

THE USE OF MATERIAL-TECHNICAL PREPARATION IN CONTEMPORARY TEACHING

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Abstract

To have a successful and effective teaching, it is necessary to make planning and preparation for the lesson. For achieving the highest level of effectiveness and efficiency of teaching, the professional preparation of the teacher and the preparation of the students for the lesson in the cognitive and affective field is as necessary as their preparation in the material-technical field for that lesson. The purpose of the research was to evaluate the difference in the use of material-technical preparation in contemporary teaching in the Republic of North Macedonia and the Republic of Kosovo. The research was carried out in the upper cycle of primary education in both countries, where teachers were surveyed about their material-technical preparation, as well as students, professional associates, and school leaders about the teachers' material-technical preparation. As a research technique, the online survey technique was applied using the Google Forms application. The instrument was the questionnaire compiled for the four subjects included in the survey. The research methods that were used are as follows: analytical and synthetic, descriptive, inductive and deductive, comparative and statistical methods. Data processing was done by: tabular and graphic presentation, frequency, percentage, arithmetic mean, and standard deviation. To show the difference between the two states, a t-test and chi-square were used to test the hypothesis. The data were processed with Excel. This research brought us to the conclusion that there is no significant difference in the use of material-technical preparation in both countries.

Keywords: Material-technical preparation, teacher, student, lesson, contemporary teaching.

Introduction

The implementation of the educational process cannot be imagined without a certain preparation and plan. The teacher bears the main role in the teaching process. He is a person who is required to have great responsibility, both intellectual and moral, especially in the realization of the curriculum in his subject, that is, in the teaching process. Usually and traditionally the role of the teacher was simpler, which implies that he only did learning and teaching. He did not try to find new ways and apply new techniques to realize the teaching process.

Complex and more complicated problems in teaching require greater and more professional preparation on the part of the teacher. In addition to the usual work and thinking during the lesson, the teacher should think, engage, and act outside of the lesson, all to build up and perfect for a more essential and improved teaching. This type of teacher is found in contemporary literature as a research teacher. But, even the teacher, as the bearer of the educational process, needs to have some essential elements for the successful implementation of the lesson. One of the main elements of the educational process as well as teaching and learning is the material-technical preparation of teachers for the realization of the lesson preparation phase.

By material-technical preparation, we mean the tools that help teachers to realize and concretize the educational content, which through these tools will be more effective for acquiring knowledge from new educational content by the students. The education system is constantly developing, therefore teachers should

always be looking for new ways and techniques to make the teaching process as effective as possible. The material-technical tools that are used the most are visual learning tools, auditive learning tools, audio-visual learning tools, textual learning tools, multimedia learning tools, technical aids, and digital and smart learning tools.

Literature review

Teaching is the process of providing someone with systematic instruction in the appropriate knowledge, values, habits, attitudes, and behavior patterns that he or she needs to be able to function as a useful and acceptable member of the community. Teaching is a universal culture or one of those things that all people share in common. Through teaching, human beings can pass on knowledge to others, and their offspring, helping them to better adapt to their environment and enjoy life to the fullest. Seeing the achievements of someone you have given even the slightest amount of wisdom to is such a prideful feeling. Teaching is also a large part of everyone's life experience. From birth to death, we spend most of our time either receiving instructions from others or giving instructions to others. (Saha, L. J. & Dworkin, A. G. 2009, p. 573). When teachers have the motive and aspiration to enlighten their students, they will try all kinds of methods to get to the bottom of it. A great example of a teacher's commitment and dedication to his important duty is the social distancing age of COVID-19. It was a very difficult stage for everyone, including students and teachers, because not all technological worlds are created equal. (Varela, G.D. & Fedynich, C. L.2021, p.3). Nonetheless, the hardworking teachers in our communities were able to overcome it. But looking at the bright side, school from a social distance gave people the opportunity to try something new, and gaining new experiences has been always beneficial for a person.

Research and methodology data

Based on the purpose and complexity of the problem posed above, there was a need for the application of different scientific methods such as deductive, inductive, comparative, and statistical methods. As a research technique, the survey technique was applied with its instrument - a questionnaire, which was shared with students, teachers, professional associates, and school leaders. The questionnaire had multiple choice questions for the respondents to express their honest opinions regarding the material-technical preparations at their schools.

The sample in this research consists of respondents from the entire territory of the Republic of North Macedonia and the Republic of Kosovo, that is, from primary schools in these countries, to create a representative sample from both countries. The survey was carried out online through the Google Forms application, and the links to the survey sheets were randomly delivered to all schools for which official emails and/or Facebook pages were available online. There are no separate criteria according to which the selection of schools was made (eg city or village, ethnic criteria, etc.), but only 110 primary schools in the Republic of Macedonia and 30 primary schools from the Republic of Kosovo filled out the questionnaires and thus submitted feedback.

The total number of surveyed people who make the sample is 875 people, of which 671 are respondents from R.N. Macedonia and 204 respondents are from R. Kosovo (It's very obvious that the number of respondents from Kosovo and North Macedonia is not balanced, but the reason behind this is the election period in Kosovo that caused the replacement of school leaders all across the country and also was present the problem with the school literature which defocused teachers from fulfilling the survey which was quite unpleasant and difficult for the research as well). The sample includes the key 4 categories involved in the implementation of the curriculum, that is, in the process of learning and teaching in the educational institution - primary school.

Results

Hypothesis - There is no significant difference in the use of material-technical preparation in teaching in the Republic of North Macedonia (RNM) and the Republic of Kosovo (RKS).

To validate the hypothesis, the respondents (teachers, students, professional associates, and school leaders in RNM and RKS) were asked the following question: "The material-technical preparation of teaching includes:"

The data collected from all categories of respondents for material-technical preparation in teaching in RNM and RKS are presented in tables (teachers - table no. 1; students - table no. 2; professional associates - table no. 3; leaders of the school - table no. 4).

Table no.1 – Teachers' responses to the content of material-technical preparation in teaching in RNM and RKS

Teachers									
State	Total		a	b	c	d	e	f	g
RNM	159	f-YES	96	58	90	121	64	87	82
		f-NO	63	101	69	38	95	72	77
		%-YES	60.38%	36.48%	56.60%	76.10%	40.25%	54.72%	51.57%
		%-NO	39.62%	63.52%	43.40%	23.90%	59.75%	45.28%	48.43%
RKS	48	f-YES	29	16	28	42	21	21	26
		f-NO	19	32	20	6	27	27	22
		%-YES	60.42%	33.33%	58.33%	87.50%	43.75%	43.75%	54.17%
		%-NO	39.58%	66.67%	41.67%	12.50%	56.25%	56.25%	45.83%

- a. Visual learning tools
- b. Auditive learning tools
- c. Audio-visual learning tools
- d. Textual learning tools
- e. Multimedia learning tools
- f. Technical aids
- g. Digital and smart learning tools

Table no.1 shows the responses of the teachers regarding the content of the material-technical preparation in teaching in RNM and in RKS, from category - **a (Visual learning tools)**, category - **b (Auditive learning tools)**, category - **c (Audio-visual learning tools)**, category - **d (Textual learning tools)**, category - **e (Multimedia learning tools)**, category - **f (Technical aids)** and category - **g (Digital and smart learning tools)**. From the table is seen that according to the teachers, in RNM and RKS the categories - **a, c, d, and g** are mostly used. Categories - **b** and **E** are used less in both countries. On the other hand, the category - **f**, in RNM is used more than in RKS.

Table no.2 shows the responses of the students regarding the content of the material-technical preparation in teaching in RNM and in RKS, from Category - **a (Visual learning tools)**, category - **b (Auditive learning tools)**, category - **d (Textual learning tools)**, category - **f (Technical aids)** and category - **g (Digital and smart learning tools)**. From the table is seen that according to the students, in RNM and RKS, except for the category - **d**, which is mostly used in both countries, other categories are used less in both countries.

Table no.2 – Students' responses to the content of material-technical preparation in teaching in RNM and RKS

Students							
State	Total		a	b	d	f	g
RNM	438	<i>f</i> -YES	27	20	251	49	166
		<i>f</i> -NO	411	418	187	389	272
		%-YES	6.16%	4.57%	57.31%	11.19%	37.90%
		%-NO	93.84%	95.43%	42.69%	88.81%	62.10%
RKS	139	<i>f</i> -YES	11	3	80	29	61
		<i>f</i> -NO	128	136	59	110	78
		%-YES	7.91%	2.16%	57.55%	20.86%	43.88%
		%-NO	92.09%	97.84%	42.45%	79.14%	56.12%

Table no.3 shows the responses of the professional associates regarding the content of the material-technical preparation in teaching in RNM and in RKS, from category - **a (Visual learning tools)**, category - **b (Auditive learning tools)**, category - **c (Audio-visual learning tools)**, category - **d (Textual learning tools)**, category - **e (Multimedia learning tools)**, category - **f (Technical aids)** and category - **g (Digital and smart learning tools)**. From the table is seen that according to the professional associates, in RNM categories - **a, c, d, f, g** are mostly used, and in RKS mostly are used categories **a, b, c, d are**. Less in RNM are used categories - **b** and **e**. On the other hand, in RKS fewer are used categories - **e, f, and g**.

Table no.3 – Professional associates' responses to the content of material-technical preparation in teaching in RNM and RKS

Professional associates									
State	Total		a	b	c	d	e	f	g
RNM	43	<i>f</i> -YES	26	19	26	34	17	26	28
		<i>f</i> -NO	17	24	17	9	26	17	15
		%-YES	60.47%	44.19%	60.47%	79.07%	39.53%	60.47%	65.12%
		%-NO	39.53%	55.81%	39.53%	20.93%	60.47%	39.53%	34.88%
RKS	6	<i>f</i> -YES	5	4	4	6	2	2	2
		<i>f</i> -NO	1	2	2	0	4	4	4
		%-YES	83.33%	66.67%	66.67%	100.00%	33.33%	33.33%	33.33%
		%-NO	16.67%	33.33%	33.33%	0.00%	66.67%	66.67%	66.67%

Table no.4 shows the responses of the leaders of the school regarding the content of the material-technical preparation in teaching in RNM and in RKS, from category - **a (Visual learning tools)**, category - **b (Auditive learning tools)**, category - **c (Audio-visual learning tools)**, category - **d (Textual learning tools)**, category - **e (Multimedia learning tools)**, category - **f (Technical aids)** and category - **g (Digital and smart learning tools)**. From the table is seen that according to the leaders of the school, RNM and RKS are the most used categories - **a, c, d**. Less in both countries is used category - **b**. On the other hand, categories - **e, f, g**, in RNM are used more compared to RKS.

Table no.4 – School leaders' responses to the content of material-technical preparation in teaching in RNM and RKS

School leaders									
State	Total		a	b	c	d	e	f	g
RNM	31	<i>f</i> -YES	16	11	21	20	17	18	19
		<i>f</i> -NO	15	20	10	11	14	13	12
		%-YES	51.61%	35.48%	67.74%	64.52%	54.84%	58.06%	61.29%
		%-NO	48.39%	64.52%	32.26%	35.48%	45.16%	41.94%	38.71%
RKS	11	<i>f</i> -YES	8	5	8	11	4	3	4
		<i>f</i> -NO	3	6	3	0	7	8	7
		%-YES	72.73%	45.45%	72.73%	100.00%	36.36%	27.27%	36.36%
		%-NO	27.27%	54.55%	27.27%	0.00%	63.64%	72.73%	63.64%

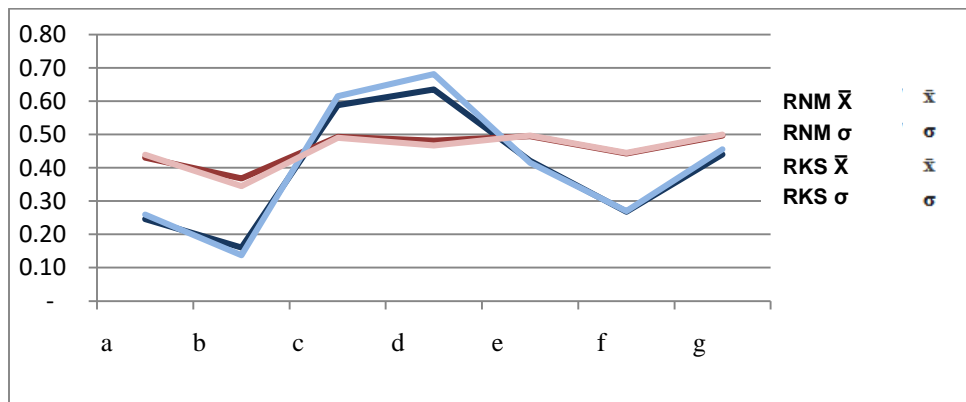
For our analysis to be more relevant to the research goals, we need to compare the total number of respondents from RNM with the total number of respondents from RKS. The results of this analysis are presented in table no. 5 and graph no.1.

Table no.5 – Responses to the content of material-technical preparation in teaching in RNM and RKS

10. The material-technical preparation in teaching includes:								
		a	b	c	d	e	f	g
RNM	f – YES	165	108	137	426	98	180	295
	f – NO	506	563	96	245	135	491	376
	% - YES	24.6%	16.1%	58.8%	63.5%	42.1%	26.8%	44.0%
	% - NO	75.4%	83.9%	41.2%	36.5%	57.9%	73.2%	56.0%
	\bar{x}	0.25	0.16	0.59	0.63	0.42	0.27	0.44
σ	0.43	0.37	0.49	0.48	0.49	0.44	0.50	
RKS	f – YES	53	28	40	139	27	55	93
	f – NO	151	176	25	65	38	149	111
	% - YES	26.0%	13.7%	61.5%	68.1%	41.5%	27.0%	45.6%
	% - NO	74.0%	86.3%	38.5%	31.9%	58.5%	73.0%	54.4%
	\bar{x}	0.26	0.14	0.62	0.68	0.42	0.27	0.46
σ	0.44	0.34	0.49	0.47	0.50	0.44	0.50	
t		0.691	0.398	0.692	0.217	0.940	0.970	0.684

$\chi^2=0.558$ $df=1$ $\rho<0.05$

Table no. 5 shows the responses of all categories of respondents regarding the content of material-technical preparation in teaching at RNM and RKS, from category - **a (Visual learning tools)**, category - **b (Auditive learning tools)**, category - **c (Audio-visual learning tools)**, category - **d (Textual learning tools)**, category - **e (Multimedia learning tools)**, category - **f (Technical aids)** and category - **g (Digital and smart learning tools)**.



Graph no.1 – Responses to the content of material-technical preparation in teaching in RNM and RKS

- a. Visual learning tools
- b. Auditive learning tools
- c. Audio-visual learning tools
- d. Textual learning tools
- e. Multimedia learning tools
- f. Technical aids
- g. Digital and smart learning tools

From table no.5 it can be observed that only categories - **c, d**, are mostly used in RNM and RKS, while other categories - **a, b, e, f, g**, are used less in both countries. This is confirmed by the arithmetic mean, because there is a greater value in both countries only in the categories - **c, and d**, while in the other categories, there are low values both in RNM and in RKS.

Regarding the standard deviation, all values in RNM and RKS are not high, which indicates that the responses of different categories of respondents in both countries do not deviate from the arithmetic means.

To verify the importance of the differences between the arithmetic means, namely the differences in the use of instruments in both countries, the t-test was applied (the smaller the value of the t-test, the greater the difference in the use of the instrument). From the table, it can be observed that there is no significant difference in the use of the contents of material-technical preparation in teaching in RNM and in RKS, which can be seen in graph no. 1, where all the lines (both arithmetic means and standard deviations in both countries) almost match each other.

To test the hypothesis, the chi-square test was applied, through which statistical significance is measured in the use of instruments in RNM and RKS. According to the obtained chi-square value ($\chi^2=0.558$ with $df=1$ and $p<0.05$), which is 0.558, with a degree of freedom of 1 and a degree of reliability (probability) of 0.05, we can notice that among the attitudes of respondents of both countries for the use of material-technical preparation, there is no significant statistical difference, which means that the hypothesis is accepted.

This, as well as the other results from Table no. 5 and graph no. 1, lead us to the conclusion that the hypothesis - **"There is no significant difference in the use of material-technical preparation in teaching in the Republic of North Macedonia and the Republic of Kosovo"** - is confirmed.

Conclusion

This research sought to understand the material-technical preparations teachers have to take to achieve an effective teaching process. In the Republic of North Macedonia as well as in the Republic of Kosovo, teachers mostly use audio-visual learning tools and textual learning tools, which are considered the most traditional learning tools. Even though in some schools' teachers are practicing some contemporary learning tools, this cannot be generalized to the entire educational system in both countries. I believe that in the upcoming years, teachers will surely incorporate new teaching methods in pursuit of giving students an advanced education.

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