Constructing languages to mediate linguistic concepts: an experimental study[*]

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Abstract: This article describes how the process of language construction can be used to mediate linguistic concepts. The authors mentioned in this article successfully use the process of language creation in class, either with young children or university students. The article further elaborates on their experiences with the use of constructed languages and the process of their construction in education, especially in teaching of linguistics. A small pilot study was created to test the effectiveness of such a teaching method. The study involved a narrowly defined process of language creation with focus on only one grammatical category, in combination with a theoretical background on the given topic. This grammatical category is case, as a category that is sufficiently complex but also familiar enough to non-linguists (in this case, Czech speakers). The several hours long study had four stages: an introductory questionnaire, a theoretical presentation, the construction itself, and a final questionnaire. All of them are briefly introduced in this article, while the focus is on the results of the study and their discussion.

Keywords: language construction; constructed language; conlang; linguistic concepts; grammatical case; abstract case; morphological case; experimental; teaching methods

1. Introduction

The most famous constructed language (or conlang, as they are called in the community of their creators), and the most successful in terms of the number of speakers, is undoubtedly the language called Esperanto. Esperanto is a typical example of an international auxiliary language, meant to simplify international communication by functioning as lingua franca. Today's constructed languages mostly have different functions - inspired by Tolkien's work and later by Okrand's Klingon, new languages are being constructed mostly for works of fiction.

However, they might not be limited only to interpersonal communication or for fiction, but also for a use in a more academic setting. One of the famous fictional language creators, David J. Peterson, who constructed languages for the TV show Game of Thrones, claimed this in his Conlang Manifesto published in 2013:

> Aside from art, though, language creation has other uses. First, creating a language allows one to better understand language itself. One who creates an ergative language is far more likely to understand ergativity in natural languages than one who does not, I say. What's more, this same understanding can ease foreign language learning considerably—not to mention linguistics itself. (Peterson 2013)

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A language construction process does not always have to be focused on constructing a functioning language, as is often the case with amateur language constructers. The sole process of its construction itself may be useful for linguistic or teaching purposes. To show how this process can be useful, we use it on a topic which is easy to grasp and evaluate, such as a simple act of teaching a certain narrowly defined topic. That is why the focus of this article will be on the use of constructed languages in teaching.

First, the works of several authors dealing with this topic will be mentioned (in section 2), namely the works of Gobbo (2013), Gobbo et al. (2016), Sanders (2016) and Pearson (2017). Based on the experience of these authors, an experimental study will be introduced in section 3, using the process of language construction to convey a linguistic concept, *case*. There will be a description of the study's methodology, including the broader description of each part of the study: the introductory questionnaire, the theoretical presentation on *case*, the language construction process itself (translation of model sentences into a constructed language), and the final questionnaire. All this will be followed by a description of profiles of the study's participants and the description and analysis of its results in section 4.

2. Constructing languages in class

There are different ways the language construction may be used in (not only linguistic) research. The most common one is the study of constructed languages themselves. Esperanto, as an example, is a common topic of linguistic research. In Google Scholar, there are around 54,000 results on *Esperanto*, while Academia shows 258 papers to include it in its title[1]. Researching Esperanto (and possibly other constructed languages) seems to be a common phenomenon.

However, when we shift focus from the result of the language construction to the process itself, it suddenly becomes much harder to find research papers dealing with this matter, and even worse when looking for those authors who used it in practice. Some of the latest works dealing with language construction as either a means of linguistic research, or, more specifically, as a means of teaching about linguistics, are Gobbo (2013) and Gobbo et al. (2016), Schreyer (2013), Sanders (2016), Pearson (2017).

Gobbo in Gobbo (2013) and Gobbo et al. (2016) describes his experience from the Montessori school environment in Italy. The first text contains a detailed description of an experiment that was performed on a group of children of different nationalities aged 8–9 years. With the assistance of a linguist, the children in the group were given the task of compiling a secret language for communication within their classroom. The construction tasks were based directly on the languages they knew, primarily Italian and English. The whole experiment was guided by the principle that children should learn grammar by creating it themselves. According to Gobbo (2013: 122), the experiment with an a posteriori[2] language confirmed an effect influencing the creators of languages, who often unknowingly allow them-

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[1] As of August 7, 2021.

[2] An a posteriori language is a constructed language based on another existing language in most of its grammatical structure or lexicon. The opposite is an a priori language, a constructed language created to be mostly independent of any other existing language.

selves to be affected by their mother tongue. Most visibly in phonology: the whole experiment began by creating the phonological inventory of the language. Without even trying to experiment with new sounds, even though the children did not know only Italian, the group agreed on a phonology almost identical to Italian. E.g., they considered the vocal system of Italian to be easier to grasp than the English one. For each phoneme, there was to be a separate graph that could be typed on the keyboard (e.g., using characters such as $) and an irregular stress based on Italian was to be marked with a diacritical mark above the stressed syllable (following the Portuguese pattern).

The experiment started with simple phrases, basic grammar, and basic vocabulary. First, it was agreed on the form of the language, which was based on Italian and was simplified in comparison with English. In general, there was a tendency to simplify everything for the maximum economy of the language. With the assistance of the linguist, the lexicon of the language began to derive from various languages that were familiar to children, but English became dominant.

In the first study (2013), the author points out that the experiment was limited in many respects and the results can only be taken as preliminary before carrying out a larger study with better analysis of the results. Nevertheless, it turned out that for children at such an age, the choice of an a posteriori constructed language was a suitable choice, because children could explore the structure of languages they already knew. Their language was used for several months and visible results were seen such as the improved ability of children to create and become familiar with linguistic structures, as well as their increased metalinguistic awareness.

Later, Gobbo et al. (2016) described a different study. Following the example of the linguistic game *Europanto*, children were to create a language (or an imitation of it) by combining words and grammar directly from various other languages. The author mentions that when using, for example, Russian words, children wrote texts in two writing systems at the same time - Cyrillic for Russian words, and Latin for others. In this experiment, children showed interest in using bilingual and multilingual dictionaries without being led to do so. The children have also learned to better understand the different word order in languages, as well as the fact that certain words may not have exact equivalents in other languages.

Sanders (2016) describes three different ways in which he uses language construction to teach linguistics at university. The first is the use of a language or languages he created (or just a fictitious dictionary) in data sets to compare different phenomena. As he argues, the use of constructed languages (often a posteriori) "can present linguistic phenomena in ways that allow students to focus on the essential details of interest, without being distracted — or worse, discouraged — by irrelevant complexity" (Sanders 2016: 201). Another argument for the use of constructed languages in such cases is the similar use of fictional situations for example in mathematics, where it serves the same purpose: to allow students to better focus only on the task and not on the unnecessary circumstances that would be present in real mathematical examples.

In a second example Sanders (2016) shows the use of language construction by students themselves in case of certain specific, smaller tasks. Sanders gave a group of words in a constructed language to his group of students to illustrate language changes. Based on previously acquired theoretical knowledge about language changes, students had to simulate the process for this task. He divided the group in two halves and each group did one linguistic

change in each word. He then divided each of these groups again in two halves, and each of those groups (quarters) again made one linguistic change to each word, and this was repeated several times until the groups had at least one member left after the division. This created a development tree of a newly created language family, a simulation of language evolution directly in the course. As Sanders points out, the focus was not solely on phonetic changes, but also on replacing words with metaphors, borrowings (of course, fictional ones) and other processes that take place naturally in the context of language changes. The goal was to simulate a realistic evolution, not a chaotic process that is not based on real examples. For students, Sanders argues, this activity had one major advantage: it gave students a much better understanding why superficial similarities between languages were far from sufficient to consider them as relatives. Related languages may not even be like each other at all.

According to Sanders, this approach can be used in various cases of creating datasets that have certain properties. According to him, thanks to such a reverse approach, when they know the result but try to create the data that lead to it, they can become much better acquainted with the taught material and better understand it. Thanks to this work with the created datasets, students also "[…] learn how to usefully present data to other people (a helpful skill for any budding linguist, for both their future research and their future teaching)." (Sanders 2016: 202)

The third and most comprehensive example of the use of language construction in teaching, presented by Sanders (2016), is the *complete* construction of language with focus on language typology. As Sanders writes, his motivation to let students construct languages was to show that "conlangs can in fact contribute to linguistics in ways that natural languages cannot, that they can have use for linguists beyond entertainment value (Sanders 2016)." Students are free to construct their language the way they want, but under several conditions. One of them is realism: the effort should be made to construct a language that is as close as possible to natural languages. During the construction, the students studied materials on language typology. Besides the study of texts, language construction is also accompanied by standard lectures, primarily on language typology. About half of the teaching is devoted to creation and the other half to typology. The task of students is to draw inspiration from patterns in typology of world languages, and to be able to logically justify all elements of their constructed languages. Students are also given regular homework to guide their language construction, and at the end of the semester they submit a project where they describe the constructed language. The final work takes form of a descriptive grammar, where students describe in detail the individual grammatical aspects of their language. Sanders claims that this course is very popular with students (Sanders 2016: 200).

Pearson (2017) describes practically the same type of course in his work but does not leave students such a free hand in their creation. On the contrary, it uses more elements of chance: students draw grammatical elements of their language, and then pay attention to them. Each draw is adapted to the statistical frequency of individual grammatical properties in world languages, and with each drawn property (e.g., SOV) the next drawn property is adjusted to the frequency it has within the previously drawn property (according to the frequency of this grammatical property in SOV languages). They use the WALS database (Dryer & Haspelmath 2013) for this draw. This simulates the relative frequency of grammatical properties between natural languages. As Pearson claims:

> Through this exercise, typology students are able to study implicational universals first-hand by seeing how those universals play out in constraining the development of a 'naturalistic' conlang grammar. (Pearson 2017: 10)

After Gobbo, Sanders and Pearson, the study[3] described in this paper follows the trend of using language construction for teaching, drawing inspiration from these authors and trying to test some of their claims: that language construction can be helpful for learning about languages, and that it is an activity that students actually enjoy, connecting studying with entertainment.

3. Methodology

The aim of the study is to verify whether the creation of languages can be a useful tool for mediating linguistic concepts and whether it is worth paying more attention to the use of created languages not only in the teaching of linguistics. However, this is not the only subject of our evaluation: it is not excluded that the phonetic side of the created language may affect the outcome of the study, as well as knowledge of certain languages, etc. Attention will be paid to the specific strategies used while constructing languages. The study was aimed primarily at students who do not have a theoretical basis regarding the linguistic concept on which the study focuses.

The focus was primarily on case. This traditional grammatical category was deliberately chosen for several reasons: first, it is an extensive category for which there is much theoretical background. Secondly, in the possible creation of a language, it gives its author a high degree of freedom and manifests itself throughout languages in different ways. Third, it is the best category to show the extent to which the study participants understand it, because it has a wide range of partial, more precisely definable properties. However, a problem with case is also that it is very language-dependent. That means, Czech speakers have a different understanding of case than English or Hungarian speakers. The participants' native languages thus inevitably have an influence on the result. That is also the reason why the study will compare the changes in the results rather than the results themselves.

The variations of the term case are the biggest difference compared to other grammatical categories, such as gender, person, number, time, or aspect, which have a much narrower scope. The study has not been focused on other grammatical categories, but nevertheless they remain an integral part of language construction and study participants had to operate with them when constructing.

Before preparing the study itself, there was a need for a theoretical background regarding *case*. Based on Blake (2004) and Malchukov and Spencer (2009), that included: what is case, what are some of its usual definitions, and what are the usual attributes of case. First, it was important to make a distinction between morphological (i.e., case as an inflectional category) and syntactic case (i.e., case relations not explicitly marked morphologically, but rather on a syntactic level[4]), and between grammatical (often also called *syntactic,* i.e., type of case

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[3] The study originally took place as part of a diploma thesis (Tůmová 2020).
[4] Similar to the concepts of case proposed by Fillmore (1968) or Chomsky (1981)

marking the basic syntactic relations in sentences, such as a subject or an object) and semantic case (also called *concrete*, i.e., type of case marking specific semantic relations in a sentence, e.g. spatial relations using local cases).

After dividing *case* into these four terms, certain statements regarding case had to be chosen to test the knowledge of the study's participants. Participants were then asked which of the chosen statements they thought were correct. The *correctness* regarding these statements is simplified, as what is correct regarding case is debatable. However, as the statements were chosen based on the four-way division of case and on the above-mentioned representative literature, they are expected to be considered correct in accordance with the information the participants were given. These statements were chosen, with information on whether they are expected to be considered correct or incorrect in the brackets in cursive:

1. Set 1:
Case (generally, not in any specific language):
a. marks the relation between a noun and a verb *(correct)*
b. marks the relation between a noun and a preposition *(correct)*
c. marks the relation between a noun and another noun *(correct)*
d. marks the time of the activity (present, future etc.) *(incorrect)*
e. marks the person: whether the activity is being performed by them, you or me *(incorrect)*
f. marks the mutual relation between a noun and an adjective *(incorrect)*
g. marks the relations between words in a sentence *(correct)*
h. appears on nouns *(correct)*
i. appears on pronouns *(correct)*
j. appears on verbs *(incorrect)*
k. may appear at adverbs *(correct)*
l. may substitute adjectives *(incorrect)*
m. may in certain languages be used to create a question or an imperative sentence *(later removed for redundancy)*
n. may mark the subject or the object of a sentence *(correct)*
o. may mark quantity *(incorrect)*
p. may mark a gender (feminine, masculine, etc.) *(incorrect)*
q. may mark ownership *(correct)*
r. may mark the way an activity is performed – either once or continuously *(incorrect)*
s. may mark the subject and the object of a sentence *(later removed for redundancy)*
t. may change internal properties of words *(correct)*
u. may mark a location *(correct)*
v. may mark whether the sentence is indicative or e.g., interrogative *(incorrect)*
w. may mark a manner and a direction of a movement *(correct)*
x. may connect with prepositions *(correct)*
y. a case in one language may be substituted by a preposition in another language *(correct)*
z. a case may mark various relations/attributes in different contexts *(correct)*

2. Set 2:

aa.   on one word there can be more cases at once *(correct)*

bb.   certain languages substitute case with something else, e.g., prepositions *(correct)*

cc.   a case suffix may be merged with another grammatical category *(correct)*

dd.   morphological case is a case which can be determined from the form of the word *(correct)*

ee.   syntactic case is a case which can be determined from the context of a sentence (word order, a certain sentence particle) *(correct)*

ff.   every language has case *(correct)*

gg.   certain languages only have morphological case *(correct)*

hh.   languages may distinguish between up to several dozens of cases *(correct)*

ii.   certain languages may not have case at all *(incorrect)*

jj.   in each language, each word can have no more than one case *(incorrect)*

kk.   an adjective may take the case of the noun it is related to (that which it is dependent on) *(correct)*

3.1 Study Outline

The study began with an introductory questionnaire[5], which was created to collect the participants' basic demographic information, and their experience with languages, philology, or linguistics. The questionnaire then examined the initial knowledge of the participants, including the statements regarding case. Participants chose which of the statements they thought were correct and tried to write down their own definition of case.

Subsequently, there was a short presentation on case, which included elemental information on the topic with examples from various languages included (e.g., Estonian, Basque, Vietnamese or Chinese).

The presentation was then followed by the process of language construction, where the participants were asked to create a grammatical structure for the presented language outline to such an extent that they can translate model sentences from Czech into their new language. For this task, the participants were given one of the two pre-made language outlines (A and B[6]) with different sounds and word forms, which included a simple lexicon and a description of the language phonology (incl. both IPA symbols and equivalent or similar sounds in Czech). The goal was for them to focus only on the construction of the grammatical structure, not the phonology or the lexicon of their language. Two variants of the language outline were created due to the possible influence of phonology on the resulting construction. The participants had around 2 hours to construct enough grammatical elements to be able to translate the 10 model sentences, which were created ad hoc to include enough possibilities for the construction of cases:

1.   From the green hill they went down along the road (up to) between the houses.
2.   Her house is as friendly as a wall.
3.   In his big house on the hill, there is a fire.

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[5] See Appendix 1 in DATA SOURCE (<http://www.phil.muni.cz/linguistica/art/tumova/tum-001-data.pdf>).

[6] See Appendix 2, 3 in DATA SOURCE.

4. Together with friends, they went out of the house onto the lawn due to the fire.
5. "Boy!" His girl called across the lawn.
6. He turned from a young boy into a big man thanks to the fire.
7. By a little house sits a woman opposite green apples.
8. She went without her wife up to the end of the wall.
9. A girl has five pieces of fruit as green as grass.
10. The girl sent fruit in a basket for each young man.

The whole study was then closed with a final questionnaire,[7] which again asked the participants to choose which case statements they thought were correct to compare the answers with the introductory questionnaire. Also, the questionnaire asked for their subjective view regarding the whole study.

4. Results and discussion

The study took place in December 2019 and in the first quarter of 2020 and had 9 participants in total, divided into 2 groups which were participating separately in a non-class environment (participants 1–4 and 5–8 respectively) and one participant (no. 9) who was participating online. The participants chosen were supposed to be current or former university students, otherwise there were no other criteria for their participation in the study.

Group 1 had one female and three male participants, all of them undergraduate students (one of IT, three of English). Their native language was Czech, second language English, and all four had some knowledge of at least one another language.

Group 2 also had one female and three male participants, 3 out of 4 were undergraduate students and one had already graduated. Only one of the three students had studied philology or linguistics in the past. Two participants had native language Slovak, one Hungarian and one Czech. Their second language was English (and Slovak in case of the Hungarian speaker). Also in this group, each of the participants had some knowledge of at least one another language.

Participant 9 was a female participant and an undergraduate student (with experience in linguistics) with Russian as the native tongue and Czech and English as second languages, and with certain amount of knowledge of several other languages.

Detailed questionnaire answers are in a separate document,[8] where translated model sentences of all participants are also included.[9]

4.1 Questionnaires

In the end, all participants had more correct and most of them less incorrect answers to the questionnaire statements. The gender and age categories do not show any significant difference in the results, but this is a small sample. There is no significant difference in the answers

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[7] See Appendix 4 in DATA SOURCE.
[8] See Appendix 5 in DATA SOURCE.
[9] See Appendix 6 in DATA SOURCE.

to the questionnaire between entries A and B. Differences can be seen in the case of participants' former language philology or linguistics studies: out of all participants, only those 3 out of 4 who did not study language philology or linguistics at university had the number of incorrect answers increased in the final questionnaire (and they had the most incorrect answers before the start of the study). They are also the only three who use primarily Slovak for communication instead of Czech, but the influence of Slovak is highly unlikely in this case.

Participant and lang. outline	Correct (intro)	Correct (final)	Incorrect (intro)	Incorrect (final)	Definition: improvement?[10]
1 A	11	21	1	1	yes
2 A	16	21	3	0	yes
3 B	11	17	2	2	no
4 B	19	24	2	0	yes
5 A	11	16	4	5	no
6 B	18	23	5	7	yes
7 B	17	19	5	2	no
8 A	13	21	1	7	yes
9 A	18	23	3	3	yes
average	14.9	20.6	2.9	3	–

Table 1: Summary of answers to questionnaire statements and definition of case

The difference is significant between the groups: the first group of participants shows much better results than the second group. There can be several reasons: in the first group there are mostly students of philology (English), the study was conducted in a more familiar environment of a tearoom and finally there may be a mistake on the part of the lecturer, who in the second group could neglect to give more detailed introduction to the theory of grammatical categories. The last argument is supported by the fact that one of the common incorrect answers in the second group is the confusion of grammatical categories, where participants also mark grammatical categories of number, person or mood under the term case.

The evaluation of the definitions of case listed by the participants is very subjective, however, six of them have shown a better grasp of the concept of case, and in three cases there was no significant change. For example, the participant 1 expanded the definition of case from only marking the subject and object in a sentence to also specify their location, use or possession. The participant no. 4 first limited their definition of case only to determine relationships in a sentence, but later added a more general meaning to case, saying that it marks relationships between words in general, or even within the word itself, especially its location or direction. The participant 5, however, has kept the definitions of case in both questionnaires limited only to a grammatical structure or device used to determine certain syntactic

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[10] I.e., whether there is an improvement in the definition of case between the introductory and the final questionnaires.

functions in a sentence. This participant has created a language with almost no affixes, using many adpositions instead, and has not used a morphological case at all.

An important point is the correlation of changes in the answers with the participants' constructed grammatical structure visible in the model sentences, in other words, whether the given property of case can be read from the constructed grammatical structure:

– The correlation can be found with participants 1, 2, 3, 4 and 7. These participants may have learnt about case directly from their language construction process.
– There is an unclear correlation in case of participants no 5, 6, 8 and 9. Interestingly, participants 5, 6 and 8 had the most incorrect answers in the final questionnaire (and who did not study philology or linguistics).

4.2 Typological profile of participants' constructed languages

To better analyse the results of the study, one way to do it is by using the typological profiles of languages whose grammatical structures were created by the study's participants. For this, the languages of the participants can be divided based on how they express grammatical relations on morphological level.

The participants have used several strategies to create the morphological structures of their languages. Participant 5 uses adpositions to express almost all their language's relationships, while only using four affixes (to mark past tense, adjectives, possession, and plural). Their language has no grammatical gender, no morphological case, or any inflection in general. As such, this language is very similar in structure to languages called *isolating*.

Most common is the use of affixes as dominant carriers of additional (not just grammatical) information. Participants 1, 2, 4 and 7 all use mainly affixes. All their languages have several examples of morphological case, even including local cases, and participants 1, 2 and 7 use adpositions to mark only a few spatial relations (direction or location) or, e.g., a comitative relation or past tense. Participant 4 strictly uses only affixes, no adpositions. Majority of words in these languages consist of two or more morphemes. Also, almost all the affixes always carry only one information at once, e.g., a certain tense or number or case. These languages may thus be called *agglutinating*.

Some languages combine adpositions with a range of affixes withour neither of them being dominant, namely those of participants 3, 8 and 9. These languages may be called *isolating-agglutinating*, as they combine perks of both.

Very different is a language of participant 6. The language uses mainly affixes with a few adpositions, but often expresses more than one information per affix, and distinguishes case affixes by grammatical gender. E.g., affix *-(i)dan* is an ablative case for inanimate gender (used in *boitidan,* "from a hill"), while *-(i)ran* is an ablative case for masculine gender (used in *faitiran*, "from a man"). Verbal endings are similar and mark both number and tense. This language thus resembles those called *fusional*.

To see the structure of the languages in more detail, there is also a sample of other typological categories in Table 2a,b. Most of them are directly related to case (whether the language marks object, whether it has local cases, whether it has a vocative case, whether there is a case agreement in the language), some are not directly related (whether there are prepositions in the language, how many genders there are, whether there can be a null-subject,

whether there are derivational affixes), and a special category: whether the work may be considered "creative", i.e., whether the constructed language may be considered different in its structure than the first and second languages spoken by the participants, or whether it consists mostly of word-for-word translations. Some of the typical typological categories were omitted since all the language fall in the same category (for example, their morphosyntactic alignment is always nominative-accusative).

Participant and language outline	1 A	2 A	3 B	4 B
language type	aggl.	aggl.	isol.-aggl.	aggl.
marks object	no	no	to a limited	yes
local cases	yes	yes	no	yes
has a vocative	no	no	no	yes
adpositions	yes	no	yes	no
case agreement	yes	yes	no	yes
genders*	2	3	0	0
null-subject	no	no	yes	no
derivational af-	no	yes	to a limited	yes
creative work**	yes	yes	no	yes

Table 2a: Typological profile of constructed languages of participants 1–4

Participant and language outline	5 A	6 B	7 B	8 A	9 A
language type	isol.	fusion.	aggl.	isol.-aggl.	isol.-aggl.
marks object	no	no	no	no	no
local cases	no	yes	yes	no	no
has a vocative	no	no	no	yes	no
adpositions	yes	yes	yes	yes	yes
case agreement	no	no	no	no	no
genders*	0	4	0	2	0
null-subject	yes	no	yes	no	yes
derivational af-	to a limited	yes	yes	yes	no
creative work**	no	yes	yes	partially	partially

Table 2b: Typological profile of constructed languages of participants 5–9
* Grammatically, i.e., whether some falls or other affixes differ according to gender. It does not apply to personal pronouns and lexical expressions or derivative affixes.
** Subjective evaluation of whether the created grammatical structure can be considered sufficiently creatively elaborated. The evaluation is mainly based on the extent to which the participant translated grammatical expressions literally from Czech, or whether he / she sufficiently developed a new grammatical system

Of the typological profiles, one cannot fail to notice the predominant agglutinating type, which includes constructed languages of 4 out of 9 participants, while the other 3 have at least a partially agglutinating language. When comparing the results in the questionnaires, a certain trend is evident: those who created purely agglutinating languages had better results than those who had isolating, isolating-agglutinating or fusional languages. We will try to compare them in Table 4a,b.

Participant and language outline	Correct (intro)	Correct (final)	Incorrect (intro)	Incorrect (final)	Definition: improvement?
1 A	11	21	1	1	yes
2 A	16	21	3	0	yes
4 B	19	24	2	0	yes
7 B	17	19	5	2	–
average	15.8	21.3	2.8	0.8	–

Table 4a: Summary of questionnaire statements answers and definitions of case of participants with the agglutinating language type

Participant and language outline	Correct (intro)	Correct (final)	Incorrect (intro)	Incorrect (final)	Definition: improvement?
3 B	11	17	2	2	no
5 A	11	16	4	5	–
6 B	18	23	5	7	yes
8 A	13	21	1	7	yes
9 A	18	23	3	3	yes
average	14.2	20	3	4.8	–

Table 4b: Summary of questionnaire statements answers and definitions of case of participants with other language types

We can see from the results that although the average number of correct answers in both groups increased by about 6, there is a noticeable difference in the number of incorrect answers: in the first group their number decreased by 2 on average, while in the second group their number increased almost by 2. There is also not a single participant in the second group whose number of incorrect answers would decrease, while in the first group it decreased in 3 out of 4 and remained the same in case of only one participant.

It is interesting what specific (supposed to be incorrect) answers in the final questionnaire participants with non-agglutinating types had:
– participant 3 thought that case marks sentence mood and appears on verbs)
– participant 5 thought that case marks the categories of person and quantity, appears on verbs, marks the relationships between nouns and adjectives)
– participant 6 thought that it marks quantity, gender and the relationships between nouns and adjectives

- participant 8 thought that case marks the categories of person, quantity and verbal aspect, appears on verbs and marks the relationships between nouns and adjectives)
- participant 9 thought case marks quantity, appears on verbs and marks the relationships between nouns and adjectives

Those who answered that case marks the relationships between nouns and adjectives had no case agreement, while participants with the agglutinating language type (who did not mark this answer) have case agreement in 3 out of 4 cases.

Another very interesting point is the overlapping of case with other grammatical categories. Those who did not prefer agglutination confused case with other grammatical categories more often than those with agglutinating language structures. It is possible that those who created an agglutinating language with a case agreement were more aware of the functions of individual morphemes and the functions of case, since each individual morpheme is assigned only one function in such a system.

However, the results may also be related to the extent to which the constructed grammatical structure resembles Czech. Although the vocative surprisingly appears with only two participants, regardless of the morphological type of language (participants 4 and 8), other language characteristics may tell us more:

- For all participants with agglutinating type of language, their construction was evaluated as creative. In case of participants with a language type other than purely agglutinating, only one participant's work was evaluated as creative (different language structures, unique or unexpected grammar perks and creatively constructed vocabulary), in two cases as partially creative and the other two participants' constructions were evaluated as insufficiently creative (too many word-for-word translations, no original grammar perks).
- Also, only 1 in 4 participants with non-agglutinative languages have local cases (Czech only has a general locative case), while all participants with agglutinating languages have local cases.
- Also, a null-subject following the example of Czech appears more often in non-agglutinating languages (in 3 out of 5), while in agglutinating languages only in one language.

Those who constructed their languages more creatively had their understanding of case closer to what was expected in this study.

4.3 Experiment evaluation

Our experimental study proved one of the assumptions, i.e., that language creation can be successfully used to mediate linguistic concepts. However, we have also learned that we needed to examine in more detail how to use language production more effectively, as it was more successful with some participants than with others. Above all, it is possible that the morphological type of the constructed language may influence the way in which its creators learn about the individual grammatical elements they create. We assume that the agglutinating type, which assigns a unique function to each morpheme, is more suitable for this process.

What was not confirmed was the influence of the phonological (or in this case rather graphemic) side of the constructed language on the result, although it is possible that in a

larger-scale study (and including the spoken form of the language) the influence could be observed. Another assumption was not confirmed either, as the influence of other languages that the participants spoke or had experience with did not have any significant effect on the results. Previous participants' studies may have had some effect: those who had previously studied linguistics or any university-based language course were more successful than those who had not studied it. Three out of four participants who did not study philology were the only ones with an increased number of incorrect answers in final questionnaire.

However, a study of such a small extent, with only a few participants is not entirely conclusive. Rather, it is a pilot study that can serve as a basis or as a motivation to carry out other similar studies in a more appropriate environment, over a longer period and with a larger number of participants, or as a possible basis to try this approach to teaching linguistics and linguistic typology directly in practice.

5. Conclusion

As Gobbo (2013), Gobbo et al. (2016), Sanders (2016) and Pearson (2017) all claim, it was also found in our study that language development could be a useful tool for learning linguistics in class. Also, 8 out of 9 participants evaluated the study to be very interesting. This approach may thus be a valid alternative to traditional teaching methods in linguistic studies, and may be successfuly incorporated into linguistic courses.

What we have also discovered and not anticipated before is that it is necessary to find out how to use this approach more effectively. Namely, what strategies should the participants use to create their languages: whether they should prefer using adpositions or affixes, how should they mark various case relations (either separately on each morpheme, or more of them combined per one morpheme), or how many morphemes should they use per word. The strategies, it was found, could have had an impact on the study's results.

Also, there was no proof that knowledge of different languages had an effect on the result, as well as there was no proof that a different set of phonemes in the language influenced the results. No proof, however, does not mean that there is no influence, just that there were not enough participants to actually prove or disprove the aforementioned phenomena.

We are aware of the downsides of the study: the low number of participants, but also the use of questionnaires. The problem with questionnaires is that the results depend on the participants' honesty, thus making room for errors. Combined with the low number of participants, each dishonest answer and each irregularity greatly affects the result. Despite the problems with questionnaires, they may still bring valuable data that could not be obtained otherwise. All that is why the study should be considered just a pilot which may show a direction of focus of potential subsequent studies of larger format.

References

BLAKE, Barry J. 2004. *Case*. Cambridge: Cambridge University Press.
CHOMSKY, Noam. 1981. *Lectures on Government and Binding*. Dordrecht: Foris Publications.

DRYER, Matthew S. – HASPELMATH, Martin. (eds.) 2013. *The World Atlas of Language Structures Online*. Leipzig: Max Planck Institute for Evolutionary Anthropology. Retrieved March 20, 2021, <http://wals.info/>.

FILLMORE, Charles J. 1968. "The case for case". In: Bach, Emmon – Harms, Robert T. (eds.), *Universals in Linguistic Theory*, 1–88. London: Holt, Rinehart & Winston.

GOBBO, Federico. 2013. "Learning linguistics by doing: The secret virtues of a language constructed in the classroom". *Journal of Universal Language* 14/2, 113–135.

GOBBO, Federico et al. 2016. "Orientation towards multilingualism in class: A Montessori experience". *AMI Journal* 2014–2015, 87–92.

MALCHUKOV, Andrej – SPENCER, Andrew. (eds.). 2009. *The Oxford Handbook of Case*. Oxford: Oxford University Press.

PEARSON, Matt. 2017. "Using language invention to teach typology and cross-linguistic universals". *Fiat Lingua*. Retrieved March 20, 2021.
<http://fiatlingua.org/wp-content/uploads/2017/03/fl-000043-00.pdf>.

PETERSON, David J. 2013. *The Conlang Manifesto*. Retrieved March 20, 2021.
<http://dedalvs.com/notes/manifesto.php>.

———. 2015. *The Art of Language Invention: From Horse-Lords to Dark Elves, the Words Behind World-Building*. New York: Penguin Books.

ROSENFELDER, Mark. 2010. *The Language Construction Kit*. Chicago: Yonagu Books.

SANDERS, Nathan. 2016. "Teaching linguistics: Constructed languages in the classroom". *Language* 92/3, 192–204.

SCHREYER, Christine. 2013. "The culture of conlanging: What can we learn about culture from created languages?". *Fiat Lingua*. Retrieved March 20, 2021.
<http://fiatlingua.org/wp-content/uploads/2013/07/fl-000017-00.pdf>

TŮMOVÁ, Anna. 2020. *Využití tvorby jazyků pro zprostředkování lingvistických konceptů*. Unpublished MA thesis. Brno: Masaryk University. <https://is.muni.cz/th/avud7/>.