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Výskumné atribúty pri používaní didaktických prostriedkov v školskom prostredí

Research attributes in the use of teaching aids in the school environment

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Abstract

The paper describes research findings oriented towards the use of didactic resources in school settings. It presents a comparison of findings regarding the use of didactic technology in teaching in vocational schools in the Czech and Slovak Republics. A self-constructed questionnaire was used to find out the data. The research confirmed that didactic technology is used in the classroom to make the educational process more attractive.

Keywords: Didactic technique, educational process, pedagogical research

Introduction

Didactic technique in conjunction with appropriate teaching aids and suitable teaching methods increase the didactic effectiveness of teaching, but also facilitates the presentation of the material covered. According to Kučerka (1991, 2019), didactic tools have an irreplaceable place in the educational process. They have become necessary not only in the work of the teacher, but also in the work of the student. The results of their use do not depend only on the technical level and ability of the teacher, but also on the level of didactic content.

The current didactic technique is designed to have the best possible characteristics and the least complex user control. The requirements for modern didactic technology can be defined from the point of view of their didactic and technical properties.

Its effectiveness, if we achieve that it fulfills a motivational function, and if its application succeeds in increasing the students' study activity, we can significantly contribute to the development of key competences.

1 Empirical research

The quality of technical education in schools can be supported by using modern innovative concepts of the teaching process. Innovation is generally understood as "a new phenomenon, a new idea, a new product". Innovation in relation to education is "the introduction of something new, new methods, new forms in

teaching, the introduction of new teaching aids and resources" (Vargová, 2014, p. 28-29).

1.1 Objectives and subject of the research

According to Čabalová, (2011) pedagogical research is a systematic investigation of pedagogical reality with the aim of confirming or refuting a certain level of knowledge, or discovering and explaining new knowledge. In other words: Pedagogical research examines pedagogical processes, phenomena and relationships, uses the information obtained to explain, refute or predict them.

In research, according to Chráska (2007), hypotheses form the core of classical research.

The main goal of the research is to evaluate the use of didactic technology in selected secondary schools. The research focuses on the use of didactic tools in secondary schools within the European Union with a research sample in Slovakia and the Czech Republic.

The research was carried out at four secondary schools in the Czech Republic and at three secondary schools in the Slovak Republic.

The subject of the research is the evaluation of the use of didactic technology in secondary schools in the Slovak Republic and the Czech Republic.

1.2 Research hypotheses

Main (starting) hypothesis: Didactic technology is used in secondary schools and the lesson is more interesting with its use

For the investigated problems, we established a hypothesis with two auxiliary hypotheses

Hypothesis 1: More than 60% of the respondents evaluate that didactic technology is used in secondary schools and that the lesson with its use is more interesting.

Hypothesis 1.1: More eye 60% of the respondents confirm that the didactic technique used in the classes of vocational subjects at secondary school

Hypothesis 1.2: More eye 60% of respondents confirm that didactic technology is used in classes on all subjects of secondary school and that the lesson is more interesting with its use.

2. Use of didactic techniques in classes of vocational subjects in secondary schools

506 students filled out the questionnaires. Of these, 302 students were from four schools in the Slovak Republic: Secondary Vocational School of Electrical Engineering Trnava (SOŠE TT), Secondary Vocational School of Automotive Trnava (SOŠA TT), Secondary Industrial School of Transport Trnava (SPŠD TT) and 204 students from four schools in the Czech Republic (Secondary Vocational School of Mechanical and Electrical Engineering Velešín (SOŠ SaE) and Higher Vocational School, Secondary Vocational School and

Secondary Vocational School of Crafts and Services Strakonice (VOŠ, SPŠ-SOŠŘaS), Secondary Vocational School of Construction and Machinery Tábor (SPŠSaS Tábor) and Secondary Vocational School mechanical and electrical engineering school (SPŠSaE ČB) .
The results of the assessment of individual items are shown graphically in graphs 1 to 5. Individual values are expressed as a percentage.

Item 1: Is the didactic technique used in the lessons of professional subjects?

Table. 1 Use of DT in classes of professional subjects

		CR				SR		
School		A	B	C	D	E	F	G
Definitely yes		65	37	17	16	32	140	31
Rather yes		12	22	10	10	13	47	14
I can't judge		2	1	1	3	3	5	2
Rather not		1	1	1	1	2	4	2
Certainly not		1	1	1	1	2	4	1

The legend:

A – SPŠSaS Tábor	E – SOSA Trnava
B – SOŠSaE Velešín	F – SOŠE Trnava
C - VOŠ,SPŠ Strakonice	G – SPŠD Trnava
D – SPŠSaE České Budejovice	

Item 1 shows the use of didactic technique in teaching. In the Czech Republic, 66.48% of respondents rated +2 and 26.6% of respondents +1, i.e. 93.08% of respondents agreed with the statement that didactic technology is used in classes of professional subjects in the Czech Republic and in the Slovak Republic 67.22% of respondents rated +2 and 24.59% of respondents rated +1, i.e. 91.81% of respondents agreed with the statement that didactic technology is used in the classes of professional subjects in Slovakia and in tab. 1.
In the Czech Republic and Slovakia, 66.9% of respondents rated definitely yes and 25.3% of respondents rather yes, i.e. 92.2% of respondents agreed with the statement that didactic technology is used in the classes of professional subjects in the Slovak Republic + the Czech Republic.

Item 2: Is the lesson in which the didactic technique is used more interesting for you?

Tab. 2 Evaluation of the interest of the lesson

	CR				SR		
School	A	B	C	D	E	F	G
Definitely yes	46	37	16	17	32	142	31
Rather yes	23	20	11	11	16	54	15
I can't judge	5	4	1	0	2	2	1
Rather not	5	1	2	2	1	1	2
Certainly not	2	0	0	1	1	1	1

The legend:

A – SPŠSaS Tábor	E – SOSA Trnava
B – SOŠSaE Velešín	F – SOŠE Trnava
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In the Czech Republic and Slovakia, 63.44% of respondents rated definitely yes and 29.64% of respondents rather yes, i.e. 93.08% of respondents agreed with the statement that didactic technology is used in the lessons of professional subjects in the SR + CR.

Item 3: When using didactic technology in class, are you also involved in the teaching process?

Table. 3 Evaluation of pupils' involvement in the lesson

	CR				SR		
School	A	B	C	D	E	F	G
Definitely yes	45	34	20	21	32	151	36
Rather yes	21	16	8	6	6	38	12
I can't judge	8	5	1	3	13	10	1
Rather not	6	4	1	1	0	1	1
Certainly not	1	3	0	0	1	0	0

The legend:

A – SPŠSaS Tábor	E – SOSA Trnava
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The third item was aimed at involving students in the teaching process when using didactic techniques. When using didactic techniques, students in the

Czech Republic said definitely yes in 58.82% and rather yes in 25%, i.e. 83.82% of cases said yes, and 75.52% of pupils in the Slovak Republic said definitely yes and 18.54% rather yes, i.e. 94.06% of cases positive opinion (graph 3a,b). The rate of agreement definitely yes and Rather yes is expressed by the respondents in tab. 3.
Definitely yes was assessed by 66.98% of respondents and rather yes by 21.14% of respondents. I.e. 78.12% of respondents agreed with the statement that students are involved in the teaching process in SR + CR when using didactic technology.

Item 4: Is the didactic technique more important than just describing the notes of the subject?

Tab. 4 Describing notes in the Czech Republic and Slovakia

	CR				SR		
School	A	B	C	D	E	F	G
Definitely yes	57	52	16	19	32	164	38
Rather yes	14	7	11	11	11	28	11
I can't judge	4	2	3	1	6	5	1
Rather not	4	1	0	0	2	2	0
Certainly not	2	0	0	0	1	1	0

The legend:

A – SPŠSaS Tábor	E – SOSA Trnava
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According to table 4, it appears that DT is more important and does not only serve to describe notes when explaining the curriculum in the Czech Republic and Slovakia. 74.69% of respondents rated definitely yes and 18.37% of respondents rather yes, i.e. that up to 93.06% of respondents expressed an agreement with the statement that DT has a greater meaning and is not only used to describe notes when explaining the curriculum in SR + CR.

Item 5: Do you remember more knowledge from the presentation when using the didactic technique than in a classical lesson?

Tab. 5 Remembering knowledge from the interpretation

	CR				SR		
School	A	B	C	D	E	F	G
Definitely yes	61	41	17	18	39	137	34
Rather yes	12	17	9	6	11	45	9
I can't judge	4	3	2	4	2	12	7
Rather not	3	1	1	3	0	3	0
Certainly not	1	0	1	0	0	3	0

The legend:

A – SPŠSaS Tábor	E – SOSA Trnava
B – SOŠSaE Velešín	F – SOŠE Trnava
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Based on table 5, it shows that students remember more knowledge from the presentation when using didactic techniques than in a classic lesson in the Czech Republic and Slovakia. 68.58% of respondents rated definitely yes and 21.54% of respondents rather yes, i.e. that up to 90.12% of respondents rated yes.

Item 6: Write what didactic tools you use in the lessons of professional subjects. In the last item of the questionnaire, the respondents - secondary school students in the Czech Republic and the Slovak Republic - answered unanimously that the teacher uses an interactive whiteboard, data projector, PC, tablet, special drawing programs, 3-D models, real machines and tools, devices, devices in professional subjects and also classical paintings.

Verification of hypothesis no. 1

H1: More than 60% of the respondents evaluated that didactic technology is used in secondary schools and that the lesson with its use is more interesting.

We verified the hypothesis with questionnaires for pupils. With the help of these questionnaires, we investigated whether the didactic technique in the lesson is used and whether it makes the lesson more interesting. To verify hypothesis 1, we established two auxiliary hypotheses.

H1.1 More eye 60% of the respondents confirmed that the didactic technique is used in the classes of vocational subjects at the secondary school.

We evaluated 5 items in the questionnaire. We also evaluated each item in the Czech Republic and Slovakia. Table 6 shows that, on average, 77.5% in the

Czech Republic and 77% in the Slovak Republic confirmed that didactic technology is used in the classes of vocational subjects at secondary schools.

Tab. 6 Evaluation of questionnaire 1

	% of success	
P	ČR	SR
1	86	80
2	82	84
3	73,5	77
4	78	76,5
5	68	71
Avg.%	77,5	77,7

The average in the Czech Republic and Slovakia is 77.6%.
The result is more than 60% and thus the working hypothesis H1.1 was confirmed.

H1.2 More eye 60% of respondents confirm that didactic technology is used in classes on all subjects of secondary school and that the lesson is more interesting with its use.
We evaluated 5 items in the questionnaire. We also evaluated each item in the Czech Republic and Slovakia. Table 7 shows that on average in the Czech Republic 77.4% and SR 79.2%.

Tab. 7 Evaluation of questionnaire 2

	% of success	
P	ČR	SR
1	82	82,5
2	82	81,5
3	78	74
4	78	78
5	67	80
Avg.%	77,4	79,2

The average in the Czech Republic and Slovakia is 78.3%.
The result is more than 60% and thus the working hypothesis H1.2 was confirmed.

Based on the confirmation of H1.1 and H1.2, we can evaluate H 1
The final decision from the results of working hypotheses H1.1 and H1.2:
Hypothesis H1 is valid.
More than 60% of the respondents evaluated that didactic technology is used in secondary schools and that the lesson with its use is more interesting.

Respondents assessed that DT is used in questionnaire 1 by an average of 77.6% and in questionnaire 2 by an average of 78.3%. The overall average in the Czech Republic and Slovakia is 77.95%

3 Summary of research results

In the submitted contribution, we set ourselves the goal of analyzing the researched issue, evaluating the usability of didactic techniques at secondary schools.

Based on the set goals, we formulated the main hypothesis:

Didactic technology is used in secondary schools and the lesson is more interesting with its use.

To fulfill the main goal, we formulated 1 hypothesis with two auxiliary hypotheses.

The sample consisted of 506 pupils (respondents) of secondary schools in the Czech Republic and Slovakia.

The validity of working hypotheses is shown in tab. 8.

Tab. 8 Summary evaluation of hypotheses

Hypothesis	Metod	Validity of the hypothesis	Investigated phenomena
H1	questionnaire	valid	The use of DT at secondary schools and its interest in teaching
H1.1	questionnaire	valid	Use of DT in vocational subjects of secondary schools
H1.2	questionnaire	valid	The use of DT in all secondary school subjects and its interest in teaching

In the experimental part, we evaluated one working hypothesis. This hypothesis was divided into 2 auxiliary hypotheses. The hypothesis was confirmed and valid.

H1 confirmed that DT is used in secondary schools and their use makes teaching more interesting, pupils are involved in teaching and remember more of the material they learn. At the same time, they confirmed that DT is not only used for describing notes.

Conclusion

The goal of the contribution was to analyze the state of DT, to point out the necessity of using DT, creating and using UP in the teaching process.

Real life shows that we need more and more people with technical education. Pupils at secondary vocational schools are provided with professional technical education. Pedagogical employees, in addition to being professionally

competent in terms of pedagogical knowledge and skills, i.e. those who can teach professional technical subjects, must also be able to use computer technology. Such personnel must be educated. In addition to the media, we also acquired this claim during meetings with the principals of secondary vocational schools, which lack professionally and pedagogically prepared personnel to ensure the teaching of vocational technical subjects.

In the experimental part, it was shown that the use of didactic technology in the lessons of professional subjects is comparable in teaching at secondary schools in the Slovak Republic and in the Czech Republic. The results convinced us that teachers participate in changing and dynamizing the current education system. In all items, more than 60% of the students expressed a positive opinion. Their answers differed only in the strength of agreement.

The paper analyzes the current state of didactic technology, the inclusion of the creation and necessity of IDP for students and shows the possibilities of processing didactic text. The results presented in this thesis can be used in further pedagogical practice as a starting point for further pedagogical research.

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