

MASTERING THE AWARENESS OF LINKING WORDS IN SECONDARY SCHOOL LEARNERS' ESSAYS USING AI TOOLS

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Abstract. Writing is one of the most difficult skills to master, especially when it comes to producing essays. Writing skills and their development have always constituted an issue leading to poor examination results, and it still holds true today. Although linking words are recognised as a fundamental characteristic of cohesive writing, it has been identified as one of the challenges for secondary school learners in their English as a Foreign Language essays. Since Artificial Intelligence (AI) tools are based on authentic corpora and can provide learners with real-life examples of linking word use, they can be regarded as a solution to master learners' awareness of linking words along with the increase of the cohesion level. Taking into account the rapid, widespread popularity of AI applications, topicality of the issue is unquestionable, and the integration of AI into the study process has to be considered. Thus, the goal of the present case study implies ascertaining the efficiency of AI tools for the purpose of secondary school learners' writing skill enhancement. The results of the conducted survey have shed light on challenges experienced by secondary school learners when trying to reach cohesion in essay writing by means of linking words. Also, their attitudes to AI tools implementation in the study process to enhance writing skills have been elicited. The comparison of learners' pre-test and post-test essays has revealed the expanded and varied use of linking words, indicating the increased level of cohesion, which, in turn, proves the enhancement of learners' writing skills.

Key words: writing, cohesion, linking words, Artificial Intelligence (AI) tools, secondary school learners

INTRODUCTION

Writing is one of the most difficult skills to master, especially when it comes to producing long texts. Latvia, being a member of the European Union, follows the requirements formulated in the *Common European Framework of References*

for Languages, designed to provide a comprehensive basis for the elaboration of language syllabuses, which state that a learner of English whose knowledge of the language corresponds to C1 reference level ‘can produce clear, well-structured texts of complex subjects’ (n.d.: 66) and ‘can effortlessly employ [...] lexical and productive cohesive devices to structure the text’ (n.d.: 158). The ability to produce the above-mentioned type of texts should be demonstrated by the secondary school learners at the state examination when they finish Form 12. However, according to the National Centre for Education’s descriptive analysis of the state examination results from 2021 to 2023, secondary school learners in Latvia have certain problems with writing their essays. Respectively, the examination essay assessment results of these years were as follows: only 52.73% in the school year 2020/2021, 51.46% in 2021/2022, and 58.45% in 2022/2023, with the highest possible score of 100% (Online 1).

In addition to the problem stated above, the British Council, the United Kingdom’s international organisation for cultural relations and educational opportunities, claims that learners of English as a foreign language usually face various challenges, such as

insufficient input and exposure to the target language, limited opportunities for using English inside and outside the classroom, the need to communicate across language and cultural boundaries in English, a lack of skills to control their own learning (Renandya and Widodo, 2016, discussed in Crompton, Edmet and Ichaporia, 2023: 4).

The scholars also claim that artificial intelligence (AI) is being ‘heralded as a tool to support English language teaching and learning [...] that can provide new strategies and opportunities to overcome challenges and extend and enhance learning’ (Baranwal, 2022, discussed in Crompton et al., 2023: 4).

Therefore, it is reasonable to assume that incorporating modern technologies, such as AI tools, into today’s classrooms can effectively enhance learners’ language skills overall and specifically improve their essay writing abilities. Thus, the goal of the present study implies ascertaining the efficiency of AI tools for the purpose of secondary school learners’ essay writing skill development. In order to attain the stated goal, the following research questions have been set:

- 1) What aspects of essay writing present more challenges for secondary school learners?
- 2) What difficulties do secondary school learners face when using linking words to achieve cohesion in the process of writing essays?
- 3) Can AI tools be used to enhance the learners’ awareness of linking words?

To attain the proposed research goal, the authors of the current paper begin with presenting the notions of the most challenging aspects of writing an essay,

then clarify what AI is, how it works and what AI tools can be used for teaching writing before presenting the results of the empirical study.

THE MOST CHALLENGING ASPECTS OF ESSAY WRITING

Essay writing is the dominating genre in language acquisition. In humanitarian subjects like English language and literature, learners are judged on their essays. If learners cannot write good essays, particularly under examination conditions, they will never succeed in these areas (Warburton, 2006: 7). Shields (2010: 167) points out that making the connections clear is important in effective written communication, and information in an essay should be bound together to make sense in a clear and connected way. He defines *cohesion* as ‘sticking together a text in essay writing (ibid.: 173). Additionally, Botunac and Perinčić Tičić (2023: 147) state that cohesion can be defined as ‘the most essential element that uses ideas logically exposed on a paragraph level to convey information using developed argumentative sentences’. Shields (2010: 173) admits that one of the ways how cohesion in an essay is achieved is through the use of connective words and signalling devices in and between sentences, paragraphs, and even chapters, which link ideas. He adds that ‘connecting words [...] are also known as connectives, (sentence) connectors, linking words and transition words’ (ibid.: 173). These words are used ‘to link sentences and paragraphs and to show the relationship between the ideas expressed’ (ibid.). As all the notions listed above have a similar function of linking phrases and sentences, the term *linking words* will be further used as an umbrella term in the present paper, since it is more familiar for secondary school learners and used in the criteria for the evaluation of their examination essays (Online 2).

There is a classification of linking words that helps differentiate their functions. Thus, according to Biber, Conrad and Leech (2002:16), three types of words are used to create connections within a sentence and establish links between sentences and paragraphs. The first of them are *coordinators* that are used to indicate a relationship between two units such as phrases or clauses (ibid.: 30). *Subordinators* are ‘linking words that introduce clauses known as dependent clauses’ (ibid.: 31). While coordinators and subordinators signal meaning relations within sentences, *linking adverbials* show ‘the relationship between two units of discourse’ (ibid.: 357). There are six major categories of linking adverbials which are of *enumeration* and *addition*, *summation*, *apposition*, *result and inference*, *contrast and concession*, *transition* (ibid.: 389). The table based on the classification suggested by (Biber et al., 2002) is used in the current study for calculating the frequency of the use of linking words in learners’ essays (Appendix 1).

Although linking words are very important cohesive devices, ‘these small, yet important chunks of language pose many difficulties for English language learners’ (Anderson, 2014: 1). It is not easy for the learners of English as a Foreign

Language to deliver a cohesive piece of writing. As a result, most of their text lacks texture, which enables words to ‘stick together’ or meaningfully be captured in a single text (Iseni, Almasaeid and Younes, 2013, discussed in Ludji et al., 2022: 15). Moreover, a recent research finding states that language learners rely on a smaller collection of linking words compared to native speakers and expert writers (Ishikawa, 2011; Leedham and Cai, 2013; Lei, 2012; Vinčela, 2013, discussed in Anderson, 2014: 2). A study conducted by a university in Latvia has shown that ‘linking words and phrases are not very frequently used even at a proficient user’s level, lacking the opportunity to keep the written text coherent and unified’ (Apse and Farneste, 2018: 36).

Therefore, there is a certain demand for teaching Latvian secondary school learners linking words that can enhance the cohesion of their writing, which consequently will help to improve their success at the examination level. AI tools can significantly simplify the process of teaching English as a Foreign Language, especially in writing, due to the numerous benefits outlined in the following sub-chapter.

APPLICATION OF AI TOOLS FOR LEARNERS’ WRITING SKILL DEVELOPMENT

AI is one of the instruments that can be applied in foreign language teaching in general and writing in particular since it has various advantages. According to Shah (2023: 16), it refers ‘to the simulation of human intelligence by machines’. It implies several stages of learning like that of a human including simulations of learning (the acquisition of information and rules for using the information), reasoning (using the rules to reach approximate or definite conclusions), and self-correction (knowing when a mistake has been made and correcting it) (ibid.).

Writing is a unique skill of each individual, and teaching it effectively requires a personalized approach. AI writing tools can be used to teach learners to enhance their English proficiency. Using these tools, learners can receive immediate feedback and assistance, improving their writing skills faster (Marzuki et al., 2023: 2). Teachers need help to keep up with the different abilities of their learners, and as class sizes can be very large, differentiated instruction is becoming more complex. Luckily, AI tools can customize and personalize content so that teachers can quickly differentiate it and ensure that it meets every learner’s unique needs. Luckin, George and Cukurova (2022: 14) point out that AI has two characteristics: *autonomy* and *adaptivity*. Autonomy enables AI systems to complete actions without constant guidance from humans, while adaptivity describes the way that AI can interact with a person (ibid.). Adaptivity changes the way that AI interacts based on the actions the person takes (ibid.). Additionally, AI-powered writing assistants help with grammar, structure, citations, and adherence to disciplinary

standards. These tools are not just helpful but central to improving the efficiency and quality of writing (Khalifa and Albadawy, 2024: 2).

There are two basic types of AI distinguished by Shah (2023: 21). The first one is *discriminative AI*, which ‘seeks to classify and differentiate data, essentially learning the differences between different categories of data’, while the second one is called *generative AI*, which is ‘designed to create new content’ (ibid.). The scholar also identifies four prominent models of generative AI (ibid.: 24-25). The first of them are text generation models, which can create coherent and contextually relevant text based on a given prompt. Popular text generation models include OpenAI’s GPT, Google’s Bard, and Anthropic’s Claude (ibid.: 24). The second ones are image synthesis models that can generate realistic images, such as faces or objects. Popular image generation models include Midjourney, AI Dall E and Stable Diffusion AI Art (ibid.). The third type of generative AI is represented by sound processing models that can both take sound as input and convert it into text, take text and convert it into spoken speech. Such a model as Google’s Magenta project can be an example in this case (ibid., 24-25). Finally, there are multi-modal generation models which do more than one of these tasks and can handle multiple project parts. ‘For example, tools embedded in Microsoft Office 365 and Canva allow a learner to generate entire slideshow presentations with text, design, and graphics generated by the AI system’ (ibid.: 25).

In the current research, such generative AI models as a text generation model such as ChatGPT 3.5 and the multi-modal generation model of SchoolAI have been used since they are more applicable in language classrooms. These tools employ smart algorithms to find grammar, punctuation, and syntax mistakes. They offer suggestions to make writing better, and they can also help rephrase sentences in case it is needed.

RESEARCH METHODOLOGY

1 METHODS AND PARTICIPANTS

The goal of the study defined the selection of the mixed research methodology, represented by qualitative and quantitative research methods.

A case study has been implemented as a qualitative research method, since ‘it provides a unique example of real people in real situations’ (Cohen et al., 2005: 181). Furthermore, Hitchcock and Hughes (1995: 317) state that a case study vividly describes events relevant to the case, focuses on individuals or groups and helps to understand participants’ perception of events.

Prior to conducting the present study and involving learners in it, informed consent advising about the goal of the research, its procedure, potential benefits as well as confidentiality and data protection was obtained from the headmaster

of the school. Moreover, the research participants were also informed about the procedure of the conducted study, the tasks to be completed within it, as well as the questionnaire that had to be anonymously completed.

Consequently, the case of the present study is represented by 60 research participants, who are twelfth-grade learners from a secondary school in Latvia. According to *Common European Framework of References for Languages*, their proficiency level of the English language can be defined as B2. Being in the final year of their secondary education, they are preparing for the state examination. The purpose of the case study, firstly, implied the elicitation of learners' awareness of linking words and their use when performing writing activities, as well as their attitudes on the application of AI for language learning purposes.

2 TOOLS AND PROCEDURE

To pursue the stated goals and answer the research questions, a questionnaire has been initially applied as a data collection tool. According to Rasinger (2013: 65), questionnaires are considered to be a reliable way to ascertain such an abstract notion as attitudes. Pre-test and post-test, particularly diagnostic testing (Cohen et al., 2005: 322), was implemented as the second data collection tool. According to Cohen et al., this type of testing allows to identify 'particular strengths, weaknesses and difficulties that a student is experiencing, and is designed to expose causes and specific areas of weakness or strength' (ibid.). Moreover, pre-test and post-test essays were implemented with the goal to find out the learners' ability to use linking words in writing, thereby tracking the progress of writing skills development. Learners' essays were collected and analysed by means of AI platform ChatGPT 3.5. The tool provided such essential information as the types of linking words used in students' essays, as well as their frequency.

The research took place during the spring semester of the school year 2023/2024 and included the following steps:

- 1) questionnaire design and its distribution among the learners;
- 2) pre-test essay writing prior to the implementation of AI-designed tasks and tools in the classroom with the goal of ascertaining whether the learners use linking words and whether their essays are cohesive;
- 3) implementation of AI tools (Chat GPT 3.5, SchoolAI) in classroom work;
- 4) post-test essay writing to establish the impact of the applied tools and tasks on the development of learners' writing skills.

Prior to the implementation of AI in classroom work, the research participants were requested to complete a questionnaire aimed at eliciting learners' awareness of linking words in essay writing, as well as their attitudes toward the implementation of AI tools in the study process.

The questionnaire consisted of nine questions prepared using Google Forms (see Appendix 3). The learners had been sent a survey invitation link to the questionnaire by means of e-class.lv and mykoob.lv platforms. Before completing the questionnaire, the respondents had been provided with guidance on each question to make sure it was clear, and all unknown words were clarified. As a result, the responses of 60 participants were obtained; their opinions on the researched issues were elicited by means of a Likert scale.

Since it was essential to ascertain learners' use of linking words along with writing cohesion, a pre-test which consisted of writing an essay before the AI tools were implemented into the study process was given to the research participants. Subsequently, the collected pre-test essays were analysed with regard to application of linking words, and compared with post-test essays written after the inclusion of the AI tools in the classroom work.

Overall, ten 45-minute lessons were devoted to the acquisition of linking words, as well as writing skill enhancement along with development of writing cohesion. The set of lessons was initiated by the presentation of the researched issue. The classification of linking words based on the typology proposed by Biber et al. (2002) was applied for this purpose. Functions of linking words, their importance for the creation of text cohesion were thoroughly explained along with the multiple examples of the word use in context.

Thereafter, the learners were offered activities aimed at practicing linking words' application. They were provided with a paragraph (see Appendix 2) and AI tools for task performance. One of such tasks implied the use of two platforms, namely, ChatGPT 3.5 and SchoolAI, and work with a provided short paragraph that did not contain any linking words. According to the task, the learners had to augment the given paragraph with linking words and insert it first into ChatGPT giving the instruction to check the appropriateness of the inserted words. Although each learner had the same text sample, the used linking words were different and, respectively, the comments provided by the platform differed, as well. Thus, the learners received personalised feedback. However, the platform only followed the given instructions; no additional questions were asked by it, thereby compelling learners to take the initiative and ask ChatGPT 3.5 questions about the text and linking words. The same procedure was performed with another AI platform – SchoolAI. As opposed to the previous tool, SchoolAI not only provided feedback and followed the stated instructions, but also created a dialogue with the users. This distinctive feature appeared to be beneficial for the learners, making them review the paragraphs they had inserted, make corrections and consider a better use of linking words.

RESULTS AND DISCUSSION

1 SURVEY RESULTS

1.1 LEARNERS' CHALLENGES IN ESSAY WRITING AND APPLICATION OF LINKING WORDS

The first and second questions of the paper aimed at ascertaining particular challenges secondary school learners face when dealing with essay writing, and, specifically when using linking words (lw) for cohesion purposes. To answer the questions, the learners were asked to complete a questionnaire (see Appendix 3, questions 1-5); the obtained results are presented in Figure 1 below.

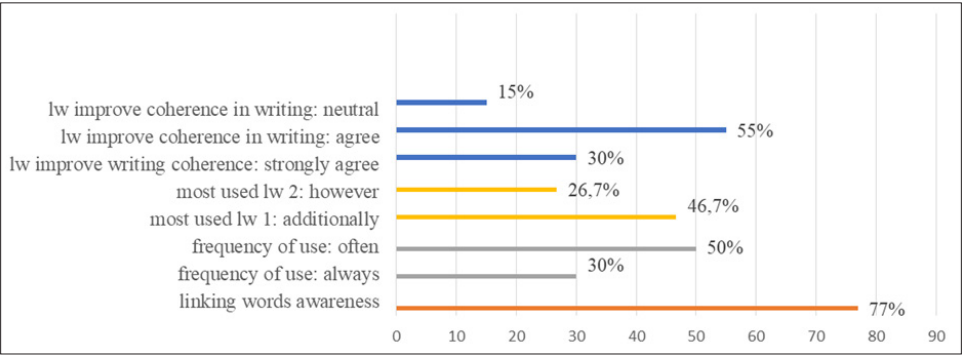


Figure 1. Learners' overall familiarity with linking words

Prior to ascertaining the challenges encountered by the learners when writing essays and using linking words, it was essential to understand their overall familiarity with the researched issue, and, consequently, it was the first question of the questionnaire. As shown in Figure 1, 77% of the respondents were familiar with the researched issue. As to the frequency of the linking words used in writing, 30% out of 60 respondents participating in the study stated that they always use them when performing written assignments, whereas 50% of the learners said that they used linking words often, which was later proved by the results obtained from the learners' pre-test essays described below.

The following question was aimed at clarifying the frequency of linking words use by the learners. As depicted in the figure above, half of the students admitted that they used the words often, 30% stated that they always used them, whereas the rest applied them in their writing only occasionally.

Question 3 was asked with the goal to establish, which linking words the respondents assumed that they used most often in their writing assignments. According to the provided answers, the most commonly used linking word is *additionally*, marked by 47% of the learners, followed by *however* indicated by

nearly 27% of the research participants. As to such linking words as *moreover*, *thus*, *therefore*, they were used by the learners only occasionally. The stated linking words belong to linking adverbials according to Biber's typology applied in this study.

Question 4 was asked to ascertain whether the learners considered the use of linking words to be helpful in the improvement of cohesion in writing. Here, 30% of the respondents expressed strong agreement, whereas 50% – agreement, respectively.

Question 5 was aimed at clarifying the challenges encountered by learners when using linking words in English sentences. Answering this question, the respondents were asked to formulate their own replies. The analysis revealed that the learners found it complicated to select an appropriate linking word among the variety of synonyms. Such issues as positioning them in the right place in sentences, as well as spelling were also mentioned. Ultimately, the meaning of some linking words is unknown, which results in avoidance to use them.

1.2 LEARNERS' FAMILIARITY AND WILLINGNESS TO RECEIVE AI INSTRUCTIONS

The third research question was aimed at finding out how AI tools could help learners master their writing skills. In order to answer the question, the learners were asked to provide replies to three questions (see Appendix 3, questions 6-8) were intended to ascertain learners' experience using AI tools and their readiness to try them in the study process. As demonstrated in the figure below, 57% of the respondents had experience in using AI for learning purposes, and 43% were ready to receive formal guidance on the application of AI tools in the study process. Nevertheless, 30% of the students expressed their unwillingness to receive AI guidance.

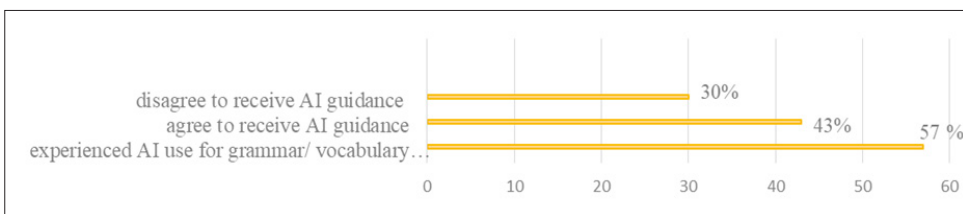


Figure 2. Learners' experience and readiness to receive AI guidance

2 PRE-TEST AND POST-TEST ESSAYS ANALYSIS ON THE SUBJECT OF LINKING WORD USE

In order to evaluate the efficiency of the AI platforms implemented in the study process, the learners were asked to write post-test essays, which were compared with the pre-test essays written before the work with the AI tools was performed.

The received essays were analysed by means of ChatGPT 3.5 on the subject of linking word use and their frequency. Each work was inserted in the platform with a request to detect and calculate the used linking words. In total, the essays written by 120 learners were collected and analysed this way. Overall, 187 linking words represented by coordinators, linking adverbials and subordinators were identified in the pre-test essays, whereas 358 linking words represented by the same types were found in the post-test essays. A more detailed demonstration is provided in Figure 3, Figure 4 and Figure 5 below.

Figure 3 shows the presence of coordinators identified in the learners' pre- and post-test essays. Only two coordinators represented by *and* and *but* were found in the collected essays. Their total amount in the pre-test essays was 96, however, their use dramatically decreased to 33 in the post-test essays. This change can be explained by the fact that prior to using AI platforms, the learners repeatedly used simple linking words they were familiar with. However, the analysis of post-test essays revealed that, instead of employing the words the learners were used to, linking adverbials carrying the same functions appeared in their essays.

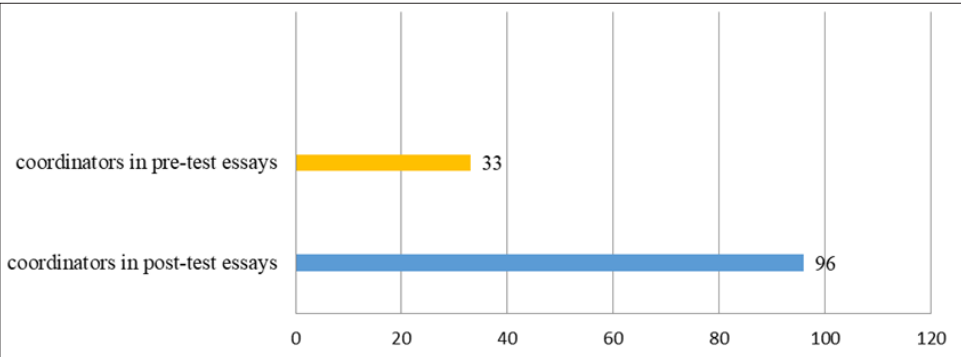


Figure 3. Number of coordinators in students' pre-test and post-test essays

Figure 4 provides further notable results concerning the use of linking adverbials. According to the typology offered by Biber et al. (2002: 389), six semantic categories are differentiated, namely, enumeration and addition, summation, apposition, result, contrast, and transition. The analysis of the pre-test and post-test essays demonstrated the presence of the following categories in the learners' works: enumeration and addition, summation, apposition, result, contrast and transition.

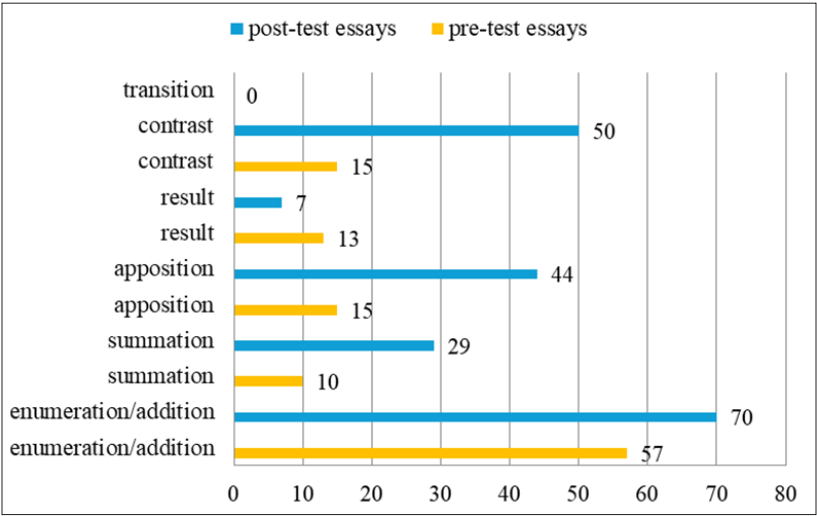


Figure 4. Number of linking adverbials in students' pre-test and post-test essays

As shown in Figure 4, the most frequently used category of linking adverbials was the one of enumeration and addition with 57 frequencies in the pre-test learners' essays. Such linking words belonging to this category were found: *in addition*, *additionally*, *furthermore*, *moreover*, *firstly*, *secondly*, *finally*, *also*. The amount of the stated linking words with the addition of the word *thirdly* increased to 70 in the post-test essays. The following category under consideration relates to contrast. The linking words of contrast, namely, *however*, *despite* and *nevertheless* were applied only 15 times in the essays written before the introduction of AI tools, whereas their use increased to 57 frequencies in the post-test essays. Apart from the linking words mentioned above, the use of the words *conversely*, *besides*, *even though*, has been identified as well. The category of apposition has been observed in the essays represented by *for example* and *for instance*. The use of these linking words increased from 15 in the pre-test essays to 44 in the post-test essays, respectively. Summation category of the linking adverbials appears in both types of essays and is expressed by such words as *to sum up*, *in conclusion*, *in summary* and *to summarise*. As it is demonstrated in the figure above, the application of this category also increased from ten to 29 in the post-test essays. The category of result is the last one to consider. Surprisingly, the analysis of the essays shows that such linking words as *consequently*, *therefore* and *as a result* have a higher frequency in the pre-test essays, specifically, they were used 13 times compared to only seven occurrences in the post-test essays. Linking words belonging to the category of transition have not been identified in the collected essays.

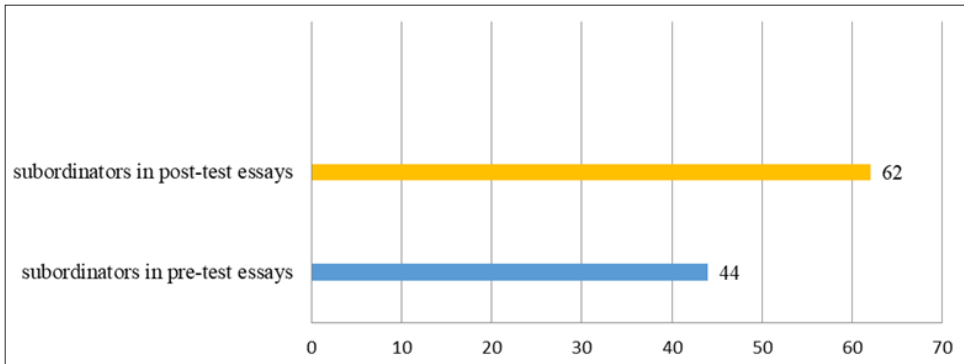


Figure 5. Number of subordinators in students' pre-test and post-test essays

The figure above demonstrates the number of subordinators used in the learners' essays. They are present both in pre-test and post-test essays, and their use increased after the inclusion of AI tools in the classroom work. Such subordinators as *if*, *because*, *than*, *that*, *as* were found in the pre-test essays with the total frequency of 44. In the post-test essays, subordinators are represented by the following words: *as*, *because*, *since*, *while*, *that*, which in the analysed post-test essays occurred 62 times in total. The subordinator *as* can be particularly highlighted, since its use increased, whereas subordinators *since* and *while* first appeared in the post-test essays.

Overall, the results of the analysed essays after the involvement of the AI platforms in comparison to the pre-test essays have revealed a considerable increase in the variety of the used linking words, thereby constituting the most obvious distinction between the pre-test and post-test essays.

CONCLUSIONS

Writing is one of the most essential and challenging language skills that secondary school learners have to acquire. As it has been ascertained in the present study, a proficient use of linking words, the absence of which results in the lack of cohesion in essays is a common challenge among secondary school learners. The most significant difficulty stated by the research participants is the inability to choose among multiple synonyms, as well as not understanding their meanings, confusion regarding their placement in sentences and spelling. It results in the use of simple linking words, and a limited range thereof in written assignments. Taking into account most learners' readiness to acquire experience in the use of AI platforms with the goal to master the use of linking words, such tools as ChatGPT 3.5 and SchoolAI were applied. After their inclusion in the study process and running pre-test and post-test essays, a conclusion has been made that learners' awareness of linking words improved. Comparatively, the application of various

types of linking words according to the typology used in this study increased, resulting in the diversity of linking words, moreover, the words not identified in the pre-test essays appeared in the post-test essays. The use of linking adverbials can be especially noted, since their variety and frequency grew, and such words as *even though*, *besides*, *conversely*, *thirdly* appeared in the post-test essays. The use of such linking adverbials as *however*, *for example*, *furthermore*, *therefore*, *in conclusion* can be highlighted, since their occurrences considerably increased in the post-test essays.

Despite the fact that some linking words were not used in the post-test essays, namely, *finally*, *especially*, *additionally*, although they were identified in the pre-test essays, it cannot be regarded as a negative indicator, given that the learners instead used other linking words with the same functions. The same conclusion can be attributed to the coordinators *and*, *but*, and their decreased frequency in the post-test essays.

Generally, as revealed by the study, AI can provide various tools which assist learners in mastering their knowledge of linking words and, consequently, enhance their writing skills. Furthermore, AI tools are able to alleviate teacher's workload, since they can assist learners in moving from simply understanding basic concepts to applying them in complex problem-solving scenarios even without the help of an educator.

Finally, it is important to note that further research is required on the subject of AI implementation in the classroom with the goal of selecting specific platforms for improvement of other language skills.

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APPENDIX 1

Table 1. **Typology of linking words** (based on Biber et al., 2002: 16-389)

Name of the group of linkers	Function	Examples
Coordinators	indicate a relationship between two units such as phrases or clause	<i>and, but, or, nor</i>
Subordinators	introduce clauses known as dependent clauses, i.e., the clauses which cannot stand alone without another clause, called the main clause. Subordinators are like coordinators, but are different from linking adverbials, because they occur in a fixed position at the front of their clause	<i>after, as, because, if, since, although, while, as, than, that, whether</i>
Linking adverbials	serve to connect stretches of text. Similarly, some linking adverbials connect whole paragraphs, while others link a main clause to a dependent clause	

Name of the group of linkers	Function	Examples
Enumeration and addition	enumerate (list) pieces of information, or signal the addition of items to a list	<i>firstly, secondly, finally, lastly, thirdly, in the first/second place, first of all, for one thing . . . for another thing, to begin with, next, further, furthermore, likewise, moreover</i>
Summation	marks summation signal that a unit of discourse concludes or sums up points made in the preceding discourse	<i>in sum, all in all, in conclusion, overall, to summarize</i>
Apposition	shows that the following piece of text is equivalent to, or included in the point made in the preceding discourse	<i>in other words, for example, which is to say, that is to say, that is, for instance, namely, specifically</i>
Result/ inference	signal that the second unit of discourse states the results or consequence of the preceding discourse	<i>consequently, thus, so, hence, therefore</i>
Contrast/ concession	mark some kind of contrast or conflict between information in different discourse units. Some of these adverbials clearly mark contrasting alternatives	<i>in contrast, alternatively, though, anyway, on the other hand, conversely instead, on the contrary, in contrast, by comparison, anyhow, besides, nevertheless, still, in any case, at any rate, in spite of that, after all, yet</i>
Transition	marks the insertion of an item that does not follow directly from the previous discourse. The new information is signaled as only loosely connected, or unconnected, to the previous discourse, as in the following	<i>by the way, incidentally, by the by, meanwhile, now</i>

APPENDIX 2

SAMPLE OF A PARAGRAPH

Climate change is a pressing issue. It is causing rising sea levels and extreme weather events. The polar ice caps are melting at an alarming rate. Many species are facing extinction. Governments need to take immediate action to reduce greenhouse gas emissions. We must transition to renewable energy sources. The consequences of inaction are dire.

APPENDIX 3

QUESTIONNAIRE

Linking Words Awareness and the Use of Artificial Intelligence (AI) Tools for its Development

Dear Student!

The results of the following anonymous questionnaire will be used in the study to understand the perspectives of teaching English linking words for writing essays by means of AI tools use at secondary school. Please provide your answers to the questions below.

Thank you!

- 1) **How familiar are you with the term 'linking words' in the context of writing?**
 - very familiar
 - somewhat familiar
 - neutral
 - somewhat unfamiliar
 - very unfamiliar
- 2) **How often do you use linking words in your writing?**
 - always
 - often
 - occasionally
 - rarely
 - never
- 3) **Which linking words do you yourself use most frequently?**
 - additionally
 - however
 - moreover
 - in addition
 - therefore
 - thus
 - for example
 - in conclusion
 - other (please specify)
- 4) **Do you believe that the use of linking words improves the cohesion of your writing?**
 - strongly agree
 - agree
 - neutral
 - disagree
 - strongly disagree
- 5) **What challenges do you face when trying to understand and use linking words in English sentences?**

Please provide your own answer

6) Have you ever used any AI-based tools to learn English grammar and vocabulary?

yes

no

If yes, how did this instruction impact your writing? (Briefly describe)

7) Would you prefer interactive personalized feedback from an AI system to improve your understanding of linking words?

yes

no

If yes, what kind of feedback? (briefly describe)

8) What specific features would you like to see in an AI tool designed to teach English linking words?

Please provide your own answer

9) Please use this space for any additional comments or thoughts regarding the use of linking words in essay writing.

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