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ПРИМЕНЕНИЕ ВЕБ-ТЕХНОЛОГИЙ В ПОЗНАВАТЕЛЬНОМ ПРОЦЕССЕ (НА ПРИМЕРЕ ИЗУЧЕНИЯ МОРФОЛОГИИ)

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Аннотация. Современное преподавание грамматики – очень сложный и комплексный процесс, который требует от учителя умения сделать скучный материал интересным для ученика и, как результат, развить его грамматические и речевые навыки. Одной из наиболее сложных грамматических тем является морфология. Цель данного исследования – определить, в какой степени новые технологии могут помочь учителю в работе над этой темой. Для этого в начальной школе г. Ниш был проведён эксперимент, позволяющий сравнить два подхода к обучению школьников морфологии (традиционный и инновационный). В качестве примера новых технологий были использованы веб-программы *Nearpod* и *Formative*. По окончании эксперимента было проведено анкетирование учащихся с целью узнать их мнение о применённых методах и формах обучения, а также тестирование результатов обучения в двух группах (экспериментальной и контрольной) с последующим сравнительным анализом. Результаты оказались вполне убедительными относительно того, какие возможности открывают для обучения новые компьютерные технологии. *Formativ* и *Nearpod* представляют собой две образовательные платформы, с помощью которых учитель создаёт урок и транслирует его на индивидуальные компьютеры обучающихся через интернет. Использование этих программ позволяет учителю активизировать и контролировать деятельность всех обучающихся, а также проверять понимание и усвоение материала в режиме реального времени.

Ключевые слова: методы обучения, веб-программы *Nearpod* и *Formative*, уроки морфологии

THE USE OF WEB TECHNOLOGIES IN THE COGNITIVE PROCESS (ILLUSTRATED BY THE STUDY OF MORPHOLOGY)

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Abstract. Modern teaching of grammar is very complex and difficult for teachers because it requires making dull material interesting for students so that they could develop grammar and speaking skills as an outcome of their studies. One of the most difficult grammar themes is Morphology. The aim of this study was to examine the extent to which new technologies can help teachers in dealing

with it. An experiment was conducted in a primary school in Niš to examine two ways of teaching Morphology (traditional and innovative). As an example of modern technologies such Web Tools as *Nearpod* and *Formativ* were used. The author surveyed the students who took part in the experiment concerning their opinions on the procedure and compared the results of their knowledge tests in the experimental and control groups. The results turned out to be convincing of great opportunities that modern technologies provide. *Formativ* and *Nearpod* are educational platforms with the help of which the teacher creates and shares a lesson with his/her students in class (via the Internet). Using these tools allows the teacher to activate and monitor the work of all students; to check the understanding of the lessons and the acquisition of knowledge in real time.

Keywords: teaching methods, Nearpod and Formative Web Tools, Morphology classes

Introduction

For the majority of students grammar classes are boring and difficult because of the material. Another problem is inability to acquire abstract content at the primary school level. The lowest achievements are from this particular area, which has for years been confirmed by the final exam (entrance exam) at the end of the primary school. Therefore, it is a real challenge for the teacher to adapt serious grammar material to younger children.

In Serbian schools, grammar classes are still being approached in a traditional way, i. e. by «grammatizing», which can be a cause of students' low achievements. Individual characteristics of learners are neglected with such an approach. Students are forced to acquire knowledge at a pace that often does not match their abilities or desires, so they fail to fully master certain grammar units. As a part of numerous characteristics of modern teaching, which significantly increases grammar and communicative competences in students, modern teaching software can also contribute to the outcomes of learning process – primarily online programs and various web tools. Their main advantages are: raising the power of perception and concentration, stimulating learners' motivation and, more importantly, influencing students' interactivity in independent

work through adjustment to the sensibility of the individual. Socially-marginalized students, discouraged children, children that are insufficiently included in the learning process (who often do not have elementary conditions and means for study – textbooks) have special benefits with the use of these technologies.

Methodology

In order to analyze the educational effect of web tools, i.e. to what extent the online programs can stimulate students to work and thus increase the level of their achievement, in April 2018 we conducted a research in Morphology classes at a primary school. We started from the assumption that the use of web tools will increase students' engagement, and therefore their motivation, which should result in a better understanding of lessons as well as in deeper and more durable knowledge. Morphology is seemingly a simple area of grammar, however, learners have big problems with it. The research was conducted on the lessons on verb forms and verb tenses.

The research sample consisted of 100 sixth-graders¹ of the Primary School

¹ Six-grade classes were not balanced regarding the composition of pupils, so the best results in all subjects are achieved by VI-4, whereas the results of VI-3 were the worst. The teacher chose

«Ivan Goran Kovačić» in Niška Banja divided by classes into two groups: an experimental group and a control group. The lessons for the experimental group, which consisted of two classes: VI-2 and VI-3, were designed by using *Nearpod*¹ and *Formative*² (with the occasional use of assisting web tools for making linguistic games), whereas the lessons in the control group, which also included two classes: VI-1 and VI-4, were conducted in a traditional way. In addition, it is very important to note that, according to students' achievements, the experimental group was much weaker in comparison with the control group and it never showed a significant progress in education (it basically included Roma children). It means that the traditional method in this group did not produce any results. The classes who had solid results in accomplishments were included into the control group. We started from the idea that only the application of ICT in teaching can increase the level of grammatical knowledge in these classes (in good classes, it is easy to achieve good results with the traditional approach, whereas in bad classes, the traditional approach does not work). In this way (with an innovative approach to grammar), we tried to help socially-marginalized students achieve better results compared with their previous accomplishments in

the area of grammar and to show how effective the implementation of software in morphology classes can be.

In this experimental research, we used the methods of quantitative and qualitative data processing, analytic-synthetic method and the method of student observation in the classroom, together with the surveying and testing techniques. Two different questionnaires, consisting of eight questions each, were used in this research. All questions were identical for both groups – experimental and control. Apart from the questionnaire, we also used knowledge tests which were the same for all respondents. Two tests were conducted in the following manner: one at the end of the sixth grade, and the other at the beginning of the seventh grade (a re-test) in order to determine what approach (innovative or traditional) allowed students to achieve better and more permanent knowledge in the area of morphology. The course of research included six classes of new material processing and one class of revision in a digital classroom in which every student had a computer. The teacher³ prepared four lectures in *Nearpod* (on Imperative, Past Participle and Present Participle, Future II, Passive Participle) and two lectures in *Formative* (Imperfect and Past Perfect).

Nearpod works in the sense that the teacher starts a presentation (*pic. 1–3*), whereas the students follow the slides on their own computers. In the presentation, the slides include some activities especially designed for learners: examples of Imperatives and tasks that allow of methodological guidance of students through the unit and their independent comprehension

VI-3 class to be the experimental group because, apart from having the lowest achievements, it has a lot of pupils from sensitive groups, socially deprived, with family issues, etc. The second experimental class had lower results in tests and knowledge assessments, it was losing motivation, and was chosen by these reasons.

¹ Nearpod. Available at: <https://nearpod.com/> (accessed: 01.11.2019).

² Formative. Available at: <https://goformative.com/> (accessed: 01.11.2019).

³ The teacher who realized these classes was Nataša Stojanović, the co-author of this paper.

Pic. 1–3: Slides made in the Nearpod

Pic. 4–5. Students are working individually on their computers

and acquisition of knowledge. The slides are interactive so that the students could give answers to the questions in their own words on the slide. They can read, think, underline, circle, write correct forms, etc. While the students are working individually on the lesson by using a computer and an online program (pic. 4–5), the teacher is monitoring their work on his/her computer simultaneously communicating with the learners in person by further clarifying the examples and encouraging them to think. Even though they work independently, students think aloud and ask the teacher questions. They all work on the same tasks and at the same time, but individually – everyone on his/her computer.

The teacher coordinates and monitors the work of all students and only when all of them finish one task the teacher goes to the next slide. On his/her own screen, the teacher monitors the answers of each learner individually (pic. 6–7), so that s/he could immediately react if s/he notices

that a student misunderstands something or that s/he does not understand enough. Then the teacher stops at that part, starts a discussion, and s/he can also show the work of other students to everyone as well as demand from the learners to explain their answers, etc. until s/he is sure that all students have understood the lesson. In this way, on the one hand, there is a participation of all students in class, and the understanding of the lesson by all, on the other hand, the teacher does not move on to new activities until all pupils show the understanding of a particular part of the lesson. After one part of the lesson, the teacher can check the acquisition of knowledge with a survey and a test (in the class phase: knowledge insurance or in the final part of the class).

The lessons are enriched with language games made in the program *Learning apps*¹ in order to additionally stimulate

¹ Learning apps. Available at: <https://learnin-gapps.org/> (accessed: 01.11.2019). Креативна

Pic. 6–7. The teacher coordinates and monitors the work of all students

Pic. 8. The teacher follows all the students

the students to better memorize and practice the learned lesson through the games. The atmosphere is more than stimulating and creative – the children enjoy grammar classes. Apart from these quick interventions and feedback to every student, even after the classes, the teacher has a possibility to analyze the learners' answers in greater detail because both tools keep and process data. This, indeed, can be useful for the teacher in planning further lessons.

While the lesson in *Nearpod* is controlled by the teacher, the lesson in *Formative* is controlled by the learner. The

student chooses tempo at which s/he will read the lesson and complete the tasks. This tool also offers tasks of the following type – true/false, multiple choice questions, free answer questions, short answer question, and the lessons are additionally enriched with interesting language games. On his/her own screen, the teacher here also follows all the students (pic. 8) and s/he can immediately reply to the learner and give him/her feedback on the completed task in the form of a personal message. Moreover, it can also make students' work a base for the further discussion.

Since a lesson on Imperfect is the most difficult one, we chose this program so that the students could determine for how long s/he would work on some task and study the lesson. To make the material a

Школа Available at: <https://onedrive.live.com/?authkey=%21AGeSTaZBCauL4n0&id=DF1648C229F0640B%211125&cid=DF1648C229F0640B> (accessed: 01.11.2019).

Pic. 9–10. Language games

Chart 1. The answers to Question 1

little easier, we created a lot of useful and meaningful language games (pic. 9–10).

When all the classes had been over, the results of the research were analysed and the effects of the project were summarized.

Research results

Surveying

After conducting the same classes in the experimental and control groups, we surveyed the students to learn about their views on the application of ICT in classes.

1. The first question was concerned with students' impressions and feelings about these classes, so they were offered the answers: «boring», «interesting», «very interesting» and «could not wait for the class to finish». As it can be seen in

the diagram (Chart 1), the majority of students answered that the classes were interesting to them (90%), 10% said that they were very interesting. Based on the overall results of the survey, we conclude that the majority of both groups was satisfied with the classes.

2. To the second question: «How do you best study grammar?» the highest percentage of students in both groups (61% in the control group and 56% in the experimental group) gave a response that they had learned best when the teacher was teaching and explaining; 25% of the students in the experimental group circled the answer «when the teacher shows tables, pictures, graphs, illustrations», while in the control group this answer was chosen by 17% of learners; 22% of the students in the con-

Chart 2. The answers to Question 2

trol group and 19% in the experimental group chose the option «when the teacher asks and the pupils answer» (Chart 2). We assume that this result can be attributed to the way the majority of teachers work with first graders: students get used to learning by carefully listening to the teacher and then repeating the material.

3. The third question was: «Would you like to study grammar with the help of computer programs and why?». The affirmative answer was given by 92% of the students from the experimental group and by 73.2 % of the control group, while the negative answer was given by 19.5% of the control group and 8% of the experimental group. This difference can be considered almost insignificant, given that the control group did not use computers in class during the research.

4. To the following question: «Is it easier for you to learn grammar through games?» the affirmative answer was given by 77.8% of the students from the experimental group and by 44% of the control group (which worked traditionally, without the use of the game method). Interestingly enough that 19.4% of the students from the experimental group and as much as 41.5% of the students from the control group gave the answer that it was irrelevant to them.

5. To the fifth question: «Do you remember the materials more easily and

longer with the help of a computer?» the positive answer was given by 66.7% of the students from the experimental group and by 51.2% of the students from the control group; the answer «no preference» was given by 19.4% of the students from the experimental group and 31.7% of the students from the control group, while the negative answers were given by 13.9% of the students from the experimental group and 17% of the students from the control group.

6. To the sixth question: «Do pictures, colors, shapes facilitate grammar classes?». The majority of learners answered affirmatively: 88.9% of the students from the experimental group and 78% of the students from the control group. Negative answers were given by 11% of the students from the experimental group and 22% of the students from the control group.

7. The question: «Do you like it when you use computers in language classes?» was answered affirmatively by as much as 88.9% of the students from the experimental group and 92.3% of the students from the control group (Chart 3).

8. The last question in the survey was: «Which form of work suits you best – frontal, individual, group or pair work?». The obtained results show that 63.9% of the experimental group preferred individual work (19.4% liked group work and 16.7% frontal work), and the control

Chart 3. The answers to Questions 3-7

Chart 4. The answers to Question 8

group favored group work by 41.5%, followed by individual (31.7%), and pair work (17.1%) (Chart 4).

Therefore, generally speaking, both groups agreed that they would like grammar to be taught with the help of computers and software, because it is more understandable, more interesting, they memorize it more easily, and with more fun. On the other hand, both groups stated that they liked it most when their teacher taught and explained, which was, expectedly, the outcome of the dominant experience in primary classes. Of course, it is not surprising that almost two times more students from the experimental group were in favor of learning through games in comparison with the control group students who did not have game-like classes. When it came to durability of knowledge, the majority of the students from both groups stated that

their knowledge was more permanent when acquired with the help of a computer. In addition to that, the opinion was identical in relation to creative teaching and the application of the diversity of colors, shapes and teaching materials in grammar classes which almost all students chose. It is also important that in none of the groups the students opted for the frontal form of work as their favorite, but they favored the group (in the control group) and individual (in the experimental group) forms of work, which reveals the need to modernize the teaching in which the frontal form of work predominates.

Testing

The effects of the use of online programs were checked by testing at the end of the sixth grade and re-testing at the beginning of the seventh one. By comparing the re-

<i>Control group</i>			<i>Experimental group</i>		
	Sixth grade	Seventh grade		Sixth grade	Seventh grade
<i>V1</i>	72,4%	58,75 %	<i>V12</i>	67%	55,5%
<i>V14</i>	63%	63,5 %	<i>V13</i>	50,2%	48,25%

Chart 5. The results of testing

sults of the tests (*Chart 5*), we can conclude that the experimental classes did not show much worse results in comparison to the control group, which is a big improvement for them given that their earlier results were much lower. The results are even almost equal: while in the control group the positive results were achieved by 72% of students in one class and 63% of students in the other class in the experimental group, the positive result was shown in as much as 67% in one class and 50% in the other class. It is important to point out that the students in the experimental group achieved better results in comparison with the previous testing in that school year. In this way, the remarkable effectiveness of the application of ICT (programs: *Nearpod* and *Formative*) in grammar classes was confirmed. The re-test in the seventh grade proved durability of knowledge and retention of the level of students' achievement even after several months (both groups showed positive results in about 50–60% of the students).

Conclusion

Morphology classes that are headache for primary students can be much more interesting and efficient if modern online programs, such as *Nearpod* and *Formative* are integrated into them. Not only are the classes organized in an interesting and interactive way, but the accomplishments of learners and the sustainability of their knowledge are much higher than usual. With such resources, motivation for study

is increased, students' knowledge is deepened and various competencies are developed. A special contribution of these tools is in encouraging those pupils who are slow and shy, providing them with an opportunity to express themselves. By endowing students with responsibility to manage their learning process, we raise their self-esteem and develop their interest in grammar. The survey showed that the experimental group was more satisfied with the application of modern technologies and methods in comparison with the control group, and the former outdid themselves in terms of knowledge. Moreover the students of both groups were in favour of modern teaching, the one that is based on using computers, group and individual forms of work, game-like and creative teaching. Testing confirmed the durability of students' knowledge and achievement under innovative teaching.

From the teacher's standpoint, computer-based classes proved to be purposeful in multiple ways: they are able to timely reveal what students comprehend and what is unclear to them, so that teachers could react immediately in order to help their students learn and understand even more. The control over the whole class and the insight into individual achievements are special advantages of individualized teaching aided by contemporary software.

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REFERENCES

1. Bowers C. The Cultural Dimension of Educational Computing. Available at: <http://faculty.washington.edu/stkerr/585read.html> (accessed: 01.11.2019).
2. Carnall C. Managing Change in Organisations. Canada, 2007. 394 p.
3. Cornu B., Danon C. Didactics, ICT and the teacher of the future. In: *Information and Communication Technologies in Education*. 2000. P. 95–102.
4. Sutherland R., Robertson S., John P. Interactive education: teaching and learning in the information age. In: *Journal of Computer Assisted Learning*, 2004, vol. 20, iss. 6, pp. 410–412.
5. Watson D. M. Pedagogy before Technology: Re-thinking the Relationship between ICT and Teaching. In: *Education and Information Technologies*, 2001, vol. 6, iss. 4, pp. 251–266.

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