

# INTED **2019**

## 13th International Technology, Education and Development Conference

11-13 March, 2019  
Valencia (Spain)

# CONFERENCE PROCEEDINGS



*Exploring New Frontiers in Education*

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# EXPLICIT INSTRUCTION AS A TOOL FOR IMPROVING LANGUAGE COMPETENCE

**D. Kuzmanovska, M. Tasevska, T. Ulanska, A. Hadzi-Nikolova**

*Faculty of Philology, University "Goce Delcev" (MACEDONIA)*

## Abstract

The paper appears as a result of research conducted in accordance with the project "Supplemental instruction as a tool for improving students' language competence at the Faculty of Philology". The purpose of this project is to detect students' weaknesses from their previous education and to overcome them by adding supplemental instruction in the duration of two semesters, two lessons per week. The results from the tests aim at improving language competence of the students from the Department of German language and literature at the Faculty of Philology, "Goce Delcev" University – Stip, the Republic of Macedonia. The results provide an answer to the question whether this supplemental instruction contributes to the improvement of students' language competence. Moreover, we hope they will define the extent of improvement by comparing them to the results obtained from the initial testing, conducted before introducing supplemental instruction to the experimental group. The instruction focused on explicit learning of grammar and vocabulary of the German language, and on development of language skills by using different exercises and activities in accordance with the communicative approaches to language learning.

Keywords: explicit learning, language competence, supplemental instruction.

## 1 INTRODUCTION

The project "Supplemental instruction as a tool for improving students' language competence at the Faculty of Philology" focuses on the first year students, enrolled at the Faculty of Philology on the Departments of Macedonian Language and Literature, English Language and Literature and German Language and Literature. They have different levels of language knowledge. The fact that a large number of students enrolled at the Department of German Language and Literature do not have any previous knowledge of German, i.e. they did not learn any other foreign language besides English is very interesting. The experience shows that these students are faced with difficulties in learning the material envisaged for the courses of Contemporary Macedonian, English or German language. Hence, the goal of the project is to test the level to which supplemental instruction can contribute to the improvement of students' knowledge and to the acquisition of language competence as a main tool for operating with the language in authentic communicative situations. The supplemental instruction lasts two semesters in order to test the effect of supplemental instruction on students divided into two groups, group A and group B. The division into groups was conducted in accordance with the first testing of the students, with the purpose of forming groups composed of students with different level of language knowledge, i.e. weaker and stronger students. In the first semester, group A, which was experimental group, attended supplemental instruction focused on explicit language learning through acquisition of grammar competences and vocabulary on one hand, and development of language skills through application of different exercises and activities according to the communicative approaches of foreign language learning on the other hand. Group B was the control group that did not attend supplemental instruction in the first semester. At the end of the first semester, students will be tested again and the results obtained will serve to determine the effect of supplemental instruction, i.e. if the students who attended supplemental instruction improved their knowledge and acquired language skills by explicit language learning. In the second semester, group B will be experimental group that will attend supplemental instruction including implicit foreign language acquisition, i.e. in accordance with the principles of language - based approaches of using literary texts. Group A will be the control group that will not attend supplemental instruction. At the end of the second semester, the third testing will be conducted in order to determine the benefits of supplemental instruction through implicit foreign language acquisition (Daskalovska, Dimova, Kuzmanovska, Kirova, Ivanova, Ulanska, Tasevska, & Hadji-Nikolova, 2017).

In this paper, we will focus on the analysis of the results obtained with the second testing of the students at the Department of German Language and Literature, i.e. the effect of supplemental instruction focused on explicit language learning.

## 2 METHODOLOGY

As mentioned before, the aim of the project was to test the effect of supplemental instruction oriented towards explicit language acquisition of the students at the Department of German Language and Literature, which was independent from the course of Contemporary German Language 1 and implemented with two additional lessons per week during one semester.

### 2.1 Participants

The participants of the research were 15 students from the Department of German Language and Literature at the Faculty of Philology of "Goce Delcev" University in Stip. Students were divided into two groups of 7 and 8 participants. In the first semester, the group of 7 participants was the experimental group and the group of 8 participants was the control group. In the second semester, the first group was the control group and the second group was the experimental group.

### 2.2 Instruments

Testing of students was conducted using t-scale in order to obtain valid results. Both tests had the same concept and their components referred to grammar and vocabulary, dictation, as well as reading and writing skills. The part that concerned grammar and vocabulary consisted of 30 multiple choice questions, with four options but one correct answer and three distracters. Each correct answer had 0.5 points value, so the maximum number of points from this part was 15 points. The dictation text was taken from the textbook Schritte International 5, level B1 according to the European framework of reference for languages. 20 points were envisaged for this part. Two texts were used for testing the reading skill, with different typology of tasks from the textbook Schritte International Intensivtrainer 5-6. The task for the first text were multiple-choice questions with three possible answers but one correct. A gap-filling task was envisaged for the second text in which student were required to fill in the gaps by choosing the correct word from three given options. Due to the difficulty of the tasks, maximum 40 points were envisaged for this part. Regarding the writing skill, 25 points were envisaged for writing a letter with previously given writing instructions from the textbook Schritte International 5. The maximum number of points from the whole test was 100 points.

### 2.3 Procedure

In the first phase, the students were informed about the project and the manner of conducting "Supplemental instruction as a tool for improving students' language competence" at the Faculty of Philology and they were asked to give their consent to take part in it. In the first week, all 15 participants, i.e. students at the Department of German Language and Literature were tested and they were divided into two groups. The first group attended two lessons of supplemental instruction per week using modern techniques and methods for explicit language acquisition, and the second group did not attend supplemental instruction. At the end of the semester, the second testing of the two groups was conducted. The results of the second testing will be demonstrated below.

## 3 RESULTS

Table 1 represents the results from the first and the second testing of the experimental group that attended supplemental instruction in the first semester. From the overall results, considering all test components, it can be concluded that attending supplemental instruction significantly contributed to improving students' knowledge:  $t = -4.12$ ,  $p < 0.05$ . However, if we analyze the individual components of the test, we will notice that the greatest improvement, i.e. the significant statistical difference is in the writing part:  $t = -4.86$ ,  $p < 0,05$ . The difference is due to the fact we mentioned before, that a large number of students, project participants, enrolled in the first year at the Department of German Language and Literature, have not studied German during their previous primary and secondary education, which is the reason for the weak results in this part. Only a small portion of students or 14% demonstrated partial knowledge of the writing skill in the first testing. Considering these aspects, the teachers engaged in the supplemental instruction paid greater attention to the writing skill, which contributed to, as the results show, the acquisition of the established goals. Certain statistical difference is visible in the reading part, in which students significantly improved language competences by application of modern communicative techniques and methods for reading:  $t = -2.19$ ,  $p < 0.05$ . Even though the expected results were not achieved in the grammar and vocabulary part of the German language, a statistical difference is still evident, which shows certain improvement of students' knowledge in this part:  $t = -3.08$ ,

$p < 0.05$ . However, the results demonstrate that all participants dispose of approximately the same level of grammar and vocabulary of German language knowledge. Hence, a special attention should be paid in future, in order to avoid the difficulties that first year students are faced with, because the syllabi of the courses at the Faculty of Philology envisage acquisition of B1 knowledge according to the European framework of reference. Significant statistical difference is visible in the dictation part:  $t = -3.80$ ,  $p < 0.05$ . A large standard deviation compared to the mean is noticeable in the first testing  $S.D = 6.58$  which explains that certain students acquired significantly larger number of points compared to others with minimal number of points. This deviation is again due to the fact that a large number of students who enrolled in the first year possess minimal or do not possess any German language knowledge. The standard deviation from the mean is reduced with the second testing and the results show a certain improvement in orthography and phonetics of the German language in a large number of students.

Table 1. Pre-test/post-test results of the experimental group

	Grammar		Reading		Writing		Dictation		Total	
	Pre-test	Post-test	Pre-test	Post-test	Pre-test	Post-test	Pre-test	Post-test	Pre-test	Post-test
Mean	4.5	7	12.57	23.86	1.43	16.43	7.14	12.43	25.64	58.28
S.D	1.62	1.85	5.92	10.68	3.50	8.33	6.58	4.95	13.48	22.89
Difference	2.5		11.29		15		5.29		32.64	

Table 2 represents the statistical data from the first and second testing of the control group of students that did not attend supplemental instruction during the first semester. The overall results demonstrate a small noticeable statistical difference with this group compared to the experimental group:  $t = -1.28$ ,  $p < 0.05$ . If we consider the individual test components, we can notice insignificant progress of these students. More precisely, the part that refers to grammar and vocabulary of German language shows that there is no significant statistical difference, i.e.  $t = 0.54$ ,  $p > 0.05$ , which demonstrates a reduced mean in the second testing compared to the first testing. These results are due to the fact that testing for supplemental instruction does not affect the grades of the Contemporary German Language 1 course, which leads to students not approaching this instruction seriously enough. However, the obtained results in this part speak about the language competence weakness of the students that can be a further obstacle for acquiring the material envisaged in the syllabi of the courses for the first year at the Department of German Language and Literature. Similar results for these students are obtained in the dictation part, with insignificant statistical difference or  $t = 0.43$ ,  $p < 0.05$ . Second tests were even weaker than the first tests in this case as well. Considering the reading skill of the control group, the results from second testing were minimally better compared to the results from the first testing:  $t = -1.05$ ,  $p < 0.05$  and writing remained as insufficiently acquired competence, even though a statistical difference is noticed:  $t = -2.82$ ,  $p < 0.05$ . However, the high standard deviation from the mean gives us information that a minimum number of students in the control group achieved points in the writing part, while a large number of students did not achieve any points in the second testing.

Table 2. Pre-test/post-test results of the control group

	Grammar		Reading		Writing		Dictation		Total	
	Pre-test	Post-test	Pre-test	Post-test	Pre-test	Post-test	Pre-test	Post-test	Pre-test	Post-test
Mean	4.68	4.06	14.37	19	1.12	7.12	6.5	5.62	26.68	35.75
S.D	2.35	1.66	5.87	11.42	1.96	6.05	5.17	3.08	13.17	15.82
Difference	-0.62		4.63		6		-0.88		9.07	

If we compare the results obtained from the first and second testing of the experimental and control group, we can notice that the experimental group demonstrated better results in the second testing in all test components. Even though enormous achievements are not noticed, we can conclude that the supplemental instruction oriented to explicit German language acquisition contributed significantly to students' knowledge improvement. The largest statistical difference is noticed in the writing part, to which significant attention was paid in the three-month instruction with the purpose of developing

language competence of students that would make their communication with German language speakers easier.

#### 4 CONCLUSION

Starting from the fact that preliminary exams for enrollment of students in higher education institutions were eliminated in the Republic of Macedonia in 2006, future students have the opportunity and the freedom to choose from faculties across the country. Without imposition of previous knowledge of the foreign language, especially the German language as a condition for enrollment at the Department of German Language and Literature, the students without previous knowledge of German face difficulties with acquiring the material envisaged for the study programme of the German language. As the results from our project demonstrate, supplemental instruction represents a huge opportunity for acquiring basic German language competences in order to overcome difficulties during studying. Even though the expected statistical differences were not reached, except for the writing part, supplemental instruction should be a subject of consideration not only at the Faculty of Philology of "Goce Delcev" University in Stip, but at all higher education institutions in the Republic of Macedonia with the purpose of its integration as additional instruction besides the compulsory instruction.

#### REFERENCES

- [1] N. Daskalovska, V. Dimova, D. Kuzmanovska, S. Kirova, B. Ivanova, T. Ulanska, M. Tasevska, A. Hadji-Nikolova, "The role of supplemental instruction in improving students' language competence at the Faculty of Philology, *Knowledge - International Journal, Scientific and Applicative Papers*, 19.3 (14). pp. 185-191, 2017.
- [2] V. Dimova, N. Daskalovska, D. Kuzmanovska, B. Ivanova, "Дополнителната настава прв чекор во подобрување на јазичната компетенција на студентите на Филолошкиот факултет – идни наставници по македонски, англиски и германски јазик", *Knowledge – International Journal*, 20 (6). pp. 2787-2791, 2017.