on the link between motivation, and self-esteem provided valuable insights into fostering a positive educational environment.

The presentations began with a comprehensive introduction, defining motivation as the psychological force driving actions toward desired goals and self-esteem as the value individuals attach to their self-descriptions. The speakers highlighted the critical role of motivation and self-esteem in an educational setting, emphasizing their impact on critical thinking, perseverance, learning from mistakes, innovation, concentration, and overall academic success. Surprisingly, the presentations pointed out the prevalence of low self-esteem in France and the UK.

The presentations delved into practical strategies for improvement. To enhance self-esteem, positive feedback, showcasing achievements, fostering a sense of importance, organizing group activities, and addressing bullying were suggested. For motivation, sharing enthusiasm, providing a sense of control, positive reinforcement, engaging lessons, offering rewards and responsibilities, and nurturing intrinsic motivation were highlighted.

In conclusion, the presentations underlined the crucial importance of developing self-esteem and motivation not only for academic success but also for personal growth. Students with enhanced self-esteem and motivation were described as more resilient, responsible, ambitious, and capable of standing up for their values, ultimately leading to a more fulfilling and happy life. These insights provide a foundation for creating a supportive and motivating learning environment for future students in France.

The textual structuring evidenced in the median student production, PN.C1.2019.11.FRN.2, presented six paragraphic segments. It began with an affirmative sentence itemising the thematic topics "self-esteem" and "motivation": "Self Esteem and motivation are a part of everybody's life." This was followed by three interrogative clauses that re-introduced the two themes through a rhetorical, interrogative sequence: "But what are self esteem ? What are the motivation ? And what are the consequence on the daily life?" Following this, the participant used "be" as a main verb to introduce a definition of a key term as a subject complement: "Motivation is a persistant of a task and the energy we use for it". There were four definitions given by the participant, three of the four were introduced via "be" and the fourth was introduced by "result": "Then self esteem result to a constant evaluation and it's summary judgment of everything a person can asses about himself or herself". Finally, the participant closed the production with, "To concluded".

The text generated by ChatGPT 4 demonstrated a direct textual structure, segmented into four paragraphs. The production began with an introduction that served in explicitly restating the context of the task: "the link between reflexive thinking and emotions". The student production and the ChatGPT 4 generation both began with definitions. The student production did not explicitly indicate that its goal was to create a link between the topics, notwithstanding, the student production attempted to make a connection between the two ideas three times, whereas the ChatGPT 4 generation did not. The student production featured the following three attempts to link the concepts:

"they both worked together: for example, low self esteem will affect motivation",

"low self esteem can have an impact on the motivation"

"If people have a low self esteem, they will automatically loose they motivation. One aspect lead to the others."

Although ensuring an attempt to link the topics, this was done in three distinct segments and this repetition led to an unclear textual structure in the paragraphic segmentation of the median student production. The attempt to link the concepts could have been written into one paragraph, or presented as two paragraphs featuring distinctly different orientations or reinforcement. The paragraphic segmentation was clear in the ChatGPT generation, separating the two main chapters of the presentation, roles and strategies for improvement, into two distinct paragraphs. Less auspiciously, the ChatGPT production focused on the two terms, "self esteem" and "motivation" as coordinated, but independent concepts within an educational context: 'the critical role of motivation and self-esteem in an educational setting". In grounding the two concepts within an educational context, ChatGPT remained contextual in its generation, it was not, however, fully coherent with synthesising the link between the topics.

On the one hand, the ChatGPT 4 generation was not fully topically coherent with the task. On the other hand, there was a clear paragraphic segmentation in the ChatGPT 4 generation. In the present dataset, there were nine student productions that provided a clear paragraphic structure that respected the task. The ChatGPT 4 generation could have, therefore, potentially been used as a pedagogical reference version by 49 of the 58 students who did not present a text with a clear paragraphic segmentation.

4.2 Textual genre

Within the MF/MD framework, a text type was attributed to each of the productions based on the corpus referencing of Biber's 1989 corpus. The text types that were found in the student productions varied between expository and argumentative sub-academic genres. In the student productions, the majority of the productions demonstrated argumentative, as well as

affective features, while four productions demonstrated straitly expository characteristics without an argumentative or affective orientation. The frequency of argumentative and/or affective productions was problematic because the task required a synthesis, being of an expository nature without an argumentative or affective orientation. The types of stylistically argumentative features that were seen were: aiming to argue for or against the concepts presented, giving value judgements on the concepts presented and reacting to the content shared. These stylistic approaches made the texts argumentative in nature instead of purely expository, which was required by the task. In addition to argumentative features, several affective features were found, namely the use of second-person plural pronouns and first-person plural pronouns, referring, thereby, directly to self or reader, the use of questions as a rhetorical device and the use of emphatics & amplifiers. Argumentative and affective features were, thereby, seen in the majority of the student productions, representing 47 out of 58 student productions.

The text generated by ChatGPT 4 demonstrated straitly expository characteristics, presenting the synthesis that was requested in a descriptive manner, avoiding any argumentative or affective feature. Textual genre, therefore, appeared to be an area in which a ChatGPT 4 generation could be used as a pedagogical tool within the context of English for Specific Purposes for psychology students. If a student generated a ChatGPT 4 text and keenly compared it to his or her own production, it appeared that the ChatGPT 4 generation would be able to draw awareness to the use of elements such as expository, argumentative and affective features. For instance, the use of impersonalised, affirmative clauses (both active and passive) compared to the use of the first-person plural pronoun, "we". Instead of using a personalised pronoun, it would be possible to employ impersonalised, affirmative clauses. Extracting from student production PN.C1.2019.11.FRN.2 anew, the student wrote, "We have two types of motivation." To avoid the use of a personalised pronoun, the sentence could have been constructed via an impersonalised, affirmative clause, 'There are two types of motivation.' In the same production, the student later wrote, "We all have our own idea about what are those", which further demonstrated evidence of affective features in comparison to purely expository description.

Additionally, a keen comparison to a ChatGPT 4 generation appeared to hold the potential of drawing awareness to the use of affirmative clausal structures compared to rhetorical, interrogative ones. In the above student production, the student wrote an introduction that consisted of a series of three rhetorical questions: "Self Esteem and motivation are a part of everybody's life. But what are self esteem ? What are the motivation ? And what are the consequence on the daily life?". The questions were presumably employed as a rhetorical device to create a connection with the reader or to solicit the reader's interest, notwithstanding, they tended more towards norms of argumentative constructions than purely expository ones. A keen exploration of a ChatGPT 4 generation, namely the linguistic features associated with the academic sub-genre required in the task, could have been useful to the student, along with the 47 students who presented an argumentative prose instead of an expository prose.

4.3 Informational Value

Table 3, seen below, can be seen the rates of nominals (nouns, nominalisations, gerunds) in the median student production on the left, paralleled by the nominal rates from the ChatGPT 4 generation on the right. The frequency of each nominal was calculated on a normalised basis, per 100 words, in order to ensure comparability of each rate.

Table 3.

Comparison of median student production and ChatGPT 4 production - Informational value

Median student production: PN.C1.2019.11.FRN.2	ChatGPT 3.5
All rates per 100 words	All rates per 100 words
Nouns: 23.55	Nouns: 19.25
Nominalisations: 5.02	Nominalisations: 11.74
Gerunds: 0	Gerunds: 0.94
Total nominal value per 100 words: 28.57	Total nominal value per 100 words: 31.93
AWL: 4.40	Average word length: 6.58

As Table 3 depicts, the ChatGPT 4 generation had a higher rate of nominal features per 100 words. The total rate of nominals per 100 words in the ChatGPT 4 generation was 31.93, compared to 28.57 in the median student production. The median student production's demonstration of all three nominals was representative, rate for rate, of the overall proportion of each nominal in the total student production dataset: nouns were employed more frequently, nominalisations sparsely, and few to no gerunds. The nominals in the ChatGPT 4 generation were, consequently, more frequent and more evenly employed throughout the production.

Based strictly on the premise that the nominal operates as the most informational, independent element in a syntactic unit, the ChatGPT 4 generation attested to a higher informational value than the median student production. While there was a noticeable difference between the rate of nouns in both types of productions, the greatest difference was seen in nominalisations. The ChatGPT 4 generation used approximately twice as many nominalisations as the median student production and 28 other student productions. In this case, the ChatGPT 4 generation could lead to student awareness of the derivational nominal system including word morphology and word families, increasing part of speech mastery.

Finally, a natural consequence of employing nominalisations and gerunds more frequently was increasing the average word length within the textual production. This presented an avenue of interest for students from the perspective that longer words in English have been an indicator of more sophisticated vocabulary. The average word length in the ChatGPT 4 generation was longer, at 6.58 letters per word, compared to 4.40 letters per word in the median student production. With the highest average word length rate in the student production dataset being 5.45, the ChatGPT 4 generation could have been useful to the whole of the 58 students. If a student keenly examined the average word length in his/her production against a ChatGPT 4 generation as a reference version, the generation appeared to hold the potential of drawing awareness to the length of words, potentially leading the student to practice word derivation, inadvertently leading to transcribing longer words; longer words being an indicator of more sophisticated lexicon.

4.4 Leveraging AI Models

By leveraging AI as a tool for self-assessment, students can take greater ownership of their learning. To aid in the development of this self-regulated learning, students may be guided in understanding the limitations surrounding AI use, namely, the ability to characterise the training datasets and to control for the degree of randomness versus predictability. This naturally includes fostering a balanced approach in which students understand the difference

between using AI as a tool in order to engage deeply with their learning process, and relying on it to bypass their own cognitive efforts.

The use of AI tools in language learning consequently raises concerns about equity and access. Not all students have the same level of access to technology or AI models, and there are potential biases in AI models that may impact students differently based on their socio-economic background or linguistic heritage. Such disparities should be acknowledged, and efforts made to ensure that awareness of AI is accessible to all students. In terms of access to the knowledge constructed by, or with, AI models, it is clear that in order for this knowledge to be beneficial to all users, equity needs to be a priority in the use of, or exposure to, an AI tool, whether this is actively or passively addressed by the teacher. When considering equity within the larger frame of education, it appears that the tiers of education will be further nuanced when teachers' dispositions are also taken into account, as illustrated in Table 4 below.

Table 4.

Comparison of the tiers of education with and without AI

With AI	Without AI
students who benefit from teachers who teach with AI	students who benefit from teachers who do not teach with AI
students who benefit from independent access to AI	persons who do not benefit from either teacher or AI

To this point, there is an open question and a large point of interest concerning the didactics of AI tool integration into the instruction, and potentially assessment, of the four language competences, for language specialists and non-specialists alike. The objectives for both student profiles, as depicted in Figure 4 below, will differ and will require a distinction between, on the one hand, autonomous language capacity requirements, and on the other, AI tool mastery aimed at producing language for specific purposes.

Figure 4.

Autonomous capacity versus AI tool mastery
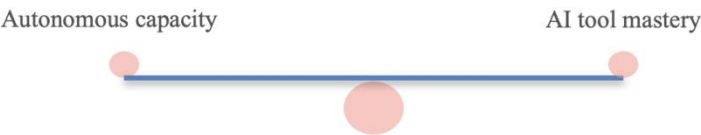
Some of the discussion around didactics will depend on the posture that institutions take. In the absence of general policies, it will also depend on individual agency exercised by teachers in choosing whether or not to expose students to AI, or to integrate into the instruction. The findings from the present analysis suggest that AI generation is likely to have an impact on students' stylistic productions in written expression. Teachers can contribute to mitigating potential, negative impacts by fostering user awareness regarding the task environments behind AI tools, and how these environments converge towards or diverge from targeted language use. In doing so, users will be better equipped to draw the line between autonomous language production and AI tool mastery.

5. Conclusion

5.1 Study Limitations

This exploratory study had limits. A negative aspect that was considered pointed back to the challenge of explainability seen in AI-based language generators. The text was generated according to the query that was submitted and unless the query included a specific request for the explanation of the grammatical rules navigating the generation, the AI model, in this case, ChatGPT 4, did not produce them automatically. This could present difficulties for English language learners in understanding the choices behind each phrasing and construction. This approach, therefore, assumed that the student using this approach would have the linguistic ability to keenly compare the productions and understand, or inference, the differences between the model's generation and his/her own production, or cultivate the reflex of requesting explanations for each aspect of the generation that was opaque. A second limitation was found within the fact that the goal of this approach was not for ChatGPT 4 to apply corrections directly to a student's production. It encouraged, instead, a meta-cognitive approach to referencing that could lead to developing autonomous autocorrection. This assumed that the student would possess the motivation necessary to follow the approach and could, there within, be useful to those who wish to be autonomous in navigating their language competences.

5.2 General Conclusion

Reflecting within the frame of possible student uses of ChatGPT textual generation as a pedagogical tool to aim for autonomous improvement of written expression, the present study examined three stylistic phenomena: textual structuring, textual genre, and informational value. This study examined the three former stylistic enquiries as phenomena that students could use to increase their awareness of areas of improvement in their textual productions.

There were aspects of all three assessments that appeared to potentially address the needs of English language learners. When analysing textual structuring, the ChatGPT 4 generation presented a clear paragraphic segmentation that aligned with the task and the expectations of academic prose. This comparison could have been useful to 49 of the 58 students who did not present a text with a clear paragraphic segmentation. When analysing textual genre, the text generated by ChatGPT 4 demonstrated straitly expository characteristics, presenting the synthesis that was requested in a descriptive manner, not featuring any argumentative or affective features. This comparison could have been useful to 48 of the 58 students, who presented an argumentative prose instead of an expository prose. When enquiring into informational value, using the frequency of nominals as the operative parameter, the ChatGPT 4 generation appeared to have the potential of drawing awareness to nominal derivation, word morphology and word families, as well as incidentally bringing attention to the average length of words, potentially encouraging student to explore and practice employing longer words, this being an indicator of more sophisticated speech. This could have been useful to the 58 students of the study, none of whom produced an average word length that was equal to or that surpassed that of the ChatGPT 4 generation.

It was noteworthy, however, that among the potential benefits of a ChatGPT 4 comparison, there was also an area in which the generation would not have helped the students: the ChatGPT 4 generation was, in fact, not fully topically coherent with the task. This was potentially tied to the concern of explainability and the default constraint to generate in conjunction with the default randomness temperature value.

5.3 Pedagogical Implications

In response to the central research question of whether AI software, such as ChatGPT, could support the needs of English language learners within an evolving technological landscape, and, if so, how, the findings of the present study suggest that while AI can provide valuable support for English language learners, its integration into educational settings requires careful consideration of both its advantages and limitations. AI tools can offer support for language development in terms of providing students with instant feedback and offering access to diverse task environments. Teachers may simultaneously remain actors in the co-constructed task environment with the student and the parallel environment with the AI model, (c.f., Figure 2) by providing personalised feedback that AI cannot fully replicate.

Students can use AI-generated texts as reference versions to expose themselves to stylistic phenomena that are representative of the task environment that they solicit in the prompt, thus fostering a meta-cognitive interaction. This potential, however, assumes that students must be encouraged by teachers to engage with AI-generated content in a way that does not replace the writing process.

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