

# **Application of Didactic Teaching Models: Teachers' and Students' Perspectives**

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*KLJUČNE BESEDE: aktiven pristop k učenju, pouk, didaktični modeli, šolski kontekst*

*POVZETEK – Inovacije pri pouku imajo prioriteto vlogo, uporaba sodobnih vsebin, metod, oblik in sredstev pa predstavlja novo filozofijo vzgoje in izobraževanja. Da bi našli rešitve za potrebe novih generacij, se številni raziskovalci osredotočajo na preučevanje postmodernih družbenih izzivov v izobraževanju. Z raziskavo želimo ugotoviti, kako učitelji in učenci dojemajo uporabo didaktičnih modelov pri pouku. Z uporabo tehnik skaliranja in anketiranja je najlažje odkriti najpogosteje uporabljene modele v praksi. V ta namen smo uporabili Likertovo ocenjevalno lestvica (SUNPIMN), ki vsebuje 30 postavk, ki preučujejo 18 didaktičnih modelov pouka. Raziskavo smo izvedli v Srbiji na vzorcu 325 anketirancev (219 učencev in 106 učiteljev). Rezultati kažejo statistično pomembne razlike v dojemanju učiteljev in učencev, učiteljev družboslovnih in naravoslovnih ved ter učiteljev z različnimi leti delovnih izkušenj.*

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*ABSTRACT – Innovations in teaching have become very important in education, whereas the application of novel contents, methods and tools in teaching has emerged as a new educational philosophy. Various researchers have focused on the study of the postmodern challenges in education with the purpose of envisaging new ideas for new generations. This research examined the teachers' and students' perceptions of the application of didactic models in teaching. The scaling technique and the survey method were used to determine which didactic models were most frequently applied in teaching practices. The Likert-type assessment scale (SUNPIMN) containing 30 items that examined 18 didactic teaching models was used. The research was conducted in the territory of the Republic of Serbia with 325 respondents (219 students and 106 teachers). The research results prove statistically significant differences regarding the perceptions of the application of didactic teaching models in schools between the following participants: teachers and students, teachers of social sciences and teachers of natural sciences, and teachers with different years of teaching experience.*

## **1 Introduction**

The improvement of the education system by introducing innovations into school contexts represents the basis that is essential for any social progress. The participants in school activities are thus regarded as the implementers of innovations and initiators of changes, which provides new roles and the development of new competencies. Consequently, the teacher is no longer a teacher in the traditional sense of the word, but rather an innovator, advisor, coordinator, etc. The teacher has to face new challenges that require the acquisition of professional, pedagogical, psychological, didactic, social and emotional competencies.

Various questions arise regarding the successful implementation of didactic models in teaching practices: Does the school environment provide the conditions necessary for their practical application? Are teachers prepared to apply new approaches? Do teachers possess the necessary competencies to apply these approaches to teaching in their everyday practice? This paper endeavours to explore and answer these questions, as well as many other (e.g. the effects of various didactic models on motivation, learning, the development of social skills, etc.). This paper is focused on the examination of the students' and teachers' attitudes in order to determine the similarities and differences in their perceptions of the application of various didactic teaching models.

## 2 Theoretical approach to the problem

The *Pedagogical Lexicon* (1996, p. 113) defines *didactic teaching models* as a modern term for the necessity of developing a pluralistic concept of teaching and its macro and micro structure, considering numerous and various elements, contents, techniques, technologies, structural components, systems, methods, teaching space, number of students, and their integration into versatile combinations.

The development of pedagogy and its scientific disciplines has motivated scientists specializing in didactics to pose the initial questions related to didactic systems and models. The construction of dynamic models that would unify all the relevant aspects of teaching has been the crucial problem. Stanković & Blažič (2017, p. 49) indicated the following: “the functional application of the didactic system represents an issue that directly concerns the areas of teaching strategy, classroom teaching structure, and organization of teaching. The application and alteration of teaching systems are an integral part of the process frequently termed the dynamization of teaching (making classroom teaching more vigorous or intensive, etc.). A dogmatic insistence on only one system of teaching, exemplified by the unsurpassed domination of the traditional or frontal method of teaching, proves that didactic systems are still not completely known or explored.” A close examination of the relationship between the factors of teaching is essential for the realization of the system's elements. Therefore, the didactic system, as the system of relationships (didactic contact) between three subsystems – teacher (tutor, professor), student (pupil, university student) and the body of knowledge or teaching content, represents the basis of the interaction of didactic elements and their natural domain (Kohanova, 2006).

Until recently, students were taught convergent thinking and provided with ready-made, correct answers, stored in their memories to be used adequately on demand. However, divergent, creative thinking is not being taught. Students strictly follow algorithmic principles, which they learn as “information”, not as novel, tentative questions and hypotheses that might stimulate their innovative concepts. Actually, the traditional school is concerned with only one task: to transfer as much information as possible and to force students to learn it by applying the traditional grading system. This requirement verges on verbalism and formalism since it provides neither quality education nor true qualifications. Generally speaking, one of the key weaknesses of traditional schooling is that it does not qualify students for independent studying and thinking about the

connection between natural and social phenomena, problem solving, cooperation, well-bred social behaviour, a sense of community and team work, personal responsibility, punctuality, industriousness and willingness to achieve success.

The aforementioned issues prove that students visualize school as a gloomy and desperate, rather than cheerful place, which is a reflection of their position in the educational processes (which are either authoritarian or democratic). Students find themselves in a gap between the rigid and intolerant school system and their parents who willingly send them to this kind of school. Students cannot grasp the true meaning of education owing to the traditional, ex-cathedra teaching, which is based on verbalism and formalism, and performed in a rigid classroom environment. Therefore, students cram for exams, study without any deeper understanding of their school materials (re-productive learning) and learn only to obtain good grades. Students blame school for their position of passive participants (teaching is performed exclusively by teachers and is separated from students' learning both in space and time), for not being educated using the methods and techniques of intellectual work, for the lack of self-assessment, for the preference of theoretical knowledge at the expense of the practical one (Stanković & Stanojević, 2019).

Teaching has been enriched by the introduction of numerous didactic and technological innovations over the past years, motivated by various reforms in pedagogy. Hence, Matijević & Topolovčan (2017, p. 95) emphasized that “these changes involve a predominant orientation towards students and more active and practical learning, which consequently leads to devising a learning strategy based on problem solving, exploration, revelation, creation and play”.

#### *Contemporary teaching practices as the foundation of the development of didactic models*

Unlike reproductive learning, which is fundamental in traditional teaching, a more sophisticated learning strategy has proved very successful in achieving the educational goals of contemporary education (Salazar et al., 2019). The changed position of students presupposes a personal approach, which in turn contributes to a greater fulfilment of students' needs (Martone, 2015). On the other hand, differentiated instruction and its wide range of modalities provide an equal approach to all students in accordance with their knowledge, e.g. doing various exercises with different levels of complexity (Acosta-Tello & Shepherd, 2014). There are some other methods and approaches that contribute to the creation of cognitive independence, interests and personal qualities of students. One of them is the heuristic method of teaching in which the teacher's role is to supervise the heuristic conversation that helps students to reach conclusions independently (Scafa, 2014; Sieberer-Nagler, 2016; Terhart, 2001).

New approaches require a different type of teaching that is directed towards the development of problem-solving skills, team work, and an expression of one's own attitudes and opinions (Kunanbayeva, 2016). This is achieved by project-based learning, which stimulates students to investigate and solve problems either individually or in a group in relation to their own interests (Peterson, 2018). In project-based learning, students learn through experience. Learning is focused on discovering and negotiating, understanding and joint experimenting of students (OECD, 2018). These teaching

models qualify students for the practical application of teaching materials and acquired knowledge in everyday life (Cohen et al., 2013).

Active teaching approaches have an impact on learning and students' self-esteem. Active methods assume not only an approach that is different from the traditional one, but also a different learning environment and interaction space. Numerous strategies have proved very successful: dramatization, the snowball technique, case study, experiments, etc. On the other hand, contemporary perception of education aims at qualifying innovative, successful and accomplished individuals in the areas of intellect, art and culture. The application of contemporary didactic models in teaching art has resulted in the students' altered perception and motivation for learning (Orak & Demirci, 2018). The review of other studies has also shown that active methods are more successful than the traditional ones, which is reflected in students' positive feelings and has a positive impact on their motivation and academic achievement (Kardas & Uca, 2016; Memnun, 2008; Telli et al., 2004). Teachers are thus expected to be engaged in both innovating teaching and acknowledging the personality of each student (Demirci, 2006).

It is very important to create a dynamic and interactive learning environment that fosters group discussion (Sieberer-Nagler, 2016). This type of group work generates critical thinking and cooperation skills. It stimulates students to participate in the organization and placement of group members so as to achieve adequate cooperation. Recent action research studies have confirmed that group work has a positive influence on learning, but that it depends on the characteristics of learning, the approach to learning, motivation, and the planning skills of group members (Nuuyoma, 2017). In Taiwan, cooperative learning has been validated as a very successful classroom teaching method and has been applied in all schools in Japan (Chia-Ling & Ya-Fung, 2017). On the other hand, the team-teaching model was applied in one of the studies related to e-learning design and materials. Its results were satisfactory since the team members were more successful owing to the internal resources of the team (Graham, 2002).

The development of technology has contributed enormously to the blooming of innovations in teaching in the twenty-first century. Digital technology has created numerous advantages for teaching. Students' and teachers' interactive communication is enabled by numerous interactive tools. The use of video games in instruction motivates students, making teaching materials more interesting and attractive (OECD, 2018). Students find great delight in learning via social media as an innovative way of learning (Brownson, 2014).

All of these learning strategies contribute to the development of the cognitive and investigative component, independent activity, and use of several information and learning resources (Vilotijević & Mandić, 2016). However, although technology initiates an individualized teaching approach, it has not been fully applied in teaching. This is confirmed by one new research study that records the problems related to the lack of resources, the limited use of the Internet and teachers' practical training in the use of technology (Evans-Williams, 2017). The use of technology to modernize teaching loses its pedagogical aspect unless teachers possess adequate competencies. Moreover, it may even have negative effects on students' further development (OECD, 2015).

### 3 Method

The goal of this paper was to determine teachers' and students' attitudes towards the application of innovative teaching models. The following tasks were established:

- comparison of teachers' and students' attitudes in order to determine the application of didactic teaching models;
- detection of particular didactic models most frequently used by teachers;
- detection of potential differences in the application of didactic models regarding the years of teaching experience and the scientific field taught (natural sciences and social sciences).

The scaling technique and the Likert-type scale (SUNPIMN) containing 30 items were used. The teachers and students were asked to express their agreement or disagreement with the given statements by selecting one out of five possible choices: strongly disagree, disagree, neither agree nor disagree, agree and strongly agree. The survey technique was also used and the questionnaire contained closed-ended questions used to examine which didactic models the teachers used most frequently. Teachers were presented with 18 models (*individualized, programmed, integrative, exemplary, heuristic, project-based, problem-based, developmental, game-like, productive, meaningful and verbal, computerized and informative, overtaking, team, and micro teaching*) and were given the option to select more than one answer. The scale and the questionnaire were constructed for the purposes of this research. The scale reliability is presented in Table 1.

Table 1. Cronbach's Alpha reliability test

<i>Cronbach's Alpha</i>	<i>N of items</i>
0.911	30

The value of the Cronbach's Alpha test was 0.911, which proved the reliability of the scale used for this research. The research was conducted in 2019. The sample consisted of 325 respondents (106 teachers and 219 students of primary schools in Serbia). The sample was a voluntary sample.

The following independent variables were used:

- scientific field (two categories) and
- years of teaching experience (three categories).

As regards the first variable, the sample consisted of 30 teachers of natural sciences (11.1%) and 70 teachers of social sciences (21.5%). Considering the years of teaching experience, 33 teachers or 10.2% had 10 years of teaching experience, 36 teachers or 11.1% had 11 to 20 years of teaching experience, and 37 teachers or 11.4% had more than 21 years of teaching experience. The obtained data were entered and analysed statistically using the SPSS program, while the following statistical parameters were used: descriptive statistics, t-test and ANOVA.

## 4 Results and interpretation

Significant results were obtained from the analysis of the first task that aimed to examine and compare the teachers' and students' responses related to the application of didactic teaching models. The statements rated the lowest on the scale of 1 to 5 by the teachers and students were the following: *I value reproduction over the understanding of teaching materials; My students have limited time to acquire new concepts; I do not apply cooperative learning; I do not stimulate competition in the group; I cooperate with schools from foreign countries via the Internet in order to exchange experience and knowledge.* The students valued the first statement ( $M = 3.041$ ,  $SD = 1.284$ ) more highly than the teachers ( $M = 2.741$ ,  $SD = 1.338$ ) since their responses had a higher arithmetic mean. The responses provided by the teachers ( $M = 2.651$ ,  $SD = 1.280$ ) and by the students ( $M = 2.941$ ,  $SD = 1.215$ ) in relation to the statement *I do not stimulate competition in the group* were positioned very low on the scale. As regards time limitations when acquiring new concepts, the students' responses ( $M = 3.091$ ,  $SD = 1.135$ ) were higher on the scale than the teachers' responses ( $M = 2.731$ ,  $SD = 1.221$ ). The teachers provided more negative responses ( $M = 2.641$ ,  $SD = 1.105$ ) than the students ( $M = 3.061$ ,  $SD = 1.267$ ) concerning the statement *I do not apply cooperative learning.* The statement *I do not stimulate competition in the group* was assessed equally by the students ( $M = 2.941$ ,  $SD = 1.215$ ) and by the teachers ( $M = 2.651$ ,  $SD = 1.280$ ). The statement *I cooperate with schools from foreign countries via the Internet in order to exchange experience and knowledge* was more highly valued by the teachers ( $M = 3.711$ ,  $SD = 1.127$ ) than by the students ( $M = 2.191$ ,  $SD = 1.306$ ). The differences in the teachers' and students' attitudes were determined by the t-test and the results are presented in Table 2.

Table 2. Students' and teachers' attitudes towards the application of didactic teaching models

N				Items (30)	p
Students		Teachers			
f	f%	f	f%	28	* $p < 0.050$
219	67,4	106	32,6		
Total		325		2	$p > 0.050$

Table 2 presents the frequencies and percentages of the responses. The results of the t-test showed that statistically significant differences in the arithmetic means, i.e. in the teachers' and students' responses related to the implementation of didactic teaching models, occurred in 28 statements ( $p < 0.050$ ).

If the differences in the responses to the items from the assessment scale are grouped according to the type of classroom teaching, they can be interpreted regarding the application of the following models: integrative teaching ( $t = -3.569$ ,  $df = 238.683$ ,  $p = 0.001$ ), individualized teaching ( $t = -8.205$ ,  $df = 239.373$ ,  $p = 0.001$ ), cooperative teaching ( $t = 2.965$ ,  $df = 323$ ,  $p = 0.003$ ), team work ( $t = -7.970$ ,  $df = 236.572$ ,

$p = 0.001$ ), project-based teaching ( $t = -3.649$ ,  $df = 258.205$ ,  $p = 0.001$ ), problem-based teaching ( $t = -7.224$ ,  $df = 259.276$ ,  $p = 0.001$ ), experiential learning ( $t = -9.908$ ,  $df = 291.061$ ,  $p = 0.001$ ), computerized teaching ( $t = -2.958$ ,  $df = 231.534$ ,  $p = 0.003$ ), distance learning ( $t = -10.843$ ,  $df = 237.440$ ,  $p = 0.001$ ), interactive teaching ( $t = -6.376$ ,  $df = 246.267$ ,  $p = 0.001$ ).

Considering the arithmetic mean, the teachers valued their application of didactic models more positively than the students. On the other hand, the responses were homogenous regarding two statements only, i.e. with  $p > 0.050$ : *I measure students' knowledge with tests and examinations* ( $t = 1.109$ ,  $df = 230.481$ ,  $p = 0.269$ ) and *I particularly pay attention to the students with social communication issues* ( $t = -1.761$ ,  $df = 323$ ,  $p = 0.079$ ).

The results obtained for the second research task, related to the identification of the most frequently used didactic teaching models, were first analysed using descriptive statistics, after which the differences in the teachers' responses with regard to the subjects they taught were determined, i.e. whether they were the teachers of natural sciences or the teachers of social sciences.

These results are shown in Table 3 and Table 4.

Table 3. The frequency of the application of didactic models in teaching

	<i>N</i>	%	<i>M</i>	<i>SD</i>
Individualized teaching	58	17.8	4.56	7.669
Programmed teaching	26	8.0	1.08	0.271
Integrative teaching	26	8.0	1.16	0.543
Exemplary teaching	20	6.2	1.18	0.722
Heuristic teaching	23	7.1	1.28	1.027
Modular teaching	15	4.6	1.23	1.050
Project-based teaching	55	16.9	2.01	2.255
Interactive teaching	61	18.8	2.31	2.737
Problem-based teaching	56	17.2	2.37	3.025
Developmental teaching	11	3.4	1.30	1.630
Game-like teaching	20	6.2	1.67	2.647
Productive teaching	20	6.2	1.98	3.850
Meaningful and verbal teaching	40	12.3	2.60	4.277
Computerized teaching	41	12.6	2.76	3.850
Overtaking teaching	6	1.8	1.27	4.277
Student-oriented teaching	26	8.0	2.36	4.619
Team teaching	67	20.6	4.71	7.292
Micro teaching	6	1.8	1.35	2.561

Table 3 presents the teachers' responses related to the most frequently used didactic teaching models. Out of the 18 teaching models provided, the teachers most frequently used team, individualized, interactive, problem-based, project-based, computerized, and meaningful and verbal teaching. They rarely used the programmed, integrative, student-oriented, exemplary, heuristic, game-like and productive teaching models, while they only occasionally used the modular, developmental, overtaking and micro teaching models. The teachers never used the experiential learning model and distance learning. The differences regarding the sciences taught by the teachers are presented in Table 4.

*Table 4.* Differences in the responses of natural science teachers and social science teachers

		<i>N</i>	<i>M</i>	<i>SD</i>	<i>t-test</i>	<i>df</i>	<i>p</i>
<i>Exemplary teaching</i>	Natural sciences	36	1.91	1.401	2.019	54.284	*0.048
	Social sciences	70	1.38	1.011			
<i>Interactive teaching</i>	Natural sciences	36	3.91	3.500	2.415	104	*0.017
	Social sciences	70	5.60	3.346			

The results of the t-test show the differences in the respondents' answers related to exemplary teaching and interactive teaching considering the independent variable of the scientific field. The teachers of natural sciences provided more positive responses for exemplary teaching than the teachers of social sciences. On the other hand, the teachers of social sciences valued interactive teaching more positively than the teachers of natural sciences. The differences were statistically significant with  $p < 0.050$ .

The differences in the subjects' responses related to the application of didactic models as regards the independent variable of teaching experience (up to 10 years; from 11 to 20 years; over 21 years) were determined by the ANOVA. The arithmetic means and the levels of deviation showed that the teachers with more than 21 years of teaching experience valued the reproductive teaching model and limiting the time for learning certain concepts more positively than the teachers from the remaining two categories. The teachers with 11 to 20 years of teaching experience valued the skills of applying new knowledge more positively than the rest of the respondents. The use of interactive methods and the application of the individualized approach were most valued by the teachers with up to 10 years of teaching experience. The diversity of the applied methods and the application of the problem-based teaching model were predominantly present in the responses of teachers with more than 21 years of teaching experience. The obtained results are presented in Table 5.

Table 5. Application of didactic teaching models according to teaching experience

		<i>N</i>	<i>M</i>	<i>SD</i>	<i>F-test</i>	<i>df</i>	<i>p</i>
<i>I value reproduction over the understanding of teaching materials.</i>	up to 10	33	2.06	1.028	8.324	2	*0.001
	from 11 to 20	36	2.58	1.204			
	over 21	37	3.27	1.446			
<i>My students have limited time to acquire new concepts.</i>	up to 10	33	2.39	1.143	6.019	2	*0.003
	from 11 to 20	36	3.11	1.213			
	over 21	37	3.35	1.206			
<i>I measure students' knowledge with tests and examinations.</i>	up to 10	33	4.15	0.712	9.657	2	*0.001
	from 11 to 20	36	4.47	0.654			
	over 21	37	3.75	0.722			
<i>I use various methods that motivate students to be active.</i>	up to 10	33	4.45	0.616	4.555	2	*0.013
	from 11 to 20	36	4.27	0.701			
	over 21	37	3.94	0.814			
<i>I apply the individualized teaching model.</i>	up to 10	33	4.42	0.902	5.903	2	*0.004
	from 11 to 20	36	3.97	0.696			
	over 21	37	3.75	0.862			
<i>I use the problem-solving learning model.</i>	up to 10	33	3.90	1.128	4.786	2	*0.010
	from 11 to 20	36	4.05	0.892			
	over 21	37	4.17	0.933			

The results obtained by the ANOVA show the differences in the use of didactic teaching models according to the years of teaching experience in relation to 6 statements. As regards the statement *I value reproduction over the understanding of teaching materials*, the statistically significant difference was evident between the responses of the teachers with up to 10 years of teaching experience and of those with over 21 years of teaching experience (Mean Difference =  $-1.209$ ,  $p = 0.001$ ). A statistically significant difference was observed between the same two categories in relation to the following statements: *I apply various methods that motivate students to be active* (Mean Difference =  $0.508$ ,  $p = 0.013$ ), *I apply the individualized teaching model* (Mean Difference =  $0.667$ ,  $p = 0.004$ ) and *I use the problem-solving learning model* (Mean Difference =  $-0.631$ ,  $p = 0.010$ ). Regarding the statement *My students have limited time to acquire new concepts*, statistically significant differences were evident in the responses of the teachers with up to 10 years of teaching experience when compared to the responses of the teachers with 11 to 20 years of teaching experience and those with more than 21 years of teaching experience (Mean Difference =  $-0.717$ ,  $p = 0.003$ ). Also, the differences in the responses regarding the years of teaching experience were detected in relation to the statement *I measure students' knowledge with tests and examinations* (Mean Difference =  $0.715$ ,  $p = 0.001$ ). The obtained results show the differences within the studied categories of respondents which were calculated by the Bonferroni post hoc test. Namely, the teachers with the fewest years of teaching experience put the most

effort into applying various teaching models and approaches, whereas the most experienced teachers still adhere to traditional teaching and value reproductive knowledge.

Firstly, the models and methods selected by the teachers in this research prove to be advantageous in many respects. Not only do they stimulate students' participation in classroom teaching but they also develop critical thinking, communication skills, problem solving, creativity, cognition, understanding, deduction, a practical approach to learning, an independent and inquiring spirit. These interpretations are present in other relevant research studies (Dorgu, 2015; Morrison, 2008; Forrest et al., 2012).

Secondly, this research proves that the teachers predominantly used the teaching methods that stimulate students' activity and an individualized approach. Moreover, it was determined that none of the teachers used the experiential learning model and distance learning. However, the teachers showed their readiness to apply didactic teaching models. Nevertheless, the obtained results show that certain teaching models are not used enough, probably due to a lack of finances and human resources. Although the respondents assessed the use of active methods positively, the majority of them still applied the traditional teaching model. The students thought that 40% of the time should be dedicated to active learning, while 98% of the teachers emphasized that they did not have enough time to apply active learning (Miller & Metz, 2014). Therefore, the obtained research results should not be generalized but judged carefully, taking into consideration the possibility of receiving socially acceptable responses from the teachers. The fact that the teachers did not apply distance learning can be explained by a lack of the necessary resources in schools, a deficiency in the relevant competencies or simply by a lack of interest on the part of the teachers in applying this model.

The research results obtained by the t-test indicate the differences in the teachers' responses regarding the subjects they taught, i.e. the corresponding scientific field. The teachers of natural sciences valued exemplary teaching more than the teachers of social sciences, whereas the teachers of social sciences assessed interactive teaching more positively than the teachers of natural sciences. The review of the relevant empirical research studies has not revealed the same findings, which further proves the authentic quality of this research. The differences in the teachers' responses related to the application of the studied teaching models were evident in relation to teaching experience, which was calculated by the ANOVA. The teachers with the fewest years of teaching experience used interactive methods the most, while the most experienced teachers still adhered to traditional teaching models, i.e. reproductive teaching and learning.

## **5 Conclusion**

The most significant result is that the teachers assessed their application of teaching models more highly than the students did. This indicates that the students judged their teachers with criticism. The obtained results may be partially ascribed to the incongruence in the students' expectations, but also to the teachers' perceptions about the number of active methods that should be used in classroom teaching. Anyway, the results clearly indicate that the students believed that the studied didactic models and methods should be implemented more frequently. This finding is confirmed by the re-

search which determined that active learning increased students' motivation and interest (Wen-Ling & Chun-Yen, 2017). On the other hand, interactive methods contribute to the creation of positive personal traits, i.e. self-esteem, cooperation, independent thinking and an optimal level of anxiety. Interactive methods have a positive effect on better understanding and more adequate self-assessment and assessment of other people (Yukhimenko et al., 2017). Compared to the traditional concepts of learning, the meta-analysis of 225 studies has determined that the application of active learning methods increases students' academic achievement by 6% (Freeman et al., 2014). The results of the research presented in this paper prove that the teachers' acceptance of new teaching models increases their students' efficiency, academic achievement and interest in learning.

The models suggested for the twenty-first century are literacy, personalized learning, problem-based learning and project-based learning. The same was emphasized by Lambrechts et al. (2013), who underlined the importance of connecting various models involving interactive methods (group discussion, role play, brainstorming), action methods (field work) and research-based methods (problem analysis, case study). Experiential learning and project-based learning have yielded good results judging by the students' estimates because of the application of the following didactic methods: films, cooperative learning and learning through web tools (Bachiorri et al., 2016; Kazlauskienė et al., 2016). These models are particularly important for teaching practices that tend to follow contemporary trends. This research proved that the teachers applied these models in their everyday classroom teaching and instruction.

As regards the research question "Are teachers willing to implement innovative teaching models?", the responses were positive, which only shows that the teachers are willing to apply the majority of didactic teaching models. The theoretical review of various research studies and their results has determined the effects of various didactic models on motivation, learning and development of social skills. However, certain questions and issues remain open for further consideration, one of them being "Do teachers have enough competencies and resources necessary for the implementation of these models?" This question may initiate theoretical and empirical research studies in the future.

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## **Uporaba didaktičnih modelov – vidik učiteljev in učencev**

*Uporaba sodobnih didaktičnih metod in modelov se je izkazala za zelo uspešno, saj z njo lahko dosežemo visoko raven razmišljanja, odločanja in sodelovanja. Pri učencih se povečuje odgovornost za učenje in raziskovanje možnosti povezovanja starega in novega znanja ter preverjanje samostojno pridobljenega znanja. Vloga učitelja v tem procesu je zagotoviti okolje, ki je skladno z učno vsebino. Njegova naloga je, da uporablja interaktivne metode dela in ne tradicionalnih tehnik, zaradi katerih so učenci pri pouku pasivni. V tej vlogi je mentor, saj učence motivira k razmišljanju o problemih, raziskovanju in uporabi pridobljenega znanja.*

Za razliko od tradicionalnega pouka in transmisijskega modela, pri katerem se pričakuje pri učencih predvsem pridobivanje kompetenc, pri sodobnih kognitivno-konstruktivističnih modelih pouka prihaja do učinkovitejšega načina dela učiteljev, ker je pedagoško delo usmerjeno predvsem v učenca. Skozi praktično uresničevanje izobraževalnih idej učitelj pomembno prispeva k spremembam v sodobni didaktiki. Takšen pouk vključuje aktiviranje individualnih posebnosti učencev in tudi učinkovitega in konstruktivnega načina pedagoškega pristopa. V sodobni šoli se pojavljajo didaktični modeli, ki omogočajo bolj učinkovit in razumljiv pouk vsem učencem. Novi pristopi so privedli do spremembe vloge učiteljev in učencev. Učenec postane središče zanimanja, vse pomembnejša postaja njegova aktivna vloga.

V tej raziskavi je bilo z metodo teoretične analize in tehniko analize vsebin ugotovljeno, da "aktivna šola" daje veliko boljše rezultate v primerjavi s šolami, ki ohranjajo tradicionalni pristop k poučevanju. Sodobni didaktični modeli spodbujajo učence k razvijanju samostojnosti, ustvarjalnosti in kritičnega mišljenja ter kompetenc za negovanje samostojnega in timskega dela. Ustvarjanje vzpodbudnega okolja prispeva k razvoju učencev, da so pripravljeni sodelovati in znanje uporabljati in vsakdanjem življenju. Tudi analize drugih raziskav so pokazale, da so aktivne metode uspešnejše od tradicionalnih, da se to vidi v pozitivnih čustvih učencev, v njihovi večji motivaciji in dosežkih. Sodobni didaktični modeli kažejo zelo dobre rezultate, saj njihova uporaba pri učencih spodbuja visoko raven razmišljanja, odločanja in sodelovanja. Povečuje se odgovornost učencev za učenje in raziskovanje možnosti povezovanja starih in novih znanj z neodvisno oceno naučenega. Vloga učitelja v tem procesu je zagotoviti okolje, ki je skladno z učno vsebino. Njegova naloga je, da uporablja interaktivne metode dela in ne tradicionalnih tehnik, zaradi katerih so učenci pasivni v učnem procesu (neposredno poučevanje, narekovanje, učenje na pamet). V tej vlogi je mentor, saj učence motivira k razmišljanju o problemih, raziskovanju in uporabi pridobljenega znanja. Zato se pričakuje, da bodo učitelji enako zainteresirani za inoviranje poučevanja in spoštovanje individualnosti vsakega učenca. Različni didaktični modeli poučevanja omogočajo izvajanje učinkovitih hevrističnih strategij, ki prispevijo k uspešnemu učenju in razvoju socialnih veščin.

Postavljajo se vprašanja o pogojih za izvajanje didaktičnih modelov v učnem procesu v smislu uporabe različnih metod, o motivaciji učiteljev za njihovo uporabo in katere učiteljeve kompetence so najpomembnejše za učinkovito uporabo didaktičnih modelov pri poučevanju. Iz teh vprašanj se je izoblikoval raziskovalni problem, ki se je osredotočil na proučevanje stališč učencev in učiteljev do uporabe didaktičnih modelov poučevanja, s primerjavo odgovorov anketirancev pa smo dobili pomembne rezultate. Namen prispevka je ugotoviti odnos učiteljev in učencev do uporabe didaktičnih učnih modelov. V empirični raziskavi so bile postavljene naloge, s katerimi smo ugotavljali, kateri didaktični modeli se v praksi največkrat uporabljajo, tako z vidika učiteljev kot učencev. Poleg tega se je preučevalo, ali obstajajo statistično pomembne razlike v uporabi različnih didaktičnih modelov poučevanja glede na zastavljene neodvisne spremenljivke raziskovanja, leta delovnih izkušenj in strokovno področje dela učiteljev. Uporabili smo opisno raziskovalno metodo s tehniko skaliranja in ocenjevalno lestvico Likertovega tipa (SUNPIMN), ki vsebuje 30 predmetov. Poleg tehnike skaliranja je bila uporabljena tehnika anketiranja, ki je vključevala vprašanje zaprtega tipa, ki je preučevalo najbolj uveljavljene didaktične modele pri pouku (18 ponujenih učnih modelov:

individualizirani, programirani, integrativni, zgledni, hevristični, modularni, projektni, interaktivni, problemski, razvijajoči se, igrivi, produktiven, smiselno-beseden, računalniško-informativen, prenatrpan, osebnostno naravnani, timski pouk in mikro poučevanje). Anketiranci so lahko odgovorili z več odgovori. V raziskavi sta bili uporabljeni naslednji spremenljivki: področje znanosti (naravoslovne in družbene vede) in leta delovnih izkušenj (do 10, od 11 do 20 in več kot 20 let delovnih izkušenj).

Ocenjevalna lestvica in vprašalnik sta bila posebej izdelana za potrebe raziskovanja o prisotnosti didaktičnih modelov pri pouku. Instrument ocenjevalne lestvice je bil preizkušen z validacijskim testom. Cronbach alfa test z vrednostjo 0,911 je dokazal, da je lestvica, uporabljena za namene te študije, zanesljiva. V skladu s postavljenimi raziskovalnimi spremenljivkami so bili v prispevku uporabljeni elementi parametrične statistike (*t*-test in ANOVA test) in deskriptivne statistike (*M* in *sd*). Raziskava je bila izvedena leta 2019 v Republiki Srbiji. Skupni vzorec zajema 325 anketirancev (106 učiteljev in 219 osnovnošolcev) in je naključen.

Raziskava je prinesla pomembne rezultate, ki kažejo statistično pomembne razlike v dojemanju uporabe didaktičnih modelov poučevanja v šolskem kontekstu med učitelji in učenci, učitelji družboslovnih in naravoslovnih ved ter učitelji z različnimi leti delovnih izkušenj. Pomemben rezultat se je pokazal z uporabo *t*-testa za prvo nalogo, ki se nanaša na primerjavo med učitelji in učenci. Statistično pomembna razlika se kaže v vseh odgovorih na postavljene trditve. Razlike je mogoče opaziti pri uporabi didaktičnih modelov pri poučevanju, in sicer pri uporabi integrativnega, individualiziranega, kooperativnega, timskega, projektnega, problemskega, izkustveno-vitagenega, interaktivnega, računalniško-informativnega modela in poučevanja na daljavo. Učitelji v primerjavi z učenci bolj cenijo uporabo omenjenih didaktičnih modelov poučevanja. Ugotovitve kažejo tudi na razlike v odzivih učiteljev, ki se nanašajo na področje znanosti v smislu interaktivnega pouka. Učitelji s področja naravoslovja kažejo bolj pozitivne odgovore, ko gre za eksemplarno obliko pouka, interaktivni pouk pa bolj pozitivno vrednotijo učitelji družboslovja. Razlog, zakaj učitelji naravoslovja v večji meri uporabljajo eksemplarni pouk, so lahko njegove široke možnosti za uporabo v naravoslovju. Čeprav gre za učenje po modelu, ki lahko privede do reproduktivnega sprejemanja vsebin, je še vedno koristno zaradi podobnosti in razlik med eksemplarnimi in analognimi vsebinami. Po drugi strani pa so interaktivne metode primernejše za predmete z družboslovnega področja, kar pomeni, da so pridobljeni rezultati v skladu s predpostavko te raziskave.

Razlike v odgovorih učiteljev glede uporabe didaktičnih modelov poučevanja so vidne tudi glede na leta delovnih izkušenj in so bile ugotovljene z uporabo testa ANOVA. Učitelji z najmanj delovnimi izkušnjami (do 10 let) pripisujejo večji pomen individualnemu pristopu in interaktivnim metodam, kar kaže na prepoznavanje pomena teh metod in odprtost za njihovo izvajanje. Učitelji, ki imajo od 10 do 20 let delovnih izkušenj, pripisujejo pomembnost pridobivanju praktičnih znanj, kar je mogoče rezultat dolgotrajnega dela in izkušenj, torej pozitivnih rezultatov pri delu z učenci. Učitelji z največ leti delovnih izkušenj (nad 21 let) deloma kažejo nagnjenost k reproduktivnemu učenju, kar je skladno s predpostavko, da zaradi dolgotrajnega dela z učenci, ki je v nekaterih segmentih dalo pozitivne rezultate, še vedno vidijo pomen njegove uporabe.

Po drugi strani pa je mogoče rezultate razlagati tudi kot zadržanost pri uporabi različnih učnih modelov, torej počasnejše prilagajanje novim izzivom sodobnega poučevanja. To domnevo lahko ovrežejo drugi rezultati raziskav, ki kažejo na njihovo od-

*prtost za uporabo problemskega poučevanja in njihovo zavezanost k uporabi sodobnih didaktičnih modelov.*

*Modeli in metode, ki so jih učitelji prepoznali kot pomembne v učnem procesu, imajo številne prednosti: spodbujajo udeležbo učencev, razvijajo kritično mišljenje, sposobnost komunikacije, spodbujajo reševanje problemov, ustvarjalnost, razmišljanje, razumevanje, sklepanje, praktični pristop k učenju, samostojnost, raziskovalni duh, refleksijo in samorefleksijo. V zvezi z raziskovalnim vprašanjem, ali so učitelji pripravljene na uporabo inovativnih učnih modelov, je bil pridobljen pritrdilni odgovor, ki kaže na odprtost in uporabo večine didaktičnih modelov poučevanja. Zato je pomembno razmisliti o možnosti kritičnega pregleda rezultatov te raziskave s poudarkom na previdnosti pri njihovem posploševanju, prav zaradi možnosti družbeno zaželenih odzivov učiteljev. Pri teoretični analizi različnih izsledkov raziskav je bilo ugotovljeno, kakšen vpliv imajo različni didaktični modeli na motivacijo in učenje. Še vedno je dovolj možnosti za odgovore na vprašanja, ki so zelo pomembna za razumevanje in ustvarjanje realne slike o izvajanju didaktičnih in inovativnih učnih modelov, vključno z vprašanjem kompetenc in pogojev, ki so potrebni za izvajanje takšnih različnih pristopov v šolskem okolju in za neposredno delo z učenci. Na podlagi teh predpostavk je mogoče utemeljiti potrebo po številnih prihodnjih kvalitativnih in kvantitativnih raziskavah.*

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