



## Teaching writing skills with LEGO® blocks

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### Abstract

The research, which took the form of a pedagogical intervention called “Brick-by-Brick: Writing Intervention Program” and involved ten 5th-grade students, five girls, and five boys, from a Polish primary school, assessed the effects of teaching English writing skills by implementing didactic materials inspired by LEGO® blocks. The researcher designed three educational tools to teach writing skills: a model of a complex sentence connected by the conjunction (“The LEGO® blocks sentence structure model”), a LEGO® blocks set, and a LEGO® sentences worksheet with a self-assessment section (“The LEGO® Sentences”). Ten pre-tests, fifty worksheets, and ten post-tests were analyzed, taking into account four types of data: the number of word order errors (WOE), the number of sentences (NS) and their complexity (SC), the number of total written words (TWW), and students’ self-assessments (SA). The researcher observed the development of students’ skills in following the correct order of words in a sentence, building complex sentences connected by a conjunction, and creating increasingly longer written statements. It was also important for the researcher to recognize what kind of experience developing writing skills in English was for the students, whether they perceived it as negative, neutral, or positive. The study outcomes showed that the applied solutions increased students’ skills in all analysed criteria (WOE, NS, SC, TWW). Moreover, the intervention aroused predominantly positive feelings among the students, leaving the memory of an unusual experience.

**Keywords:** writing skills, LEGO® blocks, primary school, EFL.



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## 1. INTRODUCTION

LEGO® bricks, one of childhood's most enjoyable toys, have accompanied people for generations. In this research, the potential of colourful Danish blocks was used to teach writing skills in English among Polish primary school students from grade 5. The focus of the study was on 1) creating correct sentences in terms of word order (Word Order Error – WOE criterion), 2) writing sentences (Number of Sentences – NS criterion), 3) constructing complex sentence structures (Sentence Complexity – SC criterion) and 4) using a lot of words in the text (Total Written Words – TWW criterion). In teaching writing skills in English, the issue of word order in affirmative and negative sentences was more closely observed and analysed. Moreover, the impact of three teaching aids inspired by LEGO® bricks, namely 1) the LEGO® blocks set containing 15 bricks of different colours and one baseplate, 2) the basic version of the LEGO® blocks sentence structure model and 3) "The LEGO® Sentences" worksheet, on developing the ability to create correct, more complicated, and longer written statements was in the scope of this study. The researcher's interests also included the effect of using LEGO® bricks to teach writing on students' attitudes towards composing written statements in English in the classroom (Self-assessment – SA criterion).

## 2. LITERATURE REVIEW

The issue of using LEGO® bricks in education increasingly appears in the scientific literature. Gauntlett (2007) and James (2013) described the use of LEGO® Serious Play<sup>1</sup> (LSP) methodology among university students, Nerantzi and Despard (2014) used LEGO® models in discussions among university teachers, and Poon's (2018) study concerned the usage of bricks among preschool children. Roy (2017) and Gadomska (2015) wrote about employing LEGO® bricks to teach writing skills to university students.

The LEGO® company collects information on the impact of its products on children's learning of various skills. The research results are available on the Learning Through Play website at <https://learningthroughplay.com/explore-the-research>. Educational solutions based on the Danish company's blocks can be found in publications such as "LEGO® Education BuildToExpress" (LEGO® Education, 2012) or "Activity Booklet for LEGO® Play Box" (The LEGO® Foundation, 2016).

The issue of word order in a sentence has been studied by scientists such as Greenberg (1963), Richards and Smith (2010), Rijkhof (2015), Syams and Said (2016), and Malak (2019). Willim and Mańczak-Wohlfeld (1997), Łockiewicz and Jaskulska (2017, 2019), and Lewandowski (2020) write about the dissimilarities between Polish and English language, which come from different rules governing word order in both languages. For this reason, the validity of teaching contrastive grammar is raised by such researchers as Odlin (1989), Łockiewicz and Jaskulska (2017, 2019), and Zhao (2019).

Bungsudi and Faliyanti (2016) found that combining two techniques, jumbled words, and word order, produces appealing grammar teaching results. However, much time must be devoted to implementing both techniques into classroom practice.

Andrews et al. (2004a) analysed the most significant publications written after 1900 on the relationship between knowledge of grammatical structures in a sentence and writing skills. They concluded that no such relationship can be indicated. Andrews et al. (2004b), Graham and Perin (2007), Saddler et al. (2018), and Walter et al. (2021) pointed out the promising effects of using the sentence-combining technique in teaching writing skills. Saddler (2019) emphasised the importance of teaching students to construct sentences because this skill affects the ease of expressing their thoughts. Andrews (2010) discussed the necessity of teaching sentence structure as part of the practical side of writing in English. Hung (2023) holds a similar view, arguing that students who understood sentence structure were more successful in learning and

1 Originally designed to assist managers with strategic planning, the LSP methodology was created in 1996 by LEGO® for their own organizational needs (James, 2015). Due to its popularity, the entire process was turned into a commercial consulting product available to the public in 2010 (Hyvönen, 2014).

using English. Hung's (2023) research demonstrated that knowing the structure of an English sentence is an essential skill that influences the correctness and effectiveness of communication. Hung (2023) also emphasised how crucial it is for teachers to clearly and understandably explain sentence structure to their students because this will subsequently affect how well they perform when learning a foreign language.

Regarding research on students' attitudes towards learning to acquire writing skills, Petric (2002) found that previous positive experiences with developing this skill influence students' attitudes towards the same type of activity in the future. Teaching students to write should involve giving them numerous opportunities to practice the skill mentioned. In this way, a behaviour change can occur, and, as a result, an attitude towards writing may be modelled. Another study by Udu (2021) indicated that students' positive attitudes towards writing in English influenced their results. To make the taught skill easier for students to develop and, ultimately, help them achieve better results, he suggested that parents and educators should work to implement solutions that foster and sustain students' positive attitudes.

Also, in the research by Savić and Król-Gierat (2023), the influence of attitudes on motivation and, as a result, educational success is emphasised. In other words, positive effects in the learning process increase motivation and maintain a good attitude towards language acquisition.

### 3. METHODOLOGY PURPOSE

The core curriculum for teaching English as the first language in Polish primary schools assumes that students can create short written statements during the five years of education at the upper level. This is not an easy task because students in the 5th grade of primary school are at the stage of acquiring this skill in their native language. To make it easier for students to understand the rules governing the order of words in a sentence in English, the researcher designed teaching aids based on LEGO® bricks, which are known to every child and, in most cases, are fun to play with. Introducing such didactic materials aimed to inspire students to create correct, simple and complex sentences, develop longer written sentences and statements, and check whether using LEGO® bricks when writing in English would affect the approach to this class activity as less stressful and more enjoyable for students.

### RESEARCH QUESTIONS

Before starting the study, three research questions were formulated:

1. Are didactic materials based on LEGO® blocks effective in teaching students to create correct and compound or complex sentence structures in English?
2. Does using didactic materials based on LEGO® blocks increase the number of words in students' work?
3. What are students' attitudes towards creating written statements in English using didactic materials based on LEGO® blocks?

### PARTICIPANTS AND PROCEDURES

The research study was conducted from November 13 to December 22, 2023 (6 weeks) and then from January 2 to February 7, 2024 (6 weeks) among ten students (five girls and five boys) of the class 5B of Primary School No. 1 (Szkoła Podstawowa nr 1) in Myślenice (Małopolska) as part of compulsory English classes. English lessons were held in this class three times a week on Mondays, Tuesdays, and Wednesdays. The study was a pedagogical intervention called "Brick-by-Brick: Writing Intervention Program" and was accepted by the school management and students' parents. As part of the intervention, eleven 45-minute classes were completed.

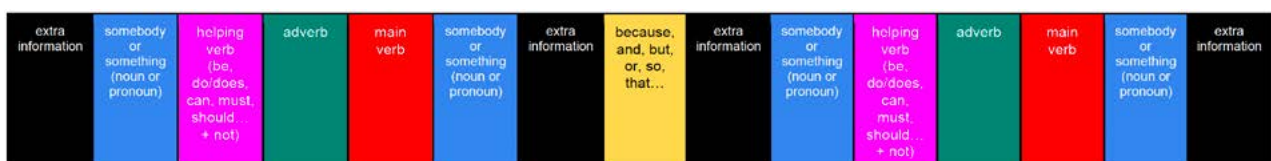
During the first classes, the students' skills in arranging words in the correct order in a sentence were diagnosed. In the pre-test "Jungles", the students received 66 jumbled words, which they had to arrange in six sentences. Three sentences were single, and three others were complex, connected by the conjunctions *because, so, and*.

**Figure 1:** "Jungles" – pre-test jumbled sentences. Created by the author using Google Docs. The content was adapted from the student's book "Fun for Movers" (Robinson & Saxby, 2015, p. 51).

hot	are	jungles	and	wet	places
are	rains	they	because	there	so
often	also	very	it	green	you
can	crocodiles	in	rivers	you	be
extremely	find	must	sometimes	careful	mouth
and	between	teeth	there	60	are
a	inside	80	crocodile's	them	have
30	about	usually	people	of	to
jungle	on	have	and	they	boats
many	sometimes	their	even	live	homes
next	in	a	people	river	a

In the second lesson, each student constructed their own LEGO® set consisting of 15 bricks of different shapes but in strictly defined colours: four black, four blue, two pink, two red, two green, and one yellow. The students placed these bricks on one large base to be ready to use during each lesson devoted to the intervention. During the same class, the students were introduced to the order of words in a sentence according to the colours of the LEGO® bricks – the basic version of the LEGO® blocks sentence structure model. This model expanded the inflectional grammatical categories to include elements such as adverbs and some conjunctions. The verb category was split into two forms: the helping and the main verb. Students were familiarised with the SVO model's extended syntactic sentence structure through this basic version. Still, the teacher did not use terms such as subject, predicate, complement, or adverbial but simplified them to terms such as "extra information" and "somebody or something". Considering the students' abilities and knowledge, it was helpful not to rely on grammatical terms but on the colours of LEGO® blocks because this was the only concrete among the abstract concepts related to inflexion and syntax.

**Figure 2:** The LEGO® blocks sentence structure model – the basic version. Created by the author using Google Docs.



On large paper boards divided into 15 columns, students placed their LEGO® bricks in the first row and then assigned the jumbled words from the previous day to the appropriate columns. The teacher closely

monitored this part of the lesson, checking the correctness of the arrangement of subsequent sentences and clarifying the students' doubts.

**Photo 1:** Students work with the pre-test sentences on paper boards with LEGO® blocks. Photos taken by the author.



This was the pupils' first contact with LEGO® bricks, and they used them to memorise the order of words in a sentence. It turned out that the biggest problem for children was the lack of previous knowledge about parts of speech and their functions from the native language, in this case, Polish. Therefore, the teacher decided to devote the third and fourth intervention lessons to explaining the grammatical categories of nouns, main and auxiliary verbs, adverbs, and conjunctions to the students using the example of the sentence "A nice LEGO® man".

**Figure 3:** The LEGO® blocks sentence structure model "A nice LEGO® man" – the extended version. Created by the author using Google Docs.

extra information	somebody or something (noun or pronoun)	helping verb (be, do/does, can, must, should, + not)	adverb	main verb	somebody or something (noun or pronoun)	extra information	because, and, but, or, so, that...	extra information	somebody or something (noun or pronoun)	helping verb (be, do/does, can, must, should, + not)	adverb	main verb	somebody or something (noun or pronoun)	extra information
Every day	a nice LEGO® man	must	quickly	run	to the new LEGO® factory	in LEGO-LAND	because		there	is	always		great fun!	

Lessons five and six were devoted to the intervention activities, i.e., writing texts using LEGO® bricks and a worksheet. The students created descriptions of their best friend (task "My friend") and their school (task "My school").

Lesson seven was devoted to analysing the mistakes made by the students and examples of correct solutions.

During the following three writing lessons, lessons eight, nine, and ten, the students were expected to use the feedback previously given to them by the teacher. This time, the students' texts concerned the description of musical instruments that the students play or would like to play (task "Musical instruments") and the description of the town where the school is located (task "My town"). In the last written task ("Letter to my Slovenian friend"), the students wrote letters to a friend from a school in Slovenia, with which the school in Myślenice collaborates as part of the Polish-Slovenian inter-school cooperation.

During the last eleventh lesson, the post-test "Antarctica" was conducted following the same procedure as the pre-test. The students again received 66 jumbled words, which they had to arrange in six sentences, three simple and three complex, connected by conjunctions: because, because, and but.

**Figure 4:** "Antarctica" – post-test jumbled sentences. Created by the author using Google Docs. The content is adapted from the class book "Steps Plus dla klasy 5" (Wheeldon et al., 2022, p. 70).

the	on	Antarctica	coldest	is	place
Earth	the	the	-80°C	temperature	in
winter	sometimes	is	you	or	because
towns	can't	in	weather	bad	always
find	the	unfortunately	is	cities	Antarctica
grow	or	because	much	don't	rain
plants	there	isn't	trees	here	example
animals	live	only	for	few	can
here	penguins	a	to	thinking	Antarctica
are	like	to	but	tourists	plans
scientists	this	about	visit	place	protect

## MEASURES

To measure the study's results, the researcher used the following tools: the two tests discussed earlier (pre- and post-test) and the worksheet "The LEGO® Sentences" created by the researcher.

The worksheet contained sections in which students wrote texts on the topic assigned during the lesson and a self-assessment section, from which the researcher could learn about the students' feelings towards the proposed activity of writing texts in English using LEGO® bricks.

The results of 20 tests (10 pre-tests and 10 post-tests) were photographed and then analysed by the researcher so that any word that did not fit the sentence pattern was treated as an error. Only in the combinations of *adjective+and+adjective* the order of adjectives could be different because it did not affect the change in the sentence's meaning. The quantitative results of incorrect answers in both tests were the basis for comparing the outcomes and determining the final result.

In the 50 worksheets (5 worksheets per 10 students) the researcher collected from students after each intervention lesson, three factors were closely analysed: the correct assignment of words and phrases to grammatical categories, the number of sentences and their complexity, and the number of words written by the student. Quantitative results were also used: the number of errors in word order (WOE – Word Order Error), the number of sentences (NS – Number of Sentences), the number of complex sentences (SC – Sentence Complexity) and the number of words in the work (TWW – Total Written Words).

The worksheet's self-assessment (SA) section included terms related to the student's feelings while writing in English in the classroom. The students were asked to choose one answer that best reflected their emotions. The description of students' feelings included two negative terms (*very bad, bad*), one neutral (*not good, not bad*), and two favourable terms (*good, very good*).

Figure 5: "The LEGO® Sentences" worksheet. Created by the author using Google Docs.

"The LEGO® Sentences" worksheet.      Who are you? .....      Date: .....

extra information	somebody or something (noun or pronoun)	helping verb (be, do/does, can, must, should... + not)	adverb	main verb	somebody or something (noun or pronoun)	extra information	because and but or so that ...	extra information	somebody or something (noun or pronoun)	helping verb (be, do/does, can, must, should... + not)	adverb	main verb	somebody or something (noun or pronoun)	extra information

Now, write your sentences from the table again.

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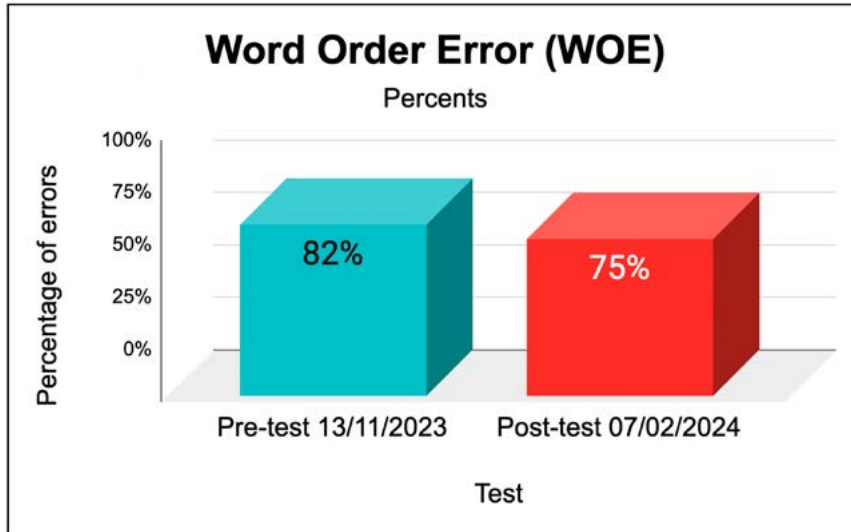
Jak oceniasz swoją dzisiejszą pracę? How do you feel about your work today? Tick the box.

Very bad. 	Bad. 	Not good, not bad. 	Good. 	Very good. 
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## 4. DATA ANALYSIS FINDINGS

The effect of the LEGO®-based teaching aids on increasing the correctness of word formation in a sentence was confirmed by comparing students’ responses in the pre-test and post-test. After analysing ten pre-tests and ten post-tests, it was found that the level of errors in word order in a sentence decreased by 7%. Ten students incorrectly arranged 82% of the words in the “Jungles” pre-test. In contrast, in the text “Antarctica” conducted at the end of the intervention, the level of incorrect answers was 75%.

**Chart 1:** Word Order Error (WOE) – pre-and post-test results.



The researcher verified the obtained results by comparing three pre- and post-test sentences containing 7, 10, and 11 words. In sentences with seven words, the number of wrong answers decreased by 2%, in sentences with ten words by 7%, and with eleven words by 20%.

**Chart 2:** Word Order Error (WOE) – comparison of sentence results.

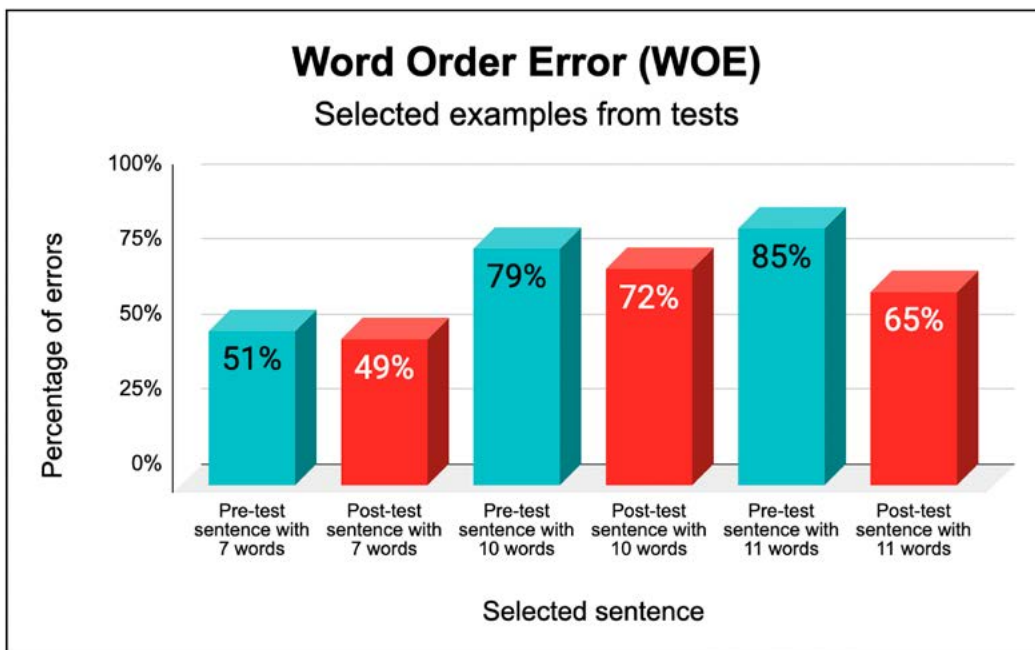
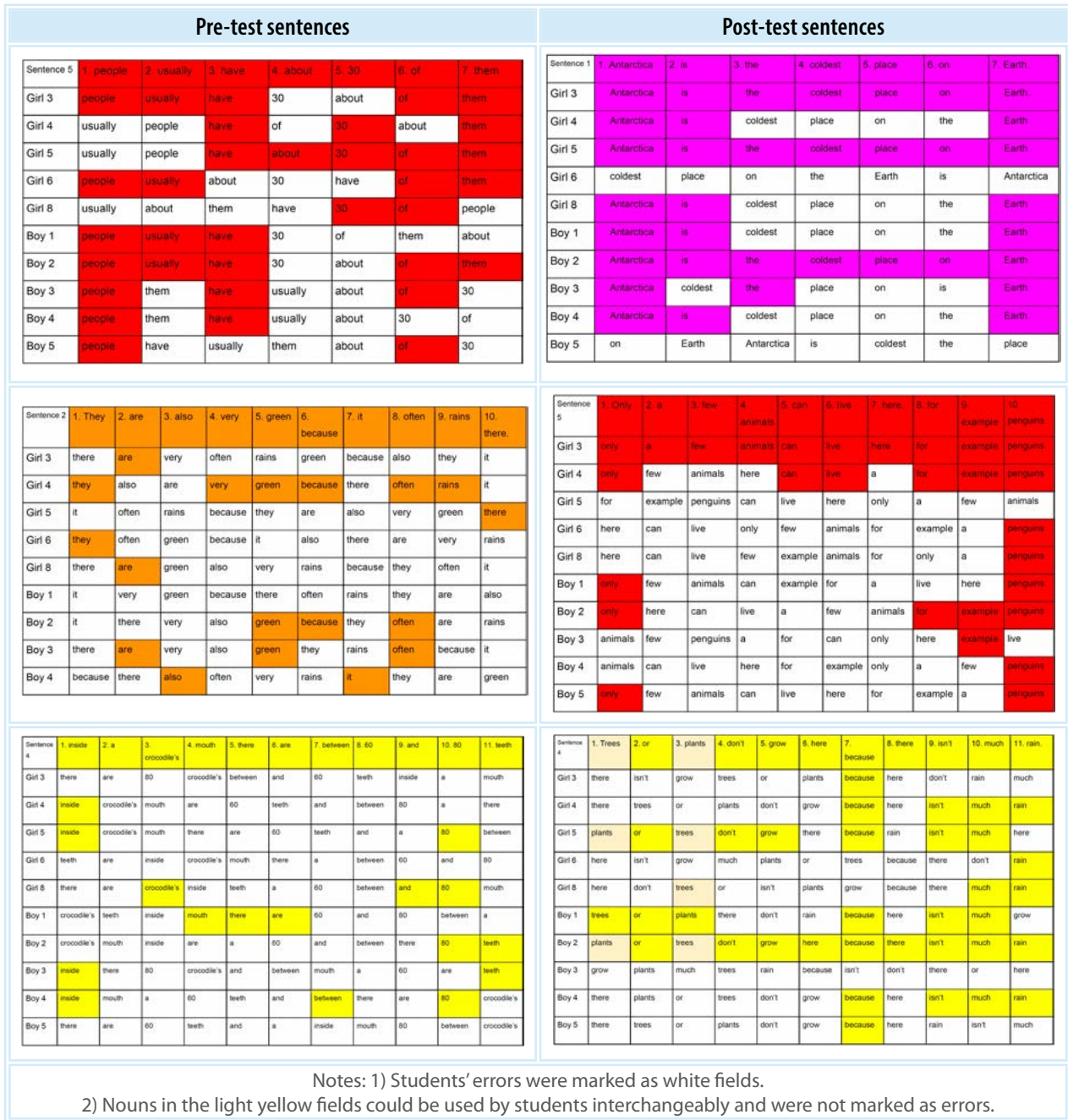




Figure 6: Word Order Error (WOE) – pre-and post-test results.



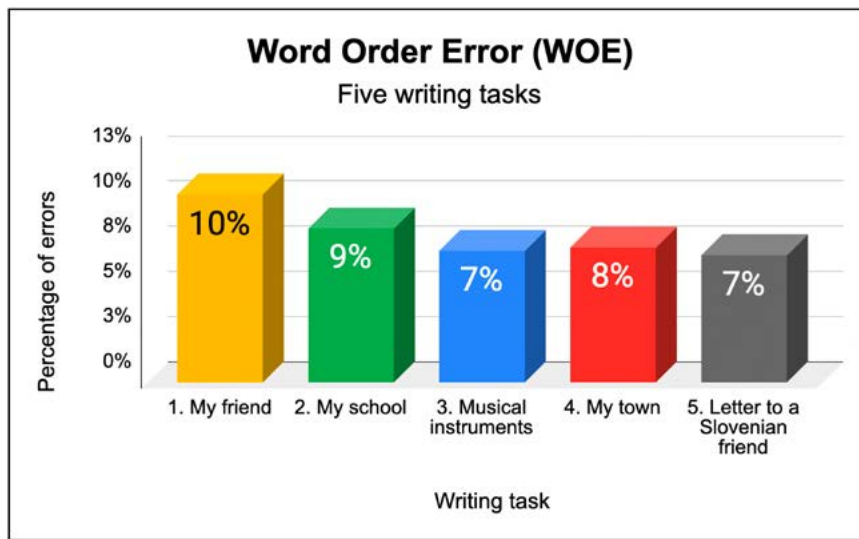
Notes: 1) Students' errors were marked as white fields.  
 2) Nouns in the light yellow fields could be used by students interchangeably and were not marked as errors.

The number of errors in terms of word order in a sentence was also counted in the five writing tasks that students wrote in class using the LEGO® bricks set and the LEGO® worksheet. However, errors were counted differently, as the main aim of this exercise for students was to assign a word or group of words to the correct grammatical category represented by the corresponding column in the LEGO® sentence model. Correct answers were those written under the LEGO worksheet's correct heading.

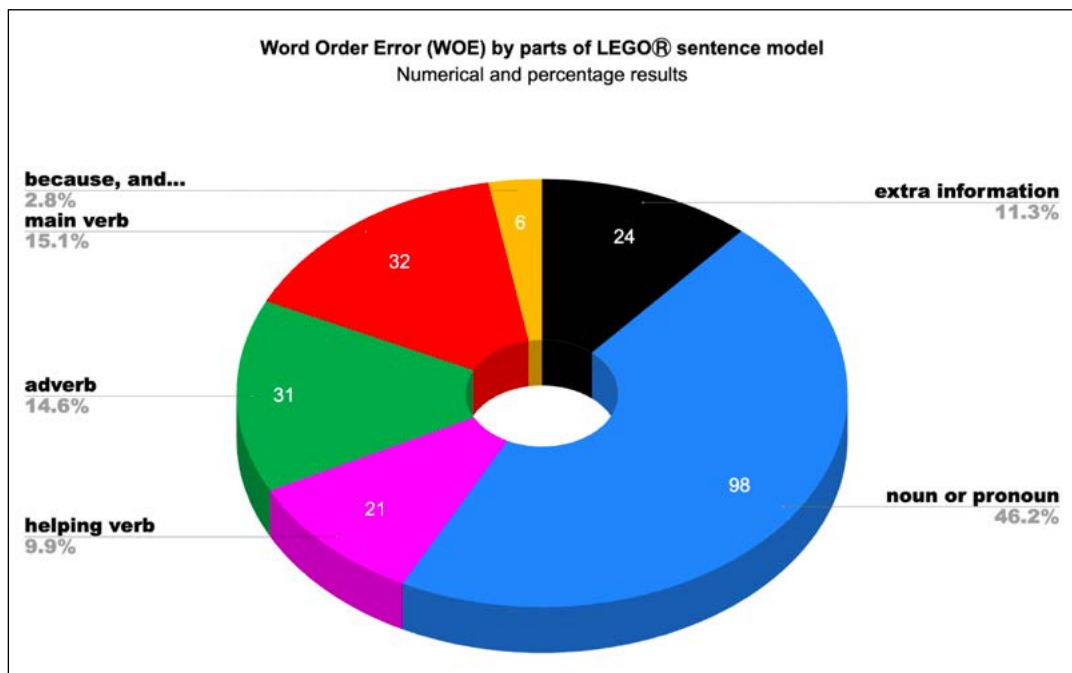
Analysis of the WOE criterion showed that the number of errors in the students' worksheets slowly but steadily decreased and finally amounted to 3% after comparing the first and last written task, where students made 10% and 7% errors, respectively.

An analysis of error types showed that students made the highest number of errors in nouns and pronouns – over 46%, main and helping verbs – around 25%, adverbs – 14.6%, and finally, conjunctions – 2.8% of errors.

**Chart 3:** Word Order Error (WOE) – writing tasks results.

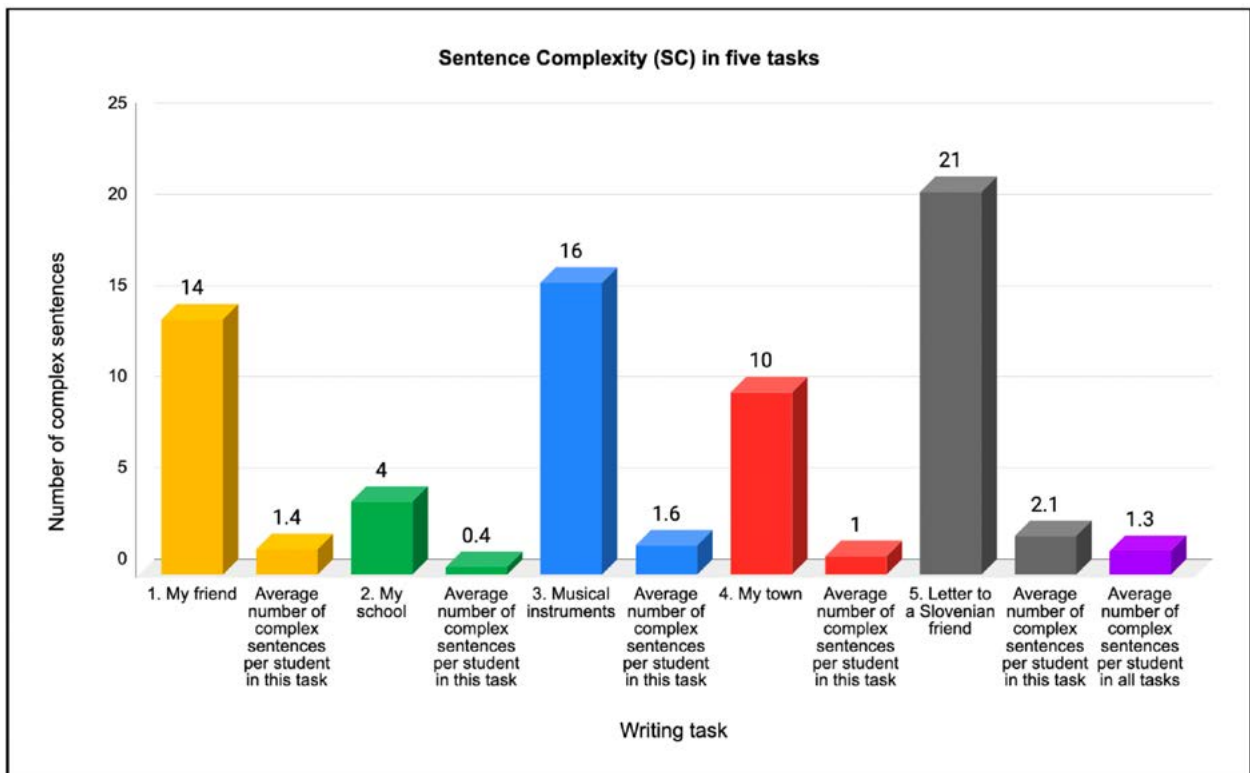
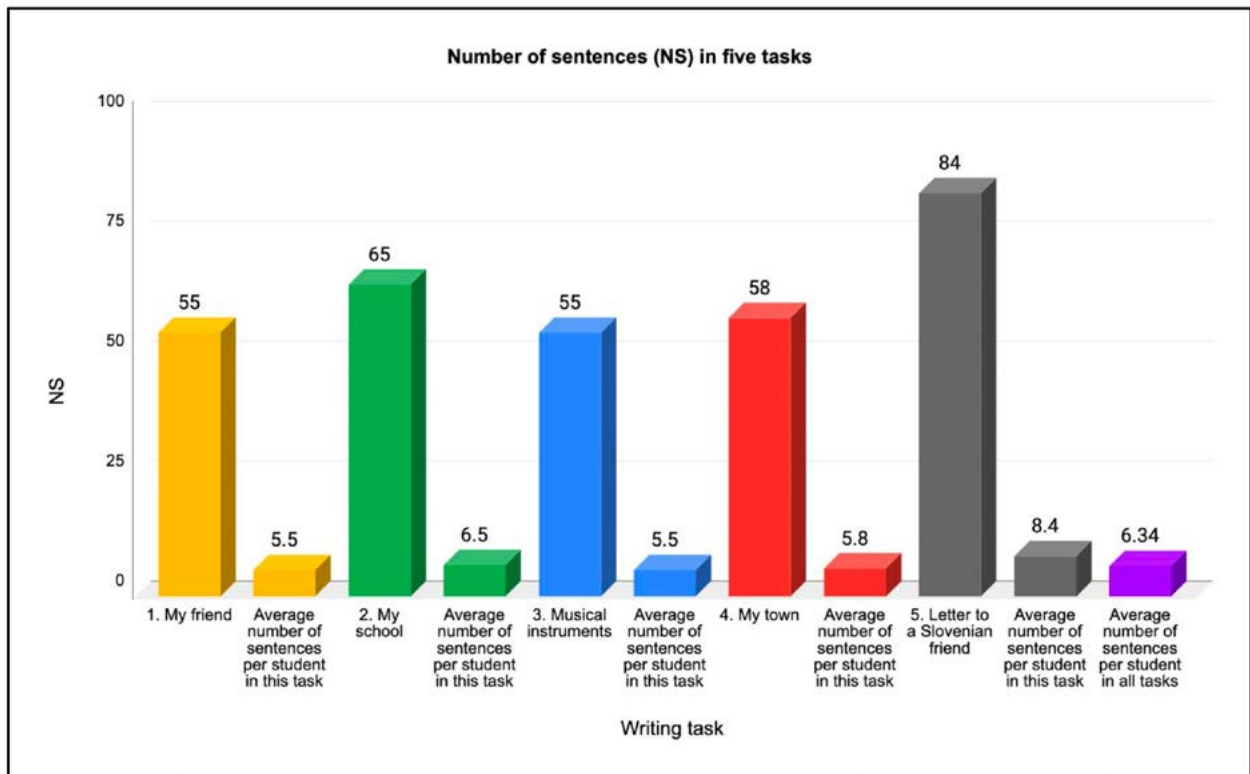


**Chart 4:** Word Order Error (WOE) according to parts of speech – writing tasks results.

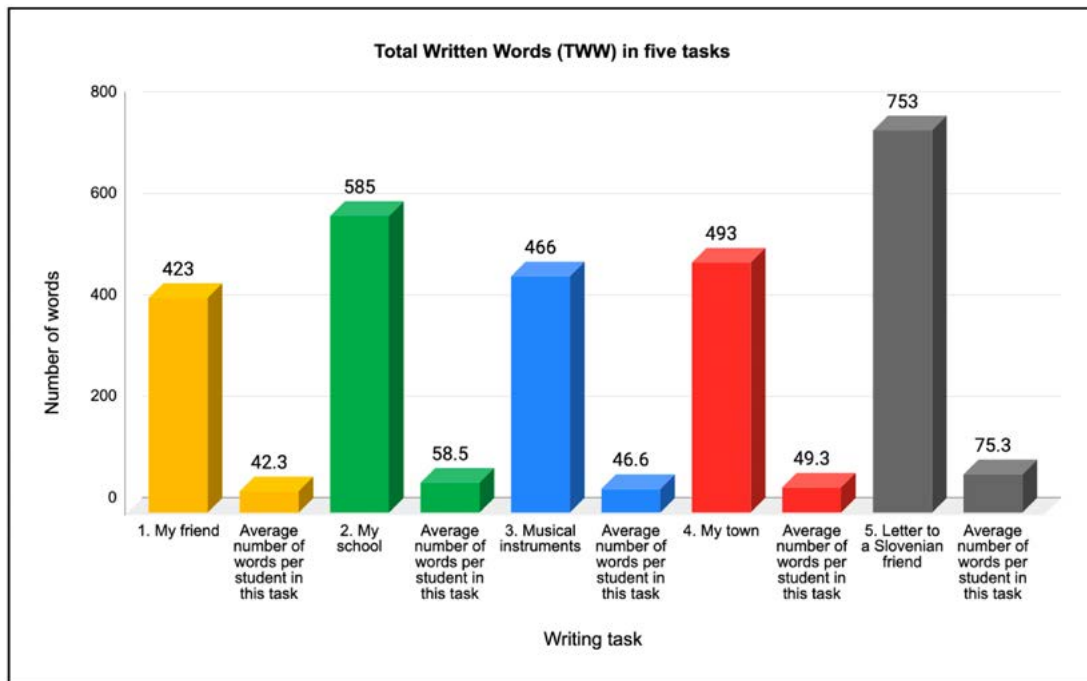


For the following criterion, Number of Sentences (NS), the difference between the number of sentences written by students in the first and last writing task was almost three (5.5 sentences in the first task and 8.4 sentences in the last one). In the Sentence Complexity (SC) criterion, where complexity was understood as a simple combination of clauses connected by conjunctions such as and, because, but, or..., the difference between the first and last writing task was 1.3 complex sentences (1.4 complex sentences in the first task and 2.1 in the last one).

In terms of the total number of words (TWW) in the written work, students' achievements showed an increase from an initial figure of an average of 42.3 words in each student's work to an average of 75.3 words in the final task, making a difference of an average of 33 words more in each student's work at the end of the intervention.

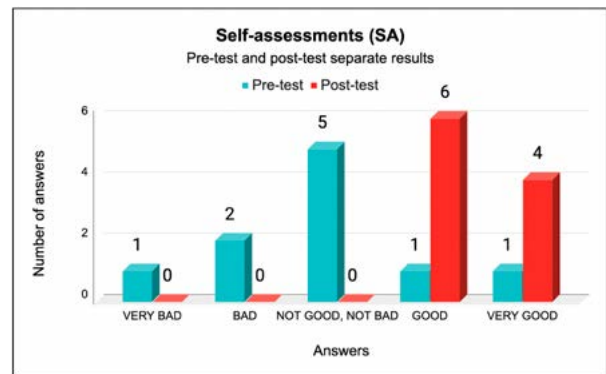
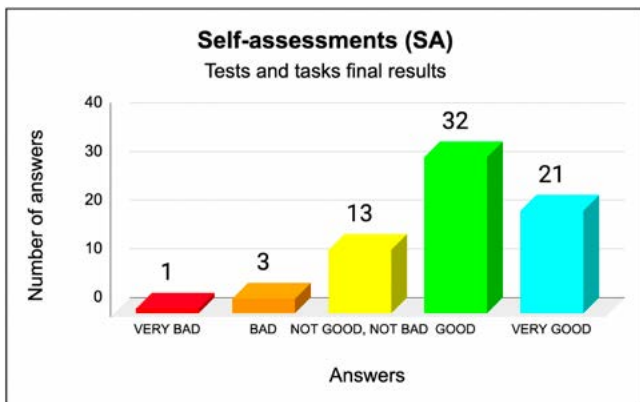
**Chart 5:** Number of Sentences (NS) and Sentence Complexity (SC) – writing task results.

**Chart 6:** Total Written Words (TWW) – writing tasks results.



The results of analysing the last criterion concerning students’ attitudes towards practising English writing skills using LEGO®–based teaching aids in a classroom indicated mainly positive feelings. 53 out of 70 student responses expressed in the 20 test-related surveys and 50 surveys in the LEGO® worksheet described the experience as good and very good. There were 13 neutral and four negative responses (one very bad and three bad). The difference in students’ attitudes was particularly evident when comparing their responses after the pre-tests and post-tests. After the pre-test, neutral and negative feelings predominated students’ feelings (8 out of 10 responses). After the post-test, students’ responses were strongly positive (10 out of 10).

**Chart 7:** Self-assessments (SA) – final results and tests separate results.



The research among Polish primary school grade 5 students showed a gradual decrease in the number of word order errors (WOE), an increase in the number of sentences (NS), compound sentences (SC), and words in the work (TWW), and dominance of positive emotions (SA).

## 5. DISCUSSION

### LEGO® and Word Order Error (WOE)

The introduction of the “Brick-by-brick” intervention was based on the assumption that students who, when learning Polish, follow a curriculum adapted to the Nowa Era textbook (Bancerz, n.d.) at the beginning of the fifth grade of primary school already know the main parts of speech in their native language, such as nouns, adjectives, verbs, prepositions, adverbs and conjunctions. However, after the first two project lessons, it turned out that the students’ knowledge of Polish grammar was not established, and teaching students the correct word order in a sentence based on parts of speech became problematic. Additionally, students at this stage are not yet familiar with the functions of parts of a sentence in the native language, such as subject, verb and object. Based on the research of other scientists (Bungsudi & Faliyanti, 2016; Syams and Said, 2016; Łockiewicz & Jaskulska, 2017; Łockiewicz & Jaskulska, 2019; Hung, 2023), to develop students’ skills related to recognising parts of speech and their functions and creating correct sentences in terms of word order, the researcher, choosing the SVO syntactic structure dominant in English, developed a basic version of a sentence model based on LEGO® blocks called “The LEGO® blocks sentence structure model”.

Creating the sentence model became the starting point for developing two further teaching aids: a set containing 15 colourful LEGO® blocks in various shapes and “The LEGO® Sentences” worksheet, with which students worked during five lessons devoted to writing texts on a given topic.

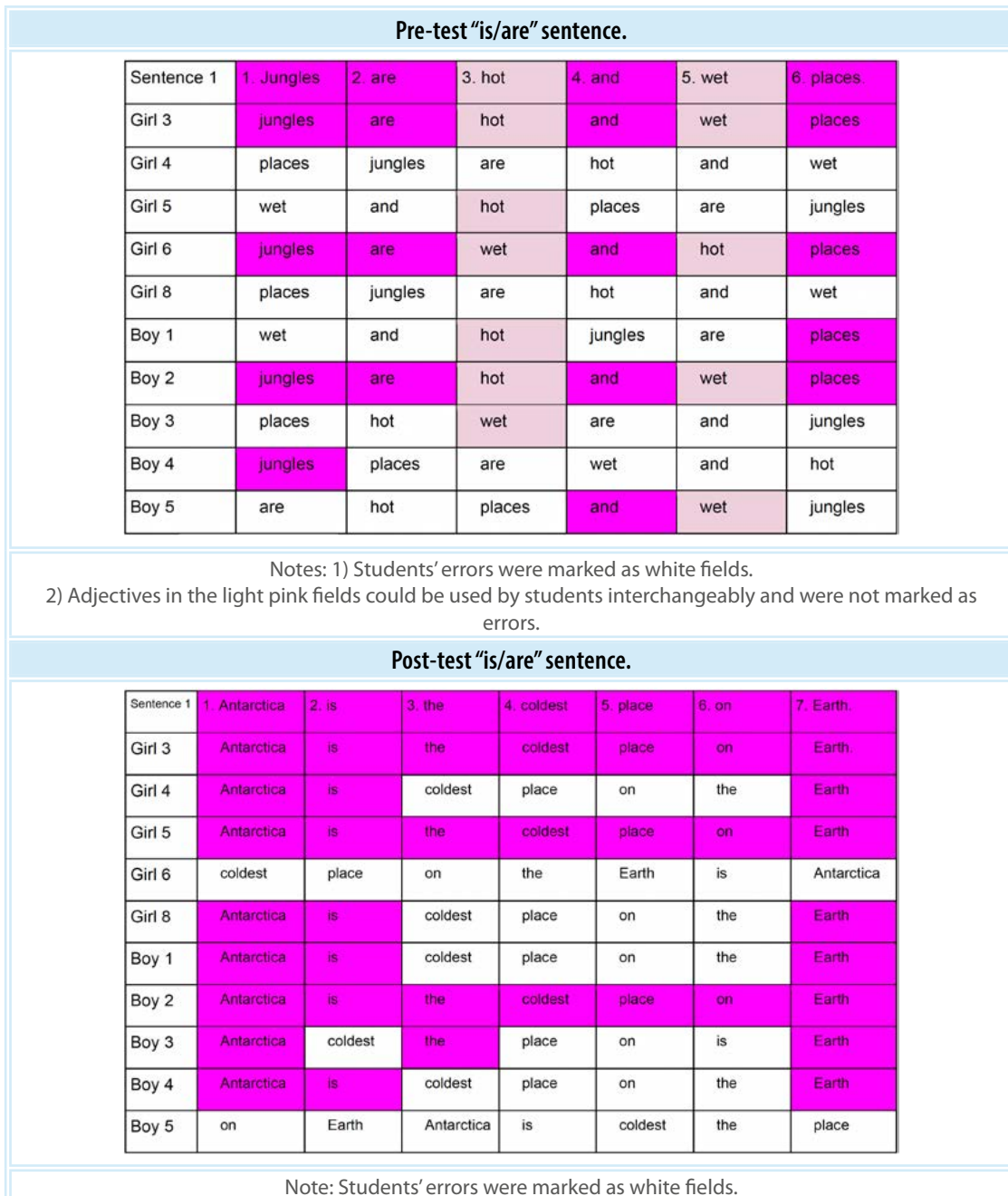
**Photo 2:** Students write their assignments using didactic materials based on LEGO® blocks.  
Photos taken by the author.



The effect of using these three teaching aids inspired by LEGO® bricks was a 7% reduction in word order errors (WOE) in both tests and a 3% decrease in the number of mistakes in written works (the differ-

ence between the results obtained in the first and last written task). In the tests (10 pre-tests and 10 post-tests), counting errors in word order meant counting all incorrectly arranged words except for adjectives, which could be used interchangeably. An example of improving students' skills is the construction "is/are", where it is visible that 8 out of 10 students arranged this construction without errors in the post-test. In the pre-test, only three students correctly performed this task.

Figure 7: Word Order Error (WOE) – pre-and post-test results.



In the written works (50 worksheets, i.e. five works collected from 10 students), the method of counting errors was slightly different because not only single words were marked as one error, but also groups of words entered in the wrong place in the table "The LEGO® Sentences" worksheet.

Figure 8: Word Order Error (WOE) – research data counting examples.

Date:	SN	extra information	noun or pronoun	helping verb	adverb	main verb	noun or pronoun	extra information	because, and, but, or, so, that...	extra information	noun or pronoun	helping verb	adverb	main verb	noun or pronoun	extra information	WOE (Word Order Error)	SN (Sentence Number)	SC (Sentence Complexity)	TWW (Total Written Words)	
22/11/2023																					
	Girl 3	1	My best friend's name	is			Tomek.										0	1	0	6	
		2	He	is			a boy	but			I		very	like	him.		1	1	1	9	
		3	He	is			10 years old	and			I		am		10 too!		0	1	1	10	
		4	He			has got	a sister named Ania.										0	1	0	7	
		5	He			likes	a tracksuit bottom	and			he		often	wears	it.		0	1	1	10	
	SN	6	He			likes	run	and			it		is		his hobbie.		0	1	1	8	
	TWW		0	9	3	0	5	13	0	4	0	4	2	2	2	6	0	1	6	4	50
	Boy 1	1	The town	is			in the south of Poland.											0	1	0	8
		2	In Myslenice	are			bus stops, library	and			more.							2	1	0	8
		3	In Myslenice	aren't			train station, airport.											1	1	0	6
		4	In Myslenice			like	Myslenice	because			it		isn't		very big town.			1	1	1	10
		5	Myslenice	has got			more than 17000 people.											0	1	0	7
	SN	6	In our town I	can			play football	and			a lots of sports							1	1	0	12
	TWW		0	13	6	0	2	17	0	3	0	6	1	0	0	3	0	5	6	1	51

Note: Students' errors were marked as grey fields.

Analysis of students' errors was not the aim of the study. Still, several recurring errors from using the LEGO® model can be distinguished among the students' answers. These are primarily: 1) the inability to separate the subject from the verb, 2) combining additional information with the subject of the sentence, and 3) the inability to use the construction "there is/are" in combination with additional information – these three issues mounted in a total of 98 errors, 4) failure to distinguish the helping verb from the main verb – 53 errors, 5) misunderstanding which words are adverbs 6) and where they are placed concerning both forms of the verb – sum of 31 errors, 7) difficulty in understanding the function of additional information in the sentence – 24 errors. The smallest number of errors, 6, was noted regarding conjunctions connecting two simple sentences. Still, this number was influenced by students creating not so many complex sentences, so the risk of making an error was also low.

Figure 9: Word Order Error (WOE) – examples of parts-of-speech mistakes from written tasks.

extra information	somebody or something (noun or pronoun)	helping verb (be, do/does)	adverb	main verb	somebody or something (noun or pronoun)	extra information	because, and, but, or, so, that...	extra information	somebody or something (noun or pronoun)	helping verb (be, do/does)	adverb	main verb	somebody or something (noun or pronoun)	extra information
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1) The inability to separate the subject from the verb:

	Myslenice	is	small		city	in Poland.								
	I live	in			Myslenice.									
	I have				two braders	and			one guinay pig.					

2) Combining additional information with the subject of the sentence:

In my class every student	play	flute.										
In our town I	can	play	football	and	a lots of sports.							
After school I		go	to gymnastic	and	acrobatic club.							

3) The inability to use the construction "there is/are" in combination with additional information:

In my school	are	25 Teachers.										
In Myslenice	aren't	train station, airport.										
In Myslenice	are	library, police station, schools and parks.										

4) Failure to distinguish the helping verb from the main verb:

Sara's favourite food	is	pizza	but	I	don't know	which one.						
I		don't have any	brothers or sister.	I	have	just	mom, dad, grandad, grandma.					

5) Misunderstanding which words are adverbs:

	Playing	on keyboard	is	click	on	the keys.						
Her hobbies	are	making	bracelets from beads.									
In my school	there is	400 students	and	between	30-50 teachers.							

6) Errors related to incorrect use of the adverb "very" with the auxiliary and main verbs:

I	very	like	my school!									
My school	is	very	old	because	it name	has	150 years old.					
She	is	very	good at football.									

7) Difficulty in understanding the function of additional information in the sentence:

I like	my school			because	I	have	best friends for ever.					
My school	is	also	old.									
My	best friends	are	Sara and Jim.									

Notes: To avoid recognising the text's authorship, the researcher changed all girls' names to "Sara" and boys' names to "Jim."

2) Students' errors were marked as grey fields.



## LEGO® and the Number of Sentences (NS) and Sentence Complexity (SC)

Both criteria were examined based on 50 worksheets. After comparing the results between the first and the last task, it was observed that the number of each student's sentences increased by an average of 2.9. In the case of complex sentences, each student created an average of 0.7 more sentences in the last task than in the first.

This result could have been achieved, for example, by acquiring experience in working with teaching aids based on LEGO® bricks or by the attractiveness of the topics of written works proposed to students. These topics were as follows: a description of a friend ("My friend"), a description of a school ("My school"), a description of musical instruments that students play or would like to play ("Musical instruments"), a description of the town where the school is located ("My town"), and a letter to a friend from Slovenia ("Letter to a Slovenian friend").

In the case of the first writing assignment, all students used 55 sentences to describe their friend, 14 of which were complex sentences. In their last exercise, students wrote letters containing 84 sentences, including 21 complex sentences. The outcomes of the study in this particular criterion are consistent with the findings of McDonough and Fuentes (2015), which state that there is a correlation between the topic of a written assignment and the type of sentences students will use to complete it. Asking students to write a private letter to an actual student from a school in Slovenia (Osnovna šola in Šentjernej), with which Primary School No. 1 in Myšlenice has been cooperating for years, resulted in the students creating the most extended and most complex texts.

Additionally, an analysis of 50 worksheets showed that while students could construct a main clause based on the LEGO® model correctly, they could not repeat this pattern for a subordinate clause.

**Figure 10:** Sentence Complexity (SC) – examples of sentence word order mistakes from written tasks.

extra information	somebody or something (noun or pronoun)	helping verb (be, do/does, can, must, should, + not)	adverb	main verb	somebody or something (noun or pronoun)	extra information	because, and, but, or, so, that...	extra information	somebody or something (noun or pronoun)	helping verb (be, do/does, can, must, should, + not)	adverb	main verb	somebody or something (noun or pronoun)	extra information
	My name	is			Sara		and		I live with my family in Myšlenice.					
	She			hate	math		because	in the math	there are numbers.					
	My best instrument	is			flute		because		I only know how to			play	it.	
	I			play	flute		because		we play it on music lessons.					

Notes: 1) To avoid recognising the text's authorship, the researcher changed all girls' names to "Sara" and boys' names to "Jim."  
2) Students' errors were marked as grey fields.

Despite the students' difficulties constructing complex sentences, their scores in the post-test show that they understood the concept of connecting two simple sentences with a conjunction. Seven out of 10 students correctly placed the "because" conjunction in the complex sentence. In the pre-test, only three students correctly performed a similar task.

The discussed results allow the researcher to conclude that familiarising students with the sentence structure of the target language in a clear and accessible way contributes to learners' progress in acquiring

a foreign language (Hung, 2023). Therefore, it is worth introducing solutions that will allow students to understand sentence structure and apply this knowledge to create correct sentences in practical writing.

Figure 11: Sentence Complexity (SC) – pre-and post-test results.

Pre-test "because" sentence										
Sentence 2	1. They	2. are	3. also	4. very	5. green	6. because	7. it	8. often	9. rains	10. there.
Girl 3	there	are	very	often	rains	green	because	also	they	it
Girl 4	they	also	are	very	green	because	there	often	rains	it
Girl 5	it	often	rains	because	they	are	also	very	green	there
Girl 6	they	often	green	because	it	also	there	are	very	rains
Girl 8	there	are	green	also	very	rains	because	they	often	it
Boy 1	it	very	green	because	there	often	rains	they	are	also
Boy 2	it	there	very	also	green	because	they	often	are	rains
Boy 3	there	are	very	also	green	they	rains	often	because	it
Boy 4	because	there	also	often	very	rains	it	they	are	green

Post-test "because" sentence											
Sentence 4	1. Trees	2. or	3. plants	4. don't	5. grow	6. here	7. because	8. there	9. isn't	10. much	11. rain.
Girl 3	there	isn't	grow	trees	or	plants	because	here	don't	rain	much
Girl 4	there	trees	or	plants	don't	grow	because	here	isn't	much	rain
Girl 5	plants	or	trees	don't	grow	there	because	rain	isn't	much	here
Girl 6	here	isn't	grow	much	plants	or	trees	because	there	don't	rain
Girl 8	here	don't	trees	or	isn't	plants	grow	because	there	much	rain
Boy 1	trees	or	plants	there	don't	rain	because	here	isn't	much	grow
Boy 2	plants	or	trees	don't	grow	here	because	there	isn't	much	rain
Boy 3	grow	plants	much	trees	rain	because	isn't	don't	there	or	here
Boy 4	there	plants	or	trees	don't	grow	because	here	isn't	much	rain
Boy 5	there	trees	or	plants	don't	grow	because	here	rain	isn't	much

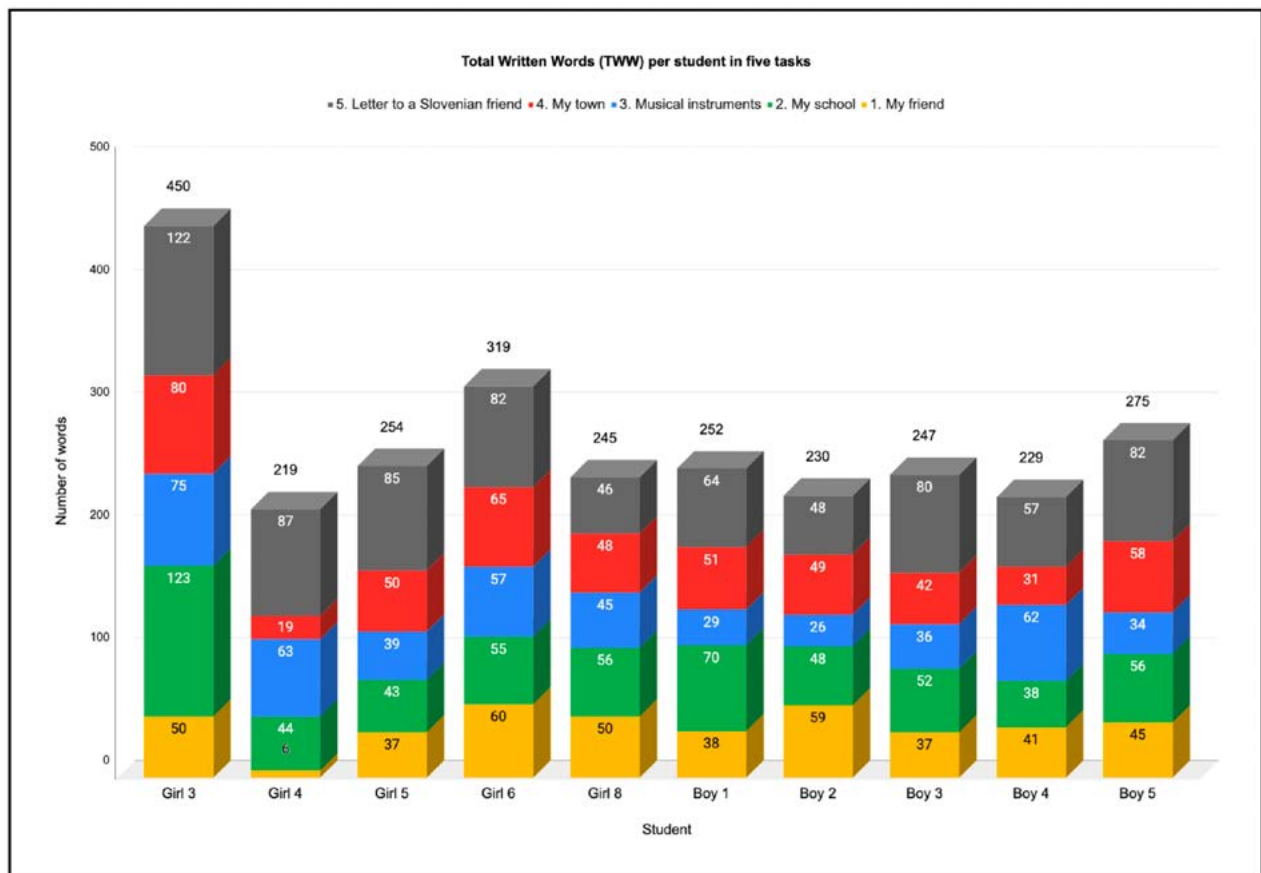
Notes: 1) Students' errors were marked as white fields. 2) Nouns in the light yellow fields could be used by students interchangeably and were not marked as errors.

## LEGO® and Total Written Words (TWW)

During the intervention, the number of words used by all students in the writing task increased from 423 to 753, which means that compared to the first work, each student wrote an average of 33 words more in their last assignment. As in the case of the number of sentences (NS) criterion and their complexity (SC), this result could have been influenced by students gaining experience in constructing written statements in English and their high personal involvement in writing a letter to a friend from Slovenia. As a result of cooperation between teachers from Poland (Monika Wójtowicz) and Slovenia (Jerneja Bevc), students were paired according to their level of English language proficiency, and their first contact through correspondence happened in December 2023 when they wrote Christmas cards to each other. The second written contact between students was a letter created during classes as part of the “Brick-by-brick” intervention.

From the point of view of the examination requirements of the eighth-grade exam summarising education in Polish primary schools specified by the Central Examination Board (Centralna Komisja Egzaminacyjna, n.d.), a student finishing education at this level should master the ability to write texts containing at least 50 words. The intervention results showed that eight students wrote 50 or more words in the last task, and only two scored below 50. In the case of other assignments, in the first one, “My friend”, four students wrote 50 or more words; in the second task, “My school” – six students; in the third task, “Musical instruments” – four students, and in the fourth task, “My town”, five students wrote 50 or more words. This example proves that students’ engagement in learning writing skills increases if the topic of the written work proposed by the teacher seems interesting (Bruning and Horn, 2000).

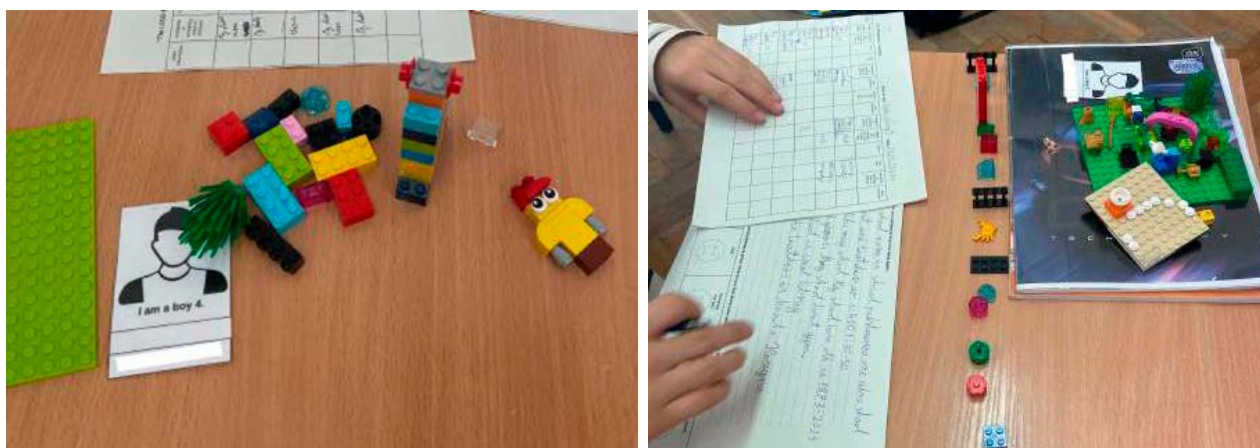
**Chart 8:** Total Written Words (TWW) – students’ writing tasks results.



## LEGO® and Self-assessments (SA)

The analysis of 70 self-assessments (20 from both tests and 50 from worksheets) allowed the researcher to conclude that the students' experience of using LEGO® bricks in learning to write in English was mainly positive for them (53 such responses out of 70). During the intervention, it was noticeable that students were not stressed about writing in English. Only one pupil, Girl 4, had significant problems creating texts in the given worksheet and was better at writing in traditional lines. The other students mentioned that working with the LEGO® worksheet required more thought and was sometimes difficult due to the necessity of performing a few tasks at the same time: thinking about the linguistic content, grammatical correctness, and finally assigning words and word groups to the appropriate columns in the LEGO® worksheet. Still, the opportunity to work with bricks that children associated with fun and play helped alleviate negative feelings. After finishing the writing task, students could go to a large box of bricks to extend their LEGO® sets. The students became very attached to their unique constructions and found it difficult to dismantle them at the end of the intervention program.

**Photo 3:** Examples of the students' LEGO® sets. Photos taken by the author.



Writing in a foreign language is a difficult skill to master. Therefore, students' experiences in this area must be as positive as possible, as they influence students' learning of this skill (O'Brien & Baugh, 2013; Udu, 2021).

## 6. CONCLUSIONS

The proposal to teach the formation of correct and extended sentences in English using teaching aids inspired by LEGO® bricks is innovative and has never been tested before. After analysing the study results, it was found that before introducing such an extensive model of a complex sentence in the 5th grade of primary school, students should have been familiarised with a simpler version of the model and learned to create easier sentences first consisting of subject, verb and object only. However, such a complex sentence model, as implemented in this research, could work well in an older group of students or among adults whose language awareness is undoubtedly higher than children in grade 5. On the other hand, according to Savić (2021), to make progress in learning a foreign language, students need to experience commitment and a challenge at the same time, and these conditions were met in the presented study because didactic materials inspired by the LEGO® blocks were introduced to teach writing skills during English classes.

The 11 lessons devoted to the intervention are insufficient for the study's results to be considered as excluding further discussion. However, it would be interesting to see how students' writing skills in

English would develop if the intervention were extended to the entire school year. The results of the discussed study open an unknown path for further research on teaching aids in learning English as a foreign language.

A model of the interrogative sentence would be a form of developing the affirmative/negative sentence structure constructed from LEGO® blocks. An interesting suggestion for students could also be combining these different types of sentences with other tools, such as digital ones, and designing an interactive game or exercises to teach the structures of English sentences. An additional advantage of these digital materials would be the immediate correction of errors and the habit of using the correct forms and phrases. The study's results confirm the importance of motivation and engagement in learning a foreign language. Appropriately selected teaching aids and written task topics should trigger interest and engagement among primary school students. In the future, the techniques of transferring knowledge about English grammar and practising writing skills proposed in this study can be adapted to the individual needs of teachers and students.

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