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TEACHERS' ASSESSMENTS OF CERTAIN CURRICULAR DETERMINANTS IN PRIMARY SCHOOL

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Abstract

There is a clear prevalence of equipment and spatial arrangements for traditional teaching from the front of the class in Croatian classrooms. During such instruction, pupils mostly sit, listen and watch. Further, it is evident that primary school classrooms feature several elements pointing to the use of constructivist didactics, and include attempts at adjusting the space and equipment to the developmental needs of pupils in middle childhood. A research team called "School and Classes for the Net Generation" organised several examinations of the assessments of curricular determinants in Croatian primary and secondary schools.

The aim of this study is to examine the assessments of changes that happen in school and in classes (or those that could happen) under the influence of new didactic understandings and digital education technology. A specifically constructed questionnaire was used on a sample of primary education male and female teachers (N=214), which is representative for Central Croatia, since the data were collected through individual surveys in schools located in the City of Zagreb and in eight counties. The questionnaire contained 50 statements that the respondents had to assess on a Likert-type scale. In this paper, we shall present only part of the results relating to the pedagogical and curricular characteristics of the teaching methods and didactics of primary education. Differences in assessments were tested in terms of the working experience of primary education teachers.

Primary education teachers recognise the characteristics of constructivist didactics and modern developments in the theory of education and the theory of school quite well. Most agree that it is important to organise classes in which the pupils are more active than the teacher, and that any curriculum is regarded as implemented if pupils are actually active. Most respondents hold that classic textbooks will soon be replaced by modern digital multimedia sources of knowledge. Teachers agree that all pupils should be provided with an opportunity to exercise their abilities in the best possible way, bearing in mind that everyone has different talents.

Keywords: *digital media, curriculum, net generation, primary education, primary education teachers*

1. Introduction and theoretical starting points

Each year, pupils in Croatian compulsory education spend 175 days at school, and another 190 days are free of school[2]. This means that digital media and informal learning play an important role in the raising and development of the net generation. Informal learning provides great competition to school learning. Consequently, the question increasingly arises about who or what has the greatest effect on the learning and development of the net generation?

More and more families in Croatia have three or four members, and divorce is increasing, so that the number of children growing up with one parent is also on the rise. In view of the given facts and the IT revolution of the past thirty years, learning and development today deserve serious attention from scientists and experts in education. Unfortunately, didactic scenarios in school today are more reminiscent of the past than a learning environment appropriate for the net generation. Classes are dominated by teaching from the

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front, which is organised in classrooms that have the same architectural characteristics and layout as those that existed over a hundred or more years ago. Despite the findings of constructivist, curricular and multimedia didactics and neuroscience, schools still function on the basis of didactics that have long been the subject of scientific criticism (Hermann, 2009; Kerres, 2013; Reich, 2006; Reece & Walker, 2011).

Teachers are facing tough challenges in the selection of methodical scenarios that could and should satisfy the development needs of the net generation in compulsory education. There are many books on these issues, but they do not always provide clear-cut answers. Studies conducted also frequently open up new questions, but they do not offer specific answers to those already raised.

There has always been great interest in the USA concerning the quality of classes in compulsory education, in particular relating to the teaching of mathematics and the natural sciences. The most quoted work relating to the problem is most certainly Jerome Bruner's *The Process of Education* (1959), which is the starting point for discussions on science education in American compulsory education. The book has been translated into many languages and has been one of the most quoted pedagogical works in the past half a century. Interest in teaching the natural sciences in compulsory education is not declining even today. A study entitled *High Hopes — Few Opportunities: The Status of Elementary Science Education in California* includes the results of research on high-quality elementary education which should introduce pupils to the world of science (Dorph, Shields, Tiffany-Morales, Harry, McCaffrey, 2011: 11). It reports that there is a great amount of studying from textbooks (48%), a lot of group work (65%), and sufficient hands-on work. There is little own research (as claimed by around 60% of respondents) and too sparse field work (around 80%). The results of initial public opinion research on science education in schools in California show that high-quality science education should be a priority for state schools. In addition, the results show that there is a great gap between what is said about the importance of science education and the ability of teachers and schools to actually provide high-quality science education to pupils.

Bruner (1999) warned that, apart from the question WHAT to learn, the question HOW to learn was also very important, i.e., the importance of learning and teaching strategies. He emphasises the advantages of learning by discovery in natural science education (Bruner, 1999). Experts in education in many states are interested in studying teaching and learning strategies (see, e.g., Çalişkan & Sünbül, 2011; Bishop, Caston & King, 2014; Robitaille & Maldonado, 2015). Çalişkan & Sünbül (2011) studied the effects of learning strategies on the quality of metacognitive knowledge and metacognitive skills, and achievements on a sample of primary school pupils. Their experiment showed that it is possible to successfully develop learning strategies important for the acquisition of metacognitive skills. Bishop, Caston & King (2014) deal with the issue of relationships within the educational environment, in particular, in classrooms for learner-centred instruction (learner-centred environments), and the development of strategies that can affect the expected learning outcomes in such an environment, specifically those relating to opinions and standpoints. In their study, they examine the functionality of the theory previously published by Terry Doyle (2008). Robitaille & Maldonado (2015) examined how pupils and teachers perceive the teaching environment, especially the connection between the organised educational environment and the possibility of organising discussion. An organised and encouraging educational environment has a significant impact on the quality of teaching and teacher-led discussions that should encourage pupils to use critical thinking. Gary Thomas, professor of pedagogy at the University of Birmingham (Thomas, 2015), has very many well-founded questions and doubts in relation to the curricular theories and teaching practices in the schools of the USA and the United Kingdom.

The topics and research issues mentioned above are equally relevant in Croatian schools. They will be specifically elaborated below.

2. Certain characteristics of today's compulsory education in Croatia

Advocates of constructivist didactics emphasise the need to change the relationship and the roles of the main actors in the teaching process: the pupil and the teacher (Reich, 2006; Terchart, 2003). What the pupils do and how they work in this process are important for learning outcomes. Listening and watching are not activities that can result in the expected outcomes of education. Adherents of constructivist didactics point out that schools should be more about learning, and less about teaching. This would include pupils' activities where they use their head, heart and hands (and not only their head!). However, school curricula in Croatian compulsory education are very much geared towards head learning, while hands-on learning has been marginalised for years.

Teachers at all education levels often say, "I must carry out the programme all the way through!" If we ask them what exactly they mean, we usually receive the response which implies the obligation to talk pupils through certain topics and to give something as an illustration (usually a film, drawing, photograph, object) to complement their talk. With this type of implementation, pupils will obviously watch, listen, take notes, draw..., which are all quite monotonous activities, yielding modest profit, in particular in terms of the self-actualisation of the pupil. Such activities in general do not satisfy the developmental needs of children and adolescents. Developmental needs that can contribute to the best possible self-actualisation of every child (and adult) are movement, conversation, research, creativity, building activities, and the resolving of actual or simulated problems, etc.

A great deal of time passes in school without any opportunity for the clear specification of the benefits of the outcomes of education foreseen in the curricula. Based on interviews with pupils and parents, we often hear how too much time is spent in school on unnecessary content or information, and that there is too much wasted time in school.

Teachers and pedagogues agree that there is no absolutely untalented child. Further, everyone agrees that all children can and love to learn. Children, however, do not like to be forced to learn through inappropriate methods, and they also do not like to participate in activities where they are exposed to unpleasant emotions. Such unpleasant emotions are often the result of competition where individuals achieve poor results. In Croatian schools, there appears to be too much competition. There are constant proclamations of the best pupil, the fastest pupil (in various fields and activities), the selection of the best singer, the best painter, etc. Most didactic games are also competitive, and not collaborative! There are few situations in adult life where competition and the everyday testing of one's abilities are advocated to the same extent as in school. More and more experts caution against the harmful consequences of too frequent and excessive testing, examination, and ranking of pupils (Gatto, 2009; Liessmann, 2006). Despite the awareness that every pupil is an individual who deserves special treatment in school and in any teaching situation, most school events are planned for the non-existent average pupil.

In primary education in Croatia, teachers grade pupils on a five-point scale (1-5); however, a high percentage of teachers use only grades 3, 4 and 5, and therefore they use only a three-point scale. Primary education teachers teach six subjects in the curriculum of primary education. Foreign languages and religious education are taught by subject teachers. In Croatia, it is still popular to present the final success of a pupil at the end of each school year in the form of an average grade obtained by calculating the arithmetic mean of all the numerical grades received for particular subjects. Of course, in view of the reliance on a three-point scale, such an average grade is between 4 and 5 for most pupils, so the point of such statistical indicators is often questioned. Still, in view of its long tradition, it can hardly be expected that teachers and parents will agree to abandon such grading practice.

In the study of teachers' attitudes towards change in school, respondents always have ideas of what should change, but the changes occur slowly, because most people do not like and do not want change.

In Croatian schools, the amount of pupils' aggressive behaviour and of disagreements between parents and teachers is also on the rise. The vocational and professional autonomy of teachers is frequently brought into question, so that actions are presently underway by teachers' trade unions for laws to be passed to protect the teacher as an official person whose work place is the school. Teachers are dissatisfied with their social status, which is connected with their low monthly salary, and which they usually compare with other professions in the civil service where the same or a similar level of education is required.[1] We checked the above statements about the situation in Croatian schools on a representative sample of primary education teachers.

3. Empirical research

The aim of this study was to obtain a deeper insight into the pedagogical and curricular characteristics of primary education teaching methods and didactics based on teachers' assessments.

On the total sample of 214 primary education teachers, the authors examined teachers' assessments of the pedagogical and curricular characteristics of primary education teaching methods and didactics. The sample was representative for Central Croatia (around one third of the population) given that the respondents work in more than one hundred schools in this part of the county. Considering the size of the project, for the

[1] At the time of writing this text, the average monthly salary of teachers in Croatian schools was around EUR 800.

purpose of this study we used 25 variables relating to teachers' assessments of the said characteristics. The variables are ordinary/discreet with quantified characteristics: 1 – completely disagree; 2 – somewhat disagree; 3 – somewhat agree; 4 – completely agree. The main descriptive statistics are shown in Table 1.

Table 1 - descriptive statistics

	Min	Max	Mean	Std. Deviation	Skewness		Kurtosis	
variable	Stat	Stat	Stat	Stat	Stat	Std. Error	Stat	Std. Error
1	1.0	4.0	2.803	.8208	-.514	.159	-.073	.317
5	1.0	4.0	2.877	.9707	-.483	.158	-.746	.316
7	1.0	4.0	2.948	.9900	-.568	.159	-.745	.318
8	1.0	4.0	3.199	.7370	-.784	.158	.639	.316
9	1.0	4.0	2.581	.9664	-.216	.158	-.907	.316
10	1.0	4.0	2.919	.7830	-.396	.159	-.180	.316
11	1.0	4.0	1.584	.9299	1.375	.159	.610	.318
12	1.0	4.0	2.545	.7743	-.234	.159	-.324	.316
13	1.0	4.0	2.352	.9585	.132	.159	-.931	.318
14	1.0	4.0	3.613	.5690	-1.295	.159	1.471	.316
15	1.0	4.0	3.141	.7066	-.649	.159	.650	.317
16	1.0	4.0	3.637	.7060	-2.156	.159	4.414	.317
18	1.0	4.0	2.685	.8491	-.403	.159	-.363	.316
20	1.0	4.0	2.540	.9436	-.194	.159	-.861	.316
21	1.0	4.0	3.055	.7798	-.588	.159	.076	.316
22	1.0	4.0	3.059	.7967	-.616	.158	.039	.316
26	1.0	4.0	3.186	.8037	-.748	.158	.011	.316
31	1.0	4.0	1.958	.9970	.553	.158	-.966	.316
36	1.0	4.0	2.292	.8375	.018	.158	-.698	.316
39	1.0	4.0	3.691	.6150	-2.276	.159	5.589	.318
41	1.0	4.0	2.847	.7235	-.374	.159	.137	.316
43	1.0	4.0	3.648	.5828	-1.703	.158	3.157	.316
44	1.0	4.0	1.872	.9315	.676	.159	-.659	.317
45	1.0	4.0	2.678	.8975	-.293	.159	-.629	.318
47	1.0	4.0	3.668	.6206	-2.231	.159	5.754	.316
49	1.0	4.0	2.979	1.0041	-.675	.159	-.626	.317

Legend – 1 – The curricula include too much content and activities that are worthless for subsequent education and life; 5 – Experts who claim that there should be more learning and less teaching in classes are right; 7 – Every pupil deserves treatment as a person with special needs; 8 –The curriculum is achieved to the extent that pupils are really active; 9 – Teachers should be able to have everyday communication with parents via email and text messages; 10 – Pupils spend too much intellectual power and abilities on a lot of worthless activities; 11 – If I had the opportunity, I would stop teaching; 12 – Test tasks mostly require pupils to know information and definitions that are worthless; 13 – Today's pupils like school where there is work and discipline; 14 – Classical textbooks will soon be replaced by modern digital multimedia sources of knowledge; 15 – Grading criteria should be materially changed; 16 – There is no absolutely untalented pupil; 18 – Pupils in schools today do not acquire knowledge relevant for life and subsequent education as was the case at the time we went to school; 20 – Interpersonal relations in school are undermined; 21 – Parents want their children to attend schools where there is work and discipline; 22 – Pupils today receive unnecessarily and pointlessly high grades, so that grades are no longer a usable indicator of how successful a pupil's learning process has been; 26 – We are often "victims" of bullying by the pupils' parents; 31 – Pupils today are used to receiving high grades without any effort; 36 – Textbooks are of more use to teachers for preparing lessons than to pupils for independent studying; 39 – Teachers (and professional assistants) are not sufficiently respected in society; 41 – Most teachers in my school are ready to adapt their teaching activities to the wishes and needs of the new generations of pupils; 43 – Teachers (and professional assistants) should receive additional training for work with pupils with special needs; 44 – I am annoyed by the constant demands to learn and change something in

my work; 45 – We are often "victims" of bullying by pupils; 47 – I readily co-operate with school colleagues in thinking out ways to conduct lessons; 49 – If I had a higher salary, I would be more motivated.

As is evident from Table 1, the variable v39 has the highest MCT (Mean=3.691; Mode=4), that is, *teachers' social status,* in terms of the teachers' problems mentioned, received the highest assessment of curricular characteristics. Teachers also single out as curricular characteristics that they *readily cooperate with school colleagues in thinking out ways to conduct classes* (Mean=3.668, Mode=4); that *teachers (and professional assistants) should receive additional training for work with pupils with special needs* (Mean=3.648, Mode=4); that *there is no absolutely untalented pupil* (Mean=3.637, Mode=4) and that *classical textbooks will soon be replaced by modern digital multimedia sources of knowledge* (Mean=3.613, Mode=4). However, our respondents love their profession (*if I had an opportunity, I would stop teaching* (Mean=1.584, Mode=1)), and are ready for change (*I am annoyed by constant demands to learn and change something in my work* (Mean=1.872, Mode=1)).

In terms of skewness, most variables have a left-skewed asymmetrical distribution, which is in line with the highest values of the arithmetic mean. In addition, variables vary from mildly platikurtic to highly leptokurtic (V16, V39, V47), which is in line with higher homogeneity (less dispersion).

In line with the aim of the study, we examined whether there are age differences, i.e., years of working experience in school, in the assessments of the variables of pedagogic and curricular characteristics of teaching methods and didactics in primary education. The distribution of the variable years of work is as follows: under 10 years (22%), 11-20 years (24.6%), 21-30 years (40.7%) and over 30 years (12.7%). In order to test subsamples on dependent variables, we used the robust Welch and Brown-Forsythe tests in parallel, because the normality of distribution was undermined and the homogeneity of variances (Leven test) on certain variables was not satisfied. The results of the robust Welch and Brown-Forsythe tests are shown in Table 2.

Table 2 - Robust Tests of Equality of Means

		Statistic[a]	df1	df2	Sig.
1	Welch	3.270*	3	100.420	.024
	Brown-Forsythe	2.650*	3	203.427	.050
5	Welch	0.385	3	97.533	.764
	Brown-Forsythe	0.343	3	174.296	.794
7	Welch	2.060	3	91.570	.111
	Brown-Forsythe	2.136	3	162.755	.098
8	Welch	1.668	3	94.936	.179
	Brown-Forsythe	1.781	3	163.353	.153
9	Welch	.952	3	96.204	.419
	Brown-Forsythe	.896	3	176.849	.444
10	Welch	1.829	3	100.765	.147
	Brown-Forsythe	1.609	3	198.219	.189
11	Welch	1.365	3	97.393	.258
	Brown-Forsythe	1.265	3	177.446	.288
12	Welch	.556	3	97.706	.646
	Brown-Forsythe	.511	3	177.063	.675
13	Welch	2.209	3	95.559	.092
	Brown-Forsythe	2.436	3	166.896	.067
14	Welch	1.201	3	93.819	.314
	Brown-Forsythe	1.191	3	162.522	.315
15	Welch	.740	3	92.148	.531
	Brown-Forsythe	.727	3	140.124	.537
16	Welch	3.438*	3	88.547	.020

	Brown-Forsythe	3.786*	3	111.545	.012
18	Welch	.589	3	96.907	.624
	Brown-Forsythe	.567	3	179.299	.637
20	Welch	1.277	3	97.493	.286
	Brown-Forsythe	1.316	3	175.261	.271
21	Welch	1.945	3	99.218	.127
	Brown-Forsythe	1.835	3	190.498	.142
22	Welch	.294	3	94.034	.830
	Brown-Forsythe	.263	3	137.989	.852
26	Welch	.372	3	96.404	.773
	Brown-Forsythe	.415	3	163.085	.743
31	Welch	3.233*	3	98.185	.026
	Brown-Forsythe	3.368*	3	184.312	.020
36	Welch	.396	3	94.514	.756
	Brown-Forsythe	.402	3	153.600	.752
39	Welch	.421	3	94.333	.738
	Brown-Forsythe	.427	3	153.547	.734
41	Welch	2.200	3	101.967	.093
	Brown-Forsythe	2.106	3	201.108	.101
43	Welch	.439	3	98.954	.725
	Brown-Forsythe	.438	3	191.153	.726
44	Welch	.716	3	91.605	.545
	Brown-Forsythe	.714	3	146.873	.545
45	Welch	1.989	3	97.963	.121
	Brown-Forsythe	2.033	3	181.933	.111
47	Welch	.227	3	98.611	.877
	Brown-Forsythe	.262	3	189.592	.853
49	Welch	.875	3	97.805	.457
	Brown-Forsythe	.833	3	175.090	.477

a. Asymptotically F distributed.
*p≤0.05

As evident from Table 2, there is a statistically significant age/working difference (years of work) on the variables: **V1** (*The curricula include too much content and activities that are worthless for subsequent education and life*; **V16** (*There is no absolutely untalented pupil*) and **V31** (*Pupils today are used to receiving high grades without any effort*). In order to examine the direction of the differences, i.e., between which categories of years of work there is a statistically significant difference on the said dependent variables, we used the **POST HOC Games-Howell** test, which does not imply the homogeneity of variances. The results are shown in Table 3.

Table 3 - Multiple Comparisons

Games-Howell

Dependent Variable	(I) years of work	(J) years of work	Mean Difference (I-J)	Std. Error	Sig.	95% Confidence Interval	
						Lower Bound	Upper Bound
1	under 10 years	11-20 years	-.1757	.1530	.660	-.575	.224
		21-30 years	-.1549	.1445	.707	-.532	.222
		over 30 years	-.5033*	.1641	.016	-.935	-.071
	11-20 years	under 10 years	.1757	.1530	.660	-.224	.575
		21-30 years	.0209	.1364	.999	-.334	.376
		over 30 years	-.3276	.1570	.168	-.741	.086
	21-30 years	under 10 years	.1549	.1445	.707	-.222	.532
		11-20 years	-.0209	.1364	.999	-.376	.334
		over 30 years	-.3485	.1488	.099	-.741	.044
	over 30	under 10 years	.5033*	.1641	.016	.071	.935
		11-20 years	.3276	.1570	.168	-.086	.741
		21-30 years	.3485	.1488	.099	-.044	.741
16	under 10 years	11-20 years	-.0693	.1351	.956	-.422	.284
		21-30 years	-.2208	.1214	.272	-.539	.098
		over 30 years	.3020	.2023	.449	-.235	.839
	11-20 years	under 10 years	.0693	.1351	.956	-.284	.422
		21-30 years	-.1515	.1031	.459	-.421	.117
		over 30 years	.3713	.1919	.229	-.141	.884
	21-30 years	under 10 years	.2208	.1214	.272	-.098	.539
		11-20 years	.1515	.1031	.459	-.117	.421
		over 30 years	.5228*	.1825	.033	.032	1.014
	over 30 years	under 10 years	-.3020	.2023	.449	-.839	.235
		11-20 years	-.3713	.1919	.229	-.884	.141
		21-30 years	-.5228*	.1825	.033	-1.014	-.032
31	under 10 years	11-20 years	.0544	.1852	.991	-.429	.538
		21-30 years	.4527*	.1626	.031	.029	.877
		over 30 years	.2923	.2104	.511	-.264	.848
	11-20 years	under 10 years	-.0544	.1852	.991	-.538	.429
		21-30 years	.3983	.1703	.095	-.045	.842
		over 30 years	.2379	.2164	.691	-.333	.808
	21-30 years	under 10 years	-.4527*	.1626	.031	-.877	-.029
		11-20 years	-.3983	.1703	.095	-.842	.045
		over 30 years	-.1604	.1974	.848	-.684	.363
	over 30 years	under 10 years	-.2923	.2104	.511	-.848	.264
		11-20 years	-.2379	.2164	.691	-.808	.333
		21-30 years	.1604	.1974	.848	-.363	.684

*. The mean difference is significant at the 0.05 level.

As evident from Table 3, there is a statistically significant age/work difference (years of service) on variable V1 between those having the least years of service (under 10 years) and those having the most years of service (over 30 years). Based on the differences arithmetic mean (mean difference), the respondents with under 10 years of service believe that the curricula include less content and activities that are worthless for

subsequent education and life than their older colleagues with over 30 years of service. A graphic presentation of arithmetic mean on variable v1 is shown in Figure 1.

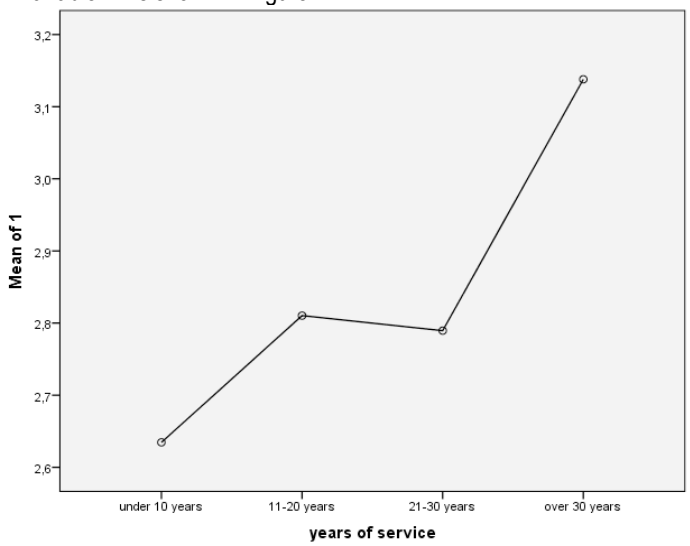

Figure 1 – Arithmetic mean: V1 (*The curricula include too much content and activities that are worthless for subsequent education and life) * years of service*

In view of the variable V16, the linear trend as in variable V1 is interrupted, since there is a statistically significant age/work difference between the respondents with 21-30 years of service and those with the most years of service (over 30 years). Those soon to retire assessed that there are more untalented pupils than their younger colleagues with 21-30 years of service (Figure 2).

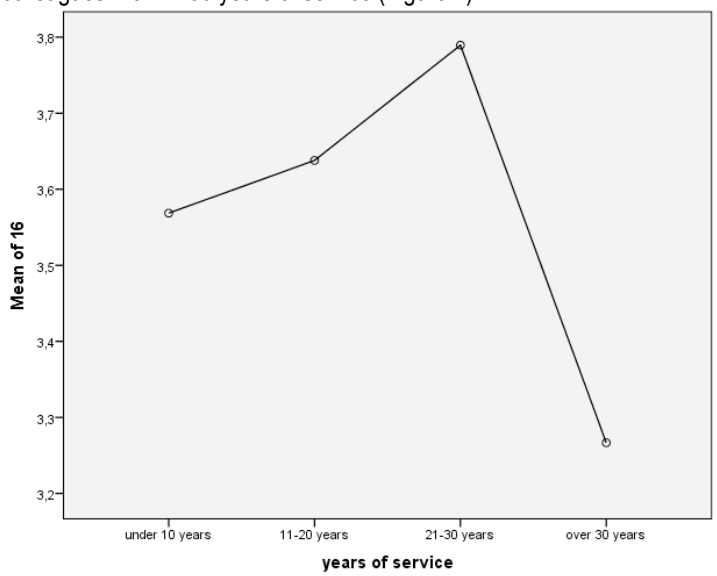

Figure 2 - Arithmetic mean: V16 (*There is no absolutely untalented pupil*) ** years of service*

Finally, the tested age/work difference on variable V31 showed that there is a statistically significant difference between teachers with the least years of service (under 10 years) and those with 21-30 years of service. The respondents with the least years of service assessed more strongly than their older colleagues (21-30 years of service) that today's pupils are used to gaining good grades without effort (Figure 3). Perhaps the reason lies in the fact that in Croatia school grades are used as the main criterion for the selection of pupils at the time of

entry into higher education, so there is great pressure on teachers from parents and pupils to give the highest grades for modest knowledge and for other outcomes of learning.

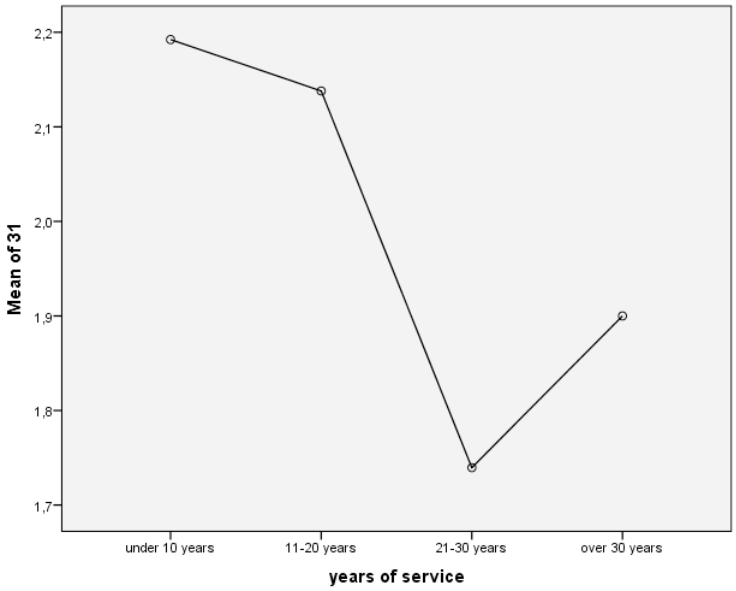

Figure 3 - Arithmetic mean **:** V31 (*Pupils today are used to receiving high grades without any effort*) ** years of service*

An increasing or declining trend of assessments on the dependent variables with regard to the tested age/work categories is not indicated from the above-mentioned statistically significant reasons.

4. Conclusion

The results of our study show that primary education teachers very clearly recognise the characteristics of constructivist didactics and modern trends in the theory of education and the theory of school. Most agree that it is important to organise classes in which pupils are more active than teachers, and that the curriculum is implemented only to the extent that pupils are really active. Most respondents hold that classical textbooks will soon be replaced by modern digital multimedia sources of knowledge. Teachers agree that all pupils should be allowed to realise their abilities to the greatest possible extent, bearing in mind that everyone has different talents (Baert, Galton, Honeth, Sivirine, Thurler, 2002). In certain variables, there is a statistically significant difference in the assessment of curricular variables in view of the age of the respondent. Teachers/respondents agree that they need further training in docimology and in the acquisition of skills relevant for work with pupils who have developmental difficulties. Most respondents agree that the status of teachers in comparison with similar professions is low, but they still readily take part in lifelong training and would not like to change their work place and to stop teaching.

It would be useful to compare these results from a sample of primary education teachers with other teachers working on the organisation of classes of pupils in lower and upper secondary levels of education.

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