

GRAMMAR TEACHING: THE INDUCTIVE VS DEDUCTIVE
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The present paper attempts to show that there is not and cannot be a universal solution to the inductive vs deductive approach problem in teaching the foreign language grammar. It is argued here that the correlation between those two approaches is very dynamic and depends upon a number of factors. The effect of some of them — the native language interference and students' aptitude — is analysed in this paper on the basis of original experimental research.

Theoretical Background. At present most applied linguists agree that language learning involves the active cooperation of the learner as a rational individual, and that students learn in a selective manner, searching for the information they need to discover the system of the language being learned (Allen 1975: 46). The view is well supported by the data from psychological research, in particular those obtained in the framework of the stage theory of mental actions formation (Galperin 1965). The conclusions of this theory seem to be well related to grammar teaching, because the actual aim of the latter is grammar habits formation, and grammar habits *are* mental actions. The validity of the stage theory had been reported to be proved in 'teaching a wide array of subjects.

The basic ideas underlying this theory are as follows. The process of any mental action acquisition could be subdivided into two phases: orientation and accomplishment. The former plans the action, while the latter carries it out. The orientation phase is more important in the sense that accomplishment completely depends upon the quality of orientation. Orientation is carried out through the orientation basis (OB), i.e. the system of orientation points used to ensure the accurate action accomplishment. The OB could be complete or incomplete. The complete OB, which yields the best results, includes three components: 1) a sample of the action; 2) the model of the object of acquisition; 3) the model of the action to be acquired (the algorithm).

Teaching Considerations. In teaching grammar, orientation may be provided by types of pedagogic information (PI). There are at least three of them. They

correspond to the elements of the complete OB: the speech pattern (SP)¹, the model (M)², and the (quasi-)algorithm (A)³. According to the stage theory, it is necessary to use the complete OB (all three types of PI) in all cases. But, as it was mentioned before^{2,3}, the application of M and A may slow down the

¹ The speech-pattern (SP) is understood as a sample sentence which contains the grammar phenomenon (action) to be learned. The sentence "The window was opened by Victor" may be used as SP for teaching the Past Indefinite Passive Tense. SP is an implicit type of PI, i.e. though it contains all necessary information about its structure, and the actions to produce this structure, in most cases students fail to realize it.

² The model (M) is understood as an artificial scheme to represent the grammatical structure, and the relations between the elements of this structure. M is an explicit type of PI as compared to SP, as the former strips the lexical component off the structure. This component may prevent students from realizing the structure. Even if students perceive a lot of sentences based on the same structure, they might not be aware of it. Their attention is diverted by the meaning of the words, which change with every new sentence. There might be different levels of M presentation. The structure of the sentence given in note 1 may be shown like the formula O + be + V_{en} + S (where "O" — is the semantic object; "be" — the verb "to be"; "V_{en}" — participle II, "S" — the semantic subject). This formula might be too difficult for junior students. For them it may be introduced in the form of geometrical multicoloured figures, each of which representing a separate element of the structure (Gochlerner 1972). The components of such M are made of separate pieces of paper. This enables each student to use it with his/her own hands (e.g. to move the second element to the front to make questions). In this way the grammar action becomes materialized. For the same aims special cards are also used. On them the students write the words they are going to use in exercises, and then place those cards under the corresponding element of the model simultaneously with pronouncing those words. This procedure helps to greatly decrease the possibility of mistakes. And even if such occur the teacher is able to pinpoint them exactly because the grammar action of each pupil is clearly seen. It improves the efficiency of control a lot. However the M application slows down exercises at the initial stages. On the other hand, the students compensate for it later, because they make very few mistakes at more advanced stages.

³ The (quasi-)algorithm (A) is understood as a list of operations necessary to carry out the grammar action. For teaching the Past Indefinite Passive Tense to junior students (13—14 years of age) the following construction was used:

If you want to focus on the action

(or the doer of the action) do the following:

1. Take the semantic object first (*The window...*)
2. Then place the corresponding past form of the verb "to be" (*The window was...*)
3. Then place the 3d form of the main verb (*The window was opened...*)
- (4.) Then connect the semantic subject with the preposition "by" (*The window was opened by Victor*).

A is the most explicit type of PI. It is used in combination with SP and M. The procedure of its application is the same as with M. The difference is that before choosing a card with a word on it and placing it under a corresponding element of M, the students read the corresponding step of A aloud. This additional procedure allows down exercises even more than

process of acquisition at the initial stages. This may leave less time for speech exercises if we take into account the limited amount of time typical for academic training. Besides, any practical teacher is aware that some grammar actions⁴ could be effectively taught exclusively through SP, because such actions are easy to acquire. It is quite logical to assume then that the amount and the character of PI may depend upon the difficulty of a particular grammar action. To make this assumption more concrete it is desirable to find some ways to measure difficulty.

Methodological Typology of Grammar Actions. The main source of difficulty is interference, first of all — the native language interference (Weinreich 1970). It may manifest itself in at least two aspects: the principles of formation (the grammar form) and the principle of functioning (the grammar function). Both the form and the function may completely coincide with the corresponding aspects of the native language. Such aspects are transferred into the foreign language. The coincidence may be partial, and then a correction of the transfer is necessary. At last both aspects may be completely absent in the native language. In this case they have to be acquired anew. On assuming that the functional aspect is a more difficult one, it is possible to construct the typology of the grammar actions (see Table 1 on p. 117)⁵.

In this typology the degree of interference (and hence the difficulty of acquisition) gradually increases from type 1 to type 9. If we analyze the Russian/English contrast we may find representatives of most of the types given in Table 1⁶.

The Hypothesis. On the basis of the typology it is possible to assume that the

with M alone. On the other hand, it practically excludes the possibility of mistakes. And most students cease to need A after just a few readings of it aloud.

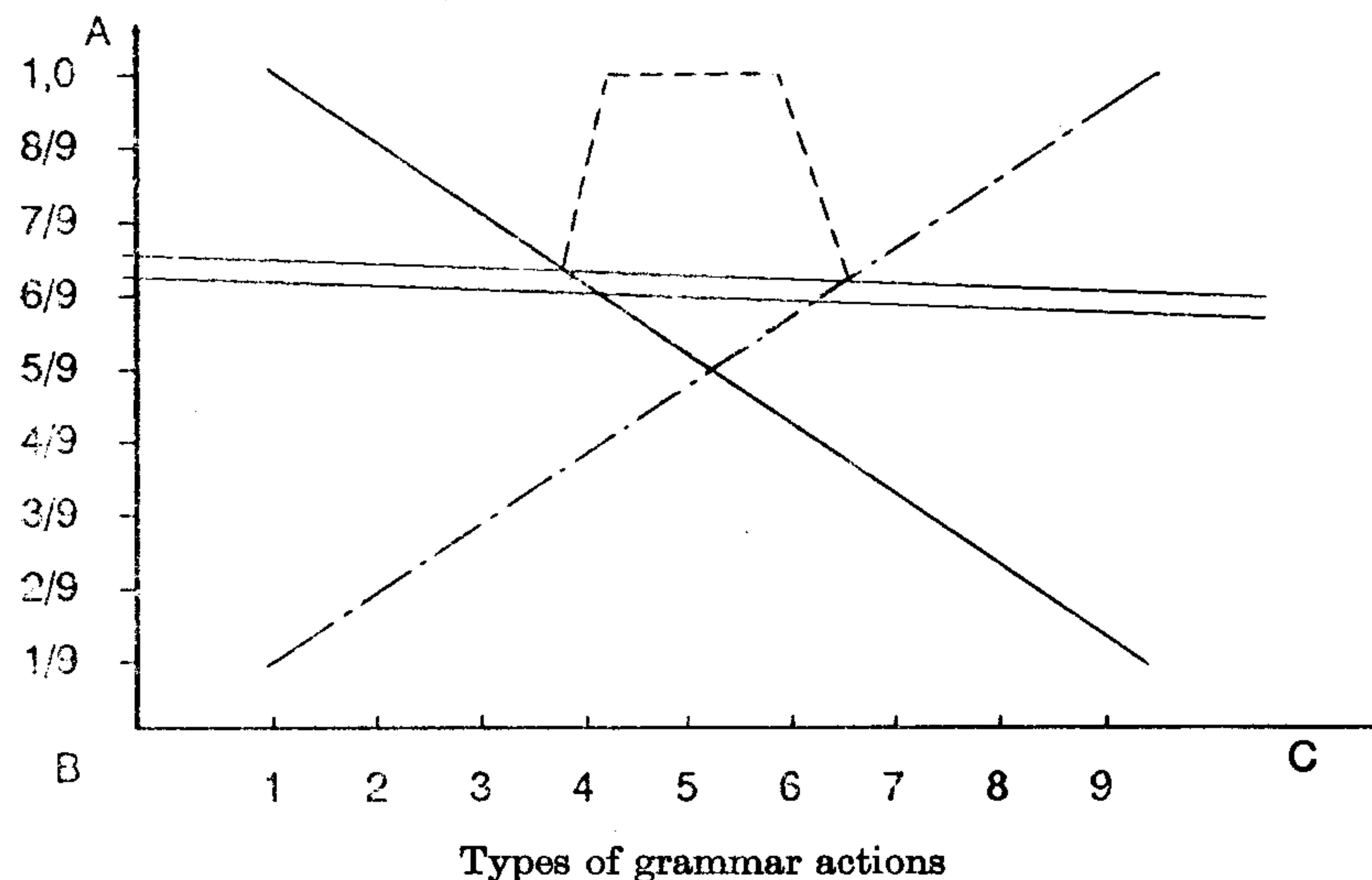
⁴ The term "grammar action" is used in this paper instead of the term "grammar phenomenon", as the aim of teaching grammar in practical courses is the acquisition of grammar actions (habits) and not grammar phenomena (knowledge).

⁵ Other researchers attempted to construct similar typologies (cf. Malyshevskaya 1975).

⁶ The 1st type — the degrees of comparison of adjectives: synthetic and analytical principles of formation and identical meaning in both languages. The 2nd type — the Future Indefinite Tense in junior school courses: the meaning is the same, because students are not aware of any other forms to express future. But the principles of formation should be corrected: the synthetic formation in English, and the synthetic and analytical ones in Russian. The 3rd type — the interrogative constructions with the full meaning verbs: the meaning is the same in both languages, but the principles of formation are absolutely different. The 4th type — the Past Indefinite Tense: the principles of formation are the same in both languages, but the meaning coincides only partially. The 5th type — the Past Indefinite Passive Tense: a correction is needed in both form and function, as there are points of a coincidence and difference. The 6th type — the Present Perfect Tense: a partial coincidence in the meaning and a complete difference in the form. No examples

predicative value of each type of PI depends upon the degree of interference in each particular case. The value of SP should be maximum for teaching grammar actions of the 1st type, and minimum for the 9th type actions, while the value of A should be absolutely reverse, with the value of M somewhere in between. This hypothesis may be presented graphically (fig. 1).

Predicted
Efficiency
of Acquisition



————— Predicted SP efficiency
- - - - - Predicted M efficiency
- · - · - Predicted A efficiency

Fig. 1. Predicted efficiency of types of PI for different types of grammar actions

In Fig. 1, the line AB represents the predicated efficiency of acquisition ranging from the maximum possible level (1,0) to the lowest possible one in the framework of this hypothesis (1/9)⁷. The line BC represents types of grammar actions. The double line just above the 6/9 mark shows the minimum level of acquisition regarded as satisfactory⁸. If the line representing a particular type of PI goes below the minimum satisfactory level of acquisition, it means that this type loses its value, and additional types of PI are needed. As it follows from Fig. 1, SP alone should be enough to teach grammar actions of types 1—3. The combination SP-M should be optimal for types 4—6 (though type 3 could be regarded as a border case). And the combination SP—M—A should be op-

of types 7—8 in the Russian/English contrast. The 9th type — the article in English absent in Russian.

⁷ In fig. 1 it is assumed that there is a regular increase in the difficulty of acquisition from type to type, i.e. that e.g. type 1 is five times easier than type 5.

timal for type 9, and probably for type 6 as well, because the latter might also be regarded as a border case.

To check this hypothesis a special experiment was carried out.

Subjects. 385 junior students (13—14 years of age) of 6 secondary (both village and city) schools in Kharkov and Poltava regions (the eastern part of Ukraine) participated in the experiment. All subjects started learning English at 12 with classes 2—3 hours per week; all were tested before the experiment.

The experimental material. Three grammar phenomena (the corresponding grammar actions) representing different types of the methodological typology (see Table 1) were taken: the Future Indefinite Tense (type 2), the Past Indefinite Passive Tense (type 5), and the Present Perfect Tense (type 6).

The experimental scheme. The experimental teaching was conducted in three series. In each only one grammar phenomenon (action) was taught. The subjects were distributed between three variants of teaching (in each series). In the 1st variant only SP was used, in the 2nd — SP and M, and in the 3rd — SP, M and A.

The experimental procedure. The amount of time for teaching in each series was the same in all variants (10 class-periods, 150—200 minutes), the system of exercises was also the same. This system was based on the generally accepted sequence for teaching oral speech (auding, imitation, substitution, transformation, usage). There was some difference between the variants in the exercises procedure, which was related to the different amount of PI used in each variant. In the 1st variant a purely inductive approach was applied: no explanations as to the principles of formation were given, and intensive speech practice started from the very beginning. The 3rd variant of teaching could be considered as a purely deductive one, while the 2nd one is somewhere in between. The progress in those variants was at first slower as compared to the 1st variant (for reasons see notes 2—3). But by about mid-course in each series there was no visible difference between the variants.

The post experimental test was conducted in all three variants after each series in oral and written forms. In the written test the subjects were presented several sentences in the native language to be translated into English. Only mistakes in particular grammar form (or function) were taken into account. In the oral test the subjects described a picture or commented on the teacher's actions. The amount of tasks for each subject was the same throughout each series⁸.

Experimental results (see Table 2, p. 117). As it follows from Table 2, in condi-

⁸ To measure the level of acquisition and to evaluate students' performance a well-known formula was used (Bespalko 1968) — the ratio of the amount of correct answers to the whole amount of the tasks presented to the subject. The ratio 0,9—1,0 is considered to be very good, 0,8—0,9 — good, 0,7—0,8—satisfactory, below 0,7 — unsatisfactory.

tions of moderate interference (1st series) even SP alone can produce good results (0,83, 1st variant of teaching). But the additional application of M in the same series increased the acquisition level (0,95, 2d variant). Calculations (*cf.* Gottsdanker 1982) proved that the difference between variants 1 and 2 in the 1st series is statistically reliable, while the same difference between variants 2 and 3 is not. Thus it can be concluded that variants 2 and 3 are reliably better than variant 1, but variants 2 and 3 are about equal. In other words, for teaching grammar actions of the 2nd type it is best to apply the combination SP-M, and A is an excessive type of PI.

The efficiency of SP (the 1st variant of teaching) goes down to the lower border of the satisfactory level when interference increases (0,70—0,71 in series 2—3). This decline (though not so sharp) is also characteristic for the 2nd variant (0,93—0,84) in series 2—3). But it remains very high in the 3rd variant (SP-M-A) even when interference increases (0,94—0,92 in series 2—3). The difference between the 1st variant of teaching, on the one hand, and the 2nd and the 3rd, on the other, is reliable in all series. But the same difference between the 2d and 3d variants is reliable only in series 3.

The hypothesis proved to be true only for A. The combination SP-M-A turned out to be efficient for teaching grammar actions of type 6 (and predictably — for type 9). The hypothesis had to be corrected for SP and M. The combination SP-M turned out to be more efficient for teaching grammar actions of types 2—5. In fact this combination could be regarded as the main one for grammar teaching. The SP is an insufficient type of PI for the majority of cases (with the possible exception of the grammar actions of the 1st type), while A is an excessive type of PI for most cases (except types 6 and probably 9).

Orientation and aptitude. In the course of the experiment a probable connection between the amount of PI and students' aptitude had been noticed. The latter is inevitably reflected in the students' performance. To check the assumed connection the subjects' results were rearranged according to the efficiency level. That is, inside each variant three groups with equal number of subjects were differentiated: "A" — one third of the subjects within each variant, those who produced the lowest results; "B" — one third of the subjects, average results; "C" — one third of the subjects, the best results. The results of each group are represented in Table 3, p. 118 (because group "B" results coincide with average results discussed above, only groups "A" and "C" are presented in the table).

As it follows from this table, group "A" subjects find a substantial difficulty in acquisition, even with moderate interference (0,71 in series 1), and can't cope with the task when interference increases (0,40—0,45 in series 2—3). Thus SP can hardly be used as the only type of PI for the low-aptitude students. The additional application of M improved the performance of this group in series 1 and 2 (0,86—0,83), but in series 3 the subjects did not cope with the task even on the basis of SP-M combination (0,61). The application of SP-M-A

substantially increased the quality of acquisition in this group in series 2 and 3 (0,90—0,75). This permits to conclude that for low-aptitude students the combination SP-M is valid for types 2—4, and the combination SP-M-A — for types 5—9.

The subjects of group "C" produced absolute results (1,0) on the basis of SP-M and SP-M-A combinations in all series. This proves that for this category of students A is an excessive type of PI in all cases. Even on the basis of SP the subjects of this group produced very good results in series 1—2 (0,98—0,96) and only in series 3 did the difference between the 1st and the 2nd variants of teaching prove to be reliable.

Thus it could be concluded that for high-aptitude students SP is enough to acquire grammar actions of types 1—5, and the combination SP-M is best for teaching types 6 and (presumably) 9.

The overall results of the experiment are presented in Table 4.

APPENDIX

Table 1. Methodological typology of grammar actions from the point view of the native language interference

Types of grammar actions	Function	Form
1	Transferred	Transferred
2	—, —	Corrected
3	—, —	Acquired anew
4	Corrected	Transferred
5	—, —	Corrected
6	—, —	Acquired anew
7	Acquired anew	Transferred
8	—, —	Corrected
9	—, —	Acquired anew

Table 2. Results of the experimental teaching (level of acquisition)

Variant of teaching	Series of the experiment		
	1	2	3
	Types of grammar actions		
	II-Future Indef.	V-Past Passive	VI-Present Perf.
1 (SP)	0,83	0,70	0,71
11 (SP-M)	0,95	0,93	0,84
111 (SP-M-A)	0,92	0,94	0,92

Table 3. Results of groups "A" (low-aptitude) and "C" (high-aptitude) in the postexperimental test.

Variant of teaching	Series of the experiment					
	1		2		3	
	Type of grammar actions					
	11		V		VI	
	gr. "A"	gr. "C"	gr. "A"	gr. "C"	gr. "A"	gr. "C"
I (SP)	0,71	0,98	0,40	0,96	0,45	0,91
11 (SP-M)	0,86	1,00	0,83	1,00	0,61	1,00
111 (SP-M-A)	0,84	1,00	0,90	1,00	0,75	1,00

Table 4. Recommended combinations of types of PI for different types of grammar actions taking into account students' language aptitude.

Types of grammar actions	Recommended combination of types of PI		
	Students' language aptitude		
	low	average	high
1	SP	SP	SP
2	SP-M	SP-M	—,,—
3	—,,—	—,,—	—,,—
4	—,,—	—,,—	—,,—
5	SP-M-A	—,,—	—,,—
6	—,,—	SP-M-A	SP-M
7	—,,—	—,,—	—,,—
8	—,,—	—,,—	—,,—
9	—,,—	—,,—	—,,—

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