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## SOME REMARKS ABOUT IMPLEMENTATION OF ELECTIVE SUBJECTS IN HIGH SCHOOLS IN SERBIA

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**Abstract:** In this work we analyze a research on the attitudes of students towards elective subjects. This research was conducted in 2019, on an appropriate sample of second grade students from five high schools in Serbia. In generally, students in Serbia have high achievements and good marks in elective subjects.

The results of this research shows that students have better opinion about first elective subject, which is probably a consequence of the fact that current offer of elective subjects in schools is not too wide and does not coincide too much with the interests of students.

Although due to large differences in the number of choices of individual elective subjects, it is not possible to test the significance of differences in students' attitudes, trend in the results indicates that students have similar attitudes towards different elective subjects.

Findings of this research suggest that there is a discrepancy between students' initial interests and expectations and what students actually have in elective subjects.

Although, formally, students have possibility to change elective subject after the first grade, most students did not change elective subject, and most common reason for that is that this possibility did not exist in their school, or that they were not informed that it was possible.

The most common problem that students report in connection with the implementation of election programs is high workload, not so good organization within the school regarding the schedule of classes, and nonsatisfactory way of teaching.

Based on the results of this research, we conclude that there is a need for reevaluation of the compliance of set of goals, outcomes and proposed teaching methods and teaching methods that is needed in existing elective subject.

Also, the results indicates the need for wider offer of elective programs, as well as better harmonization of the content of elective programs with the age of students and their interests.

In this work, results of this research are shown in appropriate manner, using tables with numerical values and graphs. Some of students response are listed with full sentences, in order to show how do they really feel and think about topics in those questions.

In last part of work, we discuss all findings and give conclusions, without recommendations for future work.

**Keywords:** elective subjects, teaching methods, satisfaction.

### 1. ELECTIVE SUBJECTS - INTRODUCTION

New **elective subjects**, introduced in secondary education in Serbia in 2018/19, are interdisciplinary and in accordance with already outcomes. They should contribute better connection of school topics and extracurricular materials. Their content helps students to learn by solving problems. One of the focuses of elective programs is on **research and project learning**, which enables students to deal with content about which they do not have a large fund of knowledge (Lee, 2020), ie which do not have to be included in the curriculum of compulsory programs. Such characteristics of those subjects will improve cooperation between students and teachers.

Programs of elective subjects are designed to provide freedom to students and teachers in terms of which specific content will be covered, taking into account the outcomes that should be achieved and the competencies that students should develop.

Six elective subjects are planned for the first grade, each with a fund of one hour per week. Different scientific fields are represented in the elective programs: natural sciences, social sciences, arts and health (Rozmaric, 1990). Each school is required to offer a minimum of four elective programs to its students, and student select two of four. After first grade, a student has the right to change one or both elective programs. We will consider six elective subjects:

- Language, media and culture,
- Individual, group and society
- Health and sports
- Education for sustainable development,

- Art and design
- Applied sciences

## 2. ABOUT THE RESEARCH

**The goal of this research** is to explore the perception of students about the elective subjects (Lee, 2020), they attended during the first grade of high school (Greig, 2018). More precisely, the research was conducted in order to examine the attitudes of high school students about elective subjects they attended. The survey was anonymous.

**Research sample** is consisted of 561 second grade students from five high schools. 30% of sample are students from natural science study group, 54% from social science and 16% are from general study group. 63.3% of sample are female and 36.7% are male. Average score achieved in first grade from elective subjects is 4.65 (Table 1).

*Table 1. Average score of participating students in first grade*

Study group	N	Min	Max	AS	SD
Natural sciences	171	4	5	4.54	0.50
Social sciences	303	3	5	4.78	0.44
General	87	3	5	4.45	0.61

*Remarks: N – number of participating students; Min – minimal mark; Max – maximal mark; AS – average score; SD – standard deviation*

**Research instruments.** For the purposes of this research, a **questionnaire** was created, with several socio-demographic questions and questions about elective subject they chose in the first grade of high school, as well as whether they changed the elective program in the second grade. After that, the students evaluated both election programs, on a scale from 1 to 5. Areas in which they evaluated the programs were: selection criteria and motivation for program selection (3 statements), burden of students with the election subject (4 statements), topics and contents of election subjects (5 statements), realization of teaching and learning of election programs (12 statements), monitoring and evaluation of teaching and learning (4 statements), affective attitude towards the election program and the teacher (4 statements).

**Processing research data.** Descriptive statistical measures, T-test for dependent samples and correlation analysis were used for this analysis. When it comes to the statements on the basis of which the election programs were evaluated, summative scores were calculated for each of the evaluation areas. In order to assess whether there are significant differences in the evaluations of elective programs by areas of evaluation, a T-test for dependent samples was applied. To determine the extent to which estimates in different areas of assessment are related, correlation analysis was applied (Greig, 2018).

## 3. SOME RESULTS OF RESEARCH

**Descriptive indicators on election programs.** Table 2 shows how many individual elective subjects were chosen in schools.

*Table 2. Total frequency of elective subject selections*

Elective subject	Natural Science group (N)	Social Science group (N)	General group (N)	Overall N (%*)
Language, media and culture	150	186	68	404 (72)
Individual, group and society	17	50	60	127 (23)
Health and sports	61	137	30	219 (39)
Education for sustainable development	16	13	16	45 (8)
Applied sciences	41	186	0	227 (40)
Art and design	57	32	0	89 (16)

*\* The percentage is calculated per 561 (total number of students) for each subject individually. The students chose two elective subjects.*

The most commonly chosen elective subject is Language, Media, and Culture: nearly three-quarters of the sample states that this program was chosen. Almost 40% of students in the sample state that they chose programs Health and Sports and Applied Sciences. A quarter of students state that they have chosen the Individual, Group and Society program. Significantly less selected subjects are Art and Design and Education for Sustainable Development, which is chosen by less than 10% of students. (Grossman, et al. 2009)

Table 3 shows the average grades of students in each of the elective subjects in the entire sample. As can be seen, students in each of the elective subjects achieve very good results.

**Table 3. Average final grades of students in each of the elective programs in the entire sample**

<b>Elective subject</b>	<b>N</b>	<b>Min</b>	<b>Maks</b>	<b>AS</b>	<b>SD</b>
Language, media and culture	404	4	5	4.98	0.16
Individual, group and society	127	3	5	4.95	0.28
Health and sports	228	4	5	5.00	0.07
Education for sustainable development	45	4	5	4.93	0.25
Applied sciences	227	3	5	4.95	0.26
Art and design	89	4	5	4.99	0.11

*Remarks: N – number of participating students; Min – minimal mark; Max – maximal mark; AS – average score; SD – standard deviation*

**Descriptive indicators and comparison of differences between subjects.** In this section, we will first present descriptive indicators on the assessments of election programs and on the assessments of election programs by defined areas of assessment. After that, we will present the results based on testing the significance of differences in the assessments of election programs by areas of assessment. The average grades of students for each of the elective programs are shown in the following chart.

The previous chart shows the average grades for each of the elective subjects on a scale from 0 to 5. In parentheses next to the name of the subject is the number of students who presented their grades. Based on the data, it can be noticed that, regardless of the number of students per subject covered by the sample, the estimates are very similar (ranging between 3.40 and 3.60). In general, the subject of Applied Science was rated the best (3.60), and Language, Media and Communication had the lowest average grade (3.40). Of course, one should be careful when interpreting these data, because the differences are not large, and the number of students varies considerably, so only the comparison is unacceptable and the statistics of conclusions are unjustified. For some more serious analyzes and conclusions based on data, it is necessary to have a larger and representative sample, but also a more uniform number of students per subject (Zongyi,2009).

The results of the evaluation of election programs by defined areas of evaluation are shown in Tables 4–11. Table 4 shows the descriptive indicators of assessment of elective courses by defined areas of assessment in the entire sample.

**Table 4. Descriptive indicators of evaluation of election programs by defined areas of evaluation (N = 560)**

<b>Areas of assessment – first elective subject</b>	<b>Min</b>	<b>Maks</b>	<b>AS</b>	<b>SD</b>
Motivation	1.00	5.00	3.42	0.64
Workload	1.00	5.00	3.16	0.84
Content	1.00	5.00	3.37	0.81
Outcomes	1.58	4.92	3.55	0.60
Monitoring	1.00	5.00	3.44	1.02
Affect	1.00	5.00	3.39	0.83
<b>Areas of assessment – second elective subject</b>	<b>Min</b>	<b>Maks</b>	<b>AS</b>	<b>SD</b>
Motivation	1.00	5.00	3.35	0.70
Workload	1.00	5.00	3.22	0.88
Content	1.00	5.00	3.37	0.84
Outcomes	1.17	5.00	3.59	0.65
Monitoring	1.00	5.00	3.42	1.07
Affect	1.00	5.00	3.39	0.86

*Remark: Motivation - selection criteria and motivation for program selection; workload - burdening students with the elective program; content - topics and contents of election programs; outcomes - realization of teaching and learning of elective programs; monitoring - monitoring and evaluation of teaching and learning; affect - affective attitude towards the elective program and the teacher; Min - minimum score; Max - maximum score; AS - arithmetic mean; SD - standard deviation*

It can be seen from Table 4 that in each assessment area, on average, students give average grades. The results are very similar for both election programs.

**Table 5. Comparison of scores by assessment areas (N = 560)**

		<b>t</b>	<b>df</b>	<b>Sig.</b>
Pair 1	Motivation 1 – Motivation 2	2.417	558	.016
Pair 2	Workload 1 – Workload 2	-2.197	559	.028
Pair 3	Content 1 – Content 2	.079	559	.937
Pair 4	Outcomes 1 – Outcomes 2	-1.770	559	.077
Pair 5	Monitoring 1 – Monitoring 2	.496	559	.620
Pair 6	Affect 1 – Affect 2	.094	559	.925

*Remark: Motivation - selection criteria and motivation for program selection; workload - burdening students with the elective program; content - topics and contents of election programs; outcomes - realization of teaching and learning of elective programs; monitoring - monitoring and evaluation of teaching and learning; affect - affective attitude towards the elective program and the teacher;*

In order to examine whether there are statistically significant differences in the assessments of students in both elective programs by areas of assessment, a T-test for dependent samples was applied. The results are presented in Table 5.

The results show that students significantly assess the area of motivation, ie selection criteria and motivation for program selection (it is more favorable to assess the first election program), as well as the assessment of workload (the first election program is assessed as less burdensome). It is possible that among the elective programs that schools offer to their students, not all elective programs are equally attractive, because the average grade for the second elective program in terms of motivation is statistically significantly lower than the assessment of the first elective program. However, with regard to other areas of assessment, there are no significant differences between the assessments of election programs.

**Descriptive indicators and comparison of differences between election programs observed by different groups in high schools.** In this section, we will first present descriptive indicators on the evaluation of election programs by defined areas of evaluation for each direction in high schools. After that, we will present the results based on testing the significance of differences in the assessments of election programs by areas of assessment for each direction in high schools. Table 6 shows the descriptive indicators of assessment of elective courses by defined areas of assessment in a sample of students from natural science group.

**Table 6. Descriptive indicators on the assessment of election programs by defined areas of assessment (natural science group, N = 171)**

<b>Areas of assessment – first elective subject</b>	<b>Min</b>	<b>Maks</b>	<b>AS</b>	<b>SD</b>
Motivation	1.67	5.00	3.50	0.63
Workload	1.00	4.75	3.12	0.84
Content	1.00	5.00	3.34	0.78
Outcomes	1.58	4.92	3.49	0.64
Monitoring	1.00	5.00	3.57	1.03
Affect	1.25	5.00	3.44	0.83
<b>Areas of assessment – second elective subject</b>	<b>Min</b>	<b>Maks</b>	<b>AS</b>	<b>SD</b>
Motivation	1.00	5.00	3.36	0.72
Workload	1.00	5.00	3.26	0.91
Content	1.00	5.00	3.41	0.75
Outcomes	1.67	4.75	3.56	0.68
Monitoring	1.00	5.00	3.54	1.10
Affect	1.00	5.00	3.54	0.78

*Remark: Motivation - selection criteria and motivation for program selection; workload - burdening students with the elective program; content - topics and contents of election programs; outcomes - realization of teaching and learning of elective programs; monitoring - monitoring and evaluation of teaching and learning; affect - affective attitude towards the elective program and the teacher; Min - minimum score; Max - maximum score; AS - arithmetic mean; SD - standard deviation*

Table 7 shows the results of the T-test for dependent samples, where the estimates for the two elective programs in the subsample of natural students were compared.

**Table 7. Comparison of scores by areas of assessment (natural sciences group, N = 171)**

		<b>t</b>	<b>df</b>	<b>Sig.</b>
Pair 1	Motivation 1 – Motivation 2	2.827	170	.005
Pair 2	Workload 1 – Workload 2	-2.224	170	.027
Pair 3	Content 1 – Content 2	-1.297	170	.196
Pair 4	Outcomes 1 – Outcomes 2	-2.118	170	.036
Pair 5	Monitoring 1 – Monitoring 2	.320	170	.749
Pair 6	Affect 1 – Affect 2	-1.693	170	.092

*Remark: Motivation - selection criteria and motivation for program selection; workload - burdening students with the elective program; content - topics and contents of election programs; outcomes - realization of teaching and learning of elective programs; monitoring - monitoring and evaluation of teaching and learning; affect - affective attitude towards the elective program and the teacher;*

From Tables 6 and 7, we can see that students of natural sciences group evaluate first elective program significantly more favorably in terms of motivation. However, in terms of outcomes, students rate the second elective program significantly better. This result requires further research to fully understand the reasons for this assessment. Table 8 shows the descriptive indicators of assessment of elective subjects by defined areas of assessment in a sample of students from social science group.

**Table 8. Descriptive indicators of assessment of election programs by defined areas of assessment (social science group, N = 302)**

<b>Areas of assessment – first elective subject</b>	<b>Min</b>	<b>Maks</b>	<b>AS</b>	<b>SD</b>
Motivation	1.00	5.00	3.33	0.59
Workload	1.00	5.00	3.08	0.88
Content	1.00	5.00	3.38	0.80
Outcomes	2.00	4.83	3.61	0.56
Monitoring	1.00	5.00	3.37	1.02
Affect	1.00	5.00	3.42	0.81
<b>Areas of assessment – second elective subject</b>	<b>Min</b>	<b>Maks</b>	<b>AS</b>	<b>SD</b>
Motivation	1.00	5.00	3.26	0.62
Workload	1.00	5.00	3.12	0.86
Content	1.00	5.00	3.34	0.86
Outcomes	1.17	5.00	3.61	0.63
Monitoring	1.00	5.00	3.33	1.08
Affect	1.00	5.00	3.33	0.88

*Remark: Motivation - selection criteria and motivation for program selection; workload - burdening students with the elective program; content - topics and contents of election programs; outcomes - realization of teaching and learning of elective programs; monitoring - monitoring and evaluation of teaching and learning; affect - affective attitude towards the elective program and the teacher; Min - minimum score; Max - maximum score; AS - arithmetic mean; SD - standard deviation*

**Table 9. Comparison of scores by assessment areas (social science group, N=302)**

		<b>t</b>	<b>df</b>	<b>Sig.</b>
Pair 1	Motivation 1 – Motivation 2	1.995	300	.047
Pair 2	Workload 1 – Workload 2	-1.018	301	.309
Pair 3	Content 1 – Content 2	.860	301	.390
Pair 4	Outcomes 1 – Outcomes 2	.110	301	.912
Pair 5	Monitoring 1 – Monitoring 2	.609	301	.543
Pair 6	Affect 1 – Affect 2	1.701	301	.090

*Remark: Motivation - selection criteria and motivation for program selection; workload - burdening students with the elective program; content - topics and contents of election programs; outcomes - realization of teaching and learning of elective programs; monitoring - monitoring and evaluation of teaching and learning; affect - affective attitude towards the elective program and the teacher;*

Table 9 shows the results of the T-test for dependent samples, where the estimates for the two elective programs in the subsample of social science group were compared. Those students evaluate first election program more favorably in terms of their interests and motivation for the election in relation to the second election program. When it comes to other areas of assessment, there are no statistically significant differences.

Table 10 shows the descriptive indicators of assessment of elective subjects by defined areas of assessment in a sample of students general education high schools.

**Table 10. Descriptive indicators of evaluation of election programs by defined areas of evaluation (general education high schools , N=87)**

<b>Areas of assessment – first elective subject</b>	<b>Min</b>	<b>Maks</b>	<b>AS</b>	<b>SD</b>
Motivation	1.00	5.00	3.58	0.75
Workload	1.75	4.75	3.42	0.67
Content	1.00	5.00	3.40	0.88
Outcomes	1.92	4.67	3.44	0.67
Monitoring	1.25	5.00	3.45	1.02
Affect	1.00	5.00	3.21	0.90
<b>Areas of assessment – second elective subject</b>	<b>Min</b>	<b>Maks</b>	<b>AS</b>	<b>SD</b>
Motivation	1.00	5.00	3.67	0.80
Workload	1.75	5.00	3.48	0.83
Content	1.00	5.00	3.40	0.94
Outcomes	2.08	5.00	3.60	0.63
Monitoring	1.25	5.00	3.49	0.95
Affect	1.00	5.00	3.30	0.94

*Remark: Motivation - selection criteria and motivation for program selection; workload - burdening students with the elective program; content - topics and contents of election programs; outcomes - realization of teaching and learning of elective programs; monitoring - monitoring and evaluation of teaching and learning; affect - affective attitude towards the elective program and the teacher; Min - minimum score; Max - maximum score; AS - arithmetic mean; SD - standard deviation*

Table 11 shows the results of the T-test for dependent samples, where the estimates for the two elective programs in the subsample of students of general education high schools. The only area of assessment in which statistically significant differences were detected was the assessment of the achievement of outcomes, with the assessment of the second election program being more favorable. This result is difficult to explain based on the available information and requires further verification on larger samples.

**Table 11. Comparison of scores by assessment areas in general education high schools (N = 87)**

		<b>t</b>	<b>df</b>	<b>Sig.</b>
Pair 1	Motivation 1 – Motivation 2	-1.125	86	.264
Pair 2	Workload 1 – Workload 2	-.919	86	.361
Pair 3	Content 1 – Content 2	.043	86	.965
Pair 4	Outcomes 1 – Outcomes 2	-2.557	86	.012
Pair 5	Monitoring 1 – Monitoring 2	-.359	86	.721
Pair 6	Affect 1 – Affect 2	-.814	86	.418

*Remark: Motivation - selection criteria and motivation for program selection; workload - burdening students with the elective program; content - topics and contents of election programs; outcomes - realization of teaching and learning of elective programs; monitoring - monitoring and evaluation of teaching and learning; affect - affective attitude towards the elective program and the teacher;*

Those results shows that there are large differences between numbers of students, for each particular elective programs. For example, elective program Language, Media, and Culture was chosen by 339 students, while other elective programs were much less likely to be the first choice of students. This means that it is slightly complicated to conduct analyzes in order to determine the existence of significant differences in assessments. Also, based on the available data, it is not possible to determine the reasons for this choice of students. In other words, it is not possible to conclude with certainty whether a very small number of students chose programs such as Art and Design or Education for Sustainable Development because the program was not in line with student interests or was not

offered to students in more schools. However, average grades by assessment areas shows that all elective programs are positively assessed (average by areas for all elective programs is from 3 to 3.5).

As in the case of first choice, there are large differences between the number of choices of elective subjects, which makes it almost impossible to apply inference statistics. In other words, it is not possible to state with certainty whether the students choices are a consequence of their interests or the elective programs offered at school. The analysis of average scores for each assessment area for all elective programs when they were the second choice of students ranges from neutral to moderately positive (scores range from 3 to 3.7).

#### 4. CONCLUSIONS

The research on the attitudes of students towards election programs was conducted on a sample of second grade students in five high schools. The results showed that students have an average high general success in the first grade of high school, as well as that they have very high achievements in both elective programs.

The results of the research showed that students evaluate the first elective program more favorably in terms of motivation for choice, ie the second elective program is assessed by students as less attractive in terms of their interests. This result suggests that it would be good to offer students more choice, ie to expand the set of elective programs, which is one of the suggestions that students made to improve elective programs. However, despite the fact that the second elective program is significantly less in line with their interests for most students, both elective programs are, globally speaking, equally valued in terms of other areas of assessment. In other words, students equally assess the workload, the achievement of outcomes, the quality and fairness of assessment, and the affective attitude toward the program and the teacher.

Available data have shown that there are large differences in the number of choices of individual election programs, especially when it comes to the first choice. As an illustration, we can state that 337 students chose Language, Media and Culture as their first choice, while Education for Sustainable Development and Art and Design were chosen less than 10 times. However, based on the available data, it is not possible to conclude whether this result is a consequence of student preferences or that some elective programs are less available in schools. Given that there are very large differences between the frequencies of selection, it is not possible to test the significance of differences in the areas of assessment between different programs when they are the first or second choice, but visual inspection shows that all assessments range from neutral to moderately positive.

It is recommended that future evaluations of election programs take into account the extent to which election programs are represented in schools. The results also show that there is not much consistency between the initial interests and expectations and what the students say they received and achieved in the elective programs in terms of content. In other words, scores on motivation and interest in a particular election program correlate weakly with the perception of the content of the election program, with the achievement of outcomes, and the affective attitude toward the teacher and the program.

The most common problem that students mention is the workload. Students suggested that programs should be better designed so that topics are more interesting, better aligned with students' age, more interesting working methods, better teaching organization, greater freedom in choosing topics, and more frequent visit to scientific and cultural institutions. We suggest that it is necessary to re-evaluate the compliance of set goals, outcomes, proposed teaching methods and teaching methods in existing elective programs.

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