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**EXCEPTIONAL CHILDREN:
EDUCATION AND TREATMENT**

Godina 2, broj 3, 2020
Volume 2, No 3, 2020
ISSN 2683-3603

INCLUSIVE EDUCATION OF CHILDREN WITH DISABILITIES IN THE ONLINE ENVIRONMENT

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Abstract

The study aims to determine the circumstances and usefulness of online learning and teaching that have been organized for students with disabilities during the COVID 19 virus pandemic and the closure of schools in Serbia and Montenegro. Online teaching in this case includes all measures taken with the aim of education and upbringing of children and students with disabilities, which were applied in the online environment, through the Internet. Education regulations mention distance education but education systems do not have elaborate procedures for implementing this form of education. During the pandemic, states have organized classes in two segments: the transmission of video lessons on national TV stations, and the preparation, production, distribution, and evaluation of assignments for students, have done by their teachers. There have been no special procedures and methods implemented for educating students with disabilities. The research on the education of children with disabilities in the online environment included parents and teachers of students with disabilities (N = 286) from Serbia and Montenegro. The respondents were surveyed electronically, using specially created questionnaires for both groups of respondents. The data were systematized and analyzed. The results show that the majority of respondents, with a significant difference between groups of teachers and parents ($p = .05$), think that online learning was not a good replacement for real learning but that in some sense it was useful for children with disabilities; also, most respondents claim that children with disabilities cannot learn online or cannot learn in that way without significant support. The level in organizing online learning for children with disabilities is visible from the results which show that teachers were in contact with students mostly indirectly, through parents to whom they sent materials for learning and practicing. Online learning for children with disabilities has yet to be developed and established as an additional form of real learning and teaching ($p = .008$). Such learning in special conditions (such as the one brought by the COVID 19 virus pandemic) can be a temporary substitution for real teaching, but with the application of specially adapted approaches and procedures that are suitable for children with disabilities. States should

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develop appropriate guidelines and establish the necessary conditions to implement the learning of children and students with disabilities in the online environment.

Keywords: children, developmental disabilities, online learning, online environment, conditions.

Introduction

Due to the pandemic of the COVID 19 virus, the countries in the region of Southeast Europe closed schools in the spring of 2020 and organized each for itself, the realization of classes for students in the online environment, i.e. distance teaching. The Education Laws of the Republic of Serbia (Law on the Fundamentals of the Education System, "Law on the Fundamentals of the Education System," 2020; "Law on Primary Education," 2019) have recently provided for the possibility of distance learning for individual students, but due to the lack of procedures for distance learning, in a state of emergency in the country teaching was organized as a hybrid of a national educational television program and the individual efforts of all teachers. At the national level, organized by the Ministry of Education, Science and Technological Development of the Republic of Serbia, videos of individual lessons were prepared for primary and secondary school students, which they could watch every day on national television channels. Materials, assignments, and exercises pupils made at home and then returned to teachers for evaluation. In exceptional cases, teachers recorded and maintained their lessons, as well as preparing assignments for students to be practiced in an online environment.

Students with disabilities in the Republic of Serbia educate according to the national curriculum, which is the basis of content for all students, but each of these students has its Individual educational plan, which adjusts the program content to his abilities and needs. In the circumstances of isolation of families and students due to the pandemic, it wasn't sought or found the possibility of adapting distance learning following the specifics that characterize the education of students of different abilities, including students with disabilities.

However, teachers who work with students with disabilities were obliged to follow the instructions of the relevant ministry and, in the absence of other resources, behaved like other teachers - sending various work materials to the parents of children with disabilities. What distinguished this procedure from the procedure towards other students was the fact that students with disabilities did not watch or listen to national classes on the national television channel since the nationally broadcast classes were based on the curriculum they followed to a different extent and content (because almost everyone was educated according to their Individual educational plans). The children themselves were thus not able to follow the program and classes on the national television station, but also not to independently practice the received assignments.

To fulfil the expectation, parents of children and pupils with disabilities played in a way teachers' roles in own homes, and were dealing with their children with practicing of received assignments, i.e. realizing activities suggested by teachers. Practically, it is

questionable how many direct contacts were there between teachers and pupils, and how much were children with disabilities educationally adequate active in a home isolation.

A similar situation was in Montenegro, as regarding distance learning of all pupils, and also regarding the online education of pupils with disabilities. In Montenegro, didn't exist any earlier developed protocol and procedures for the realization of distance learning, until the occurrence of the pandemic.

Our study aimed to determine the circumstances and usefulness of the implemented online learning for children and students with disabilities, which in this case includes all measures taken to educate children and students with disabilities during the state of emergency caused by the COVID 19 virus pandemic, i.e. during the period of conducting online classes in the two covered countries (Serbia and Montenegro).

Theoretical Framework

In the literature, online and distance learning are mentioned in different contexts. Authors Fang-Chuan Ou Yang and Wen-Chi Vivian Wu (2015), Kennedy and Levy (2009), and Lu (2008), as well as many others, talk about improving language skills using online tools. In the realization of online teaching and classes, the affective and cognitive dimension of learning as a consequence of the perception of the online presence of others and relationships with them was investigated (Russo & Benson, 2005). This is especially important for working with children with disabilities because interactions with teachers and peers have a significant impact on the stated dimensions of their learning, but also on social development (Gunawardena & Zittle, 1997) and inclusion

Since the early examples of the application of information technology for discussions, such as those given by Althaus (1997) or stating the importance of social presence in distance learning for student satisfaction (Gunawardena & Zittle, 1997), many effects and impacts of distance learning on students have been investigated. We will also mention the attitude towards programming (Wang, Hwang, Liang, & Wang, 2017), the use of social networks and forums (Chao, Lai, Liu, & Lin, 2018), the use of mobile phones in classrooms (Bartholomew & Reeve, 2018) or the use of games and game-based approaches in education as a learning tool (de Freitas, 2018). All these phenomena have their special and significant impact on the use of modern technologies with students with disabilities and should be further explored in the field of special education and rehabilitation.

As Stella and Corry (2017) emphasizes, equity and access in online education of pupils with disabilities had been examined widely earlier. But whether students with disabilities are able to maximise their agency and build for themselves a satisfying and enjoyable life using the resources of online education, it is not clear (Stella & Corry, 2017, p. 449).

An important issue of online learning of students with disabilities is the absence or very reduced socialization. Teachers, parents, and students have noted ways in which online education can uniquely support the development of social competence in students

through their ability to potentiate the strengths of individual students rather than exacerbate their weaknesses; however, as is the case for all students, it may depend on individual differences, which vary widely among students with disabilities (Shattuck et al., 2012, as cited in Stella & Corry, 2017, p. 456). Teachers, parents and students have noted ways that online education may uniquely support the development of social competence in students through its ability to emphasise individual student strengths instead of exacerbating weaknesses; however, as is true for all students, this may depend on individual differences, which vary greatly in students with disabilities (Shattuck et al., 2012, as cited in Stella & Corry, 2017, p. 456). Burci and Costa (2018) also believe that online education can support the educational inclusion of students with disabilities, emphasizing that the challenges in this area relate to teacher's mediation, training, accessibility of learning virtual environments and the control of technologies by teachers and students.

On the other hand, artificial by their nature, online and distant communication, as well as learning, cannot provide all the benefits and benefits that personal contact and interactions with peers and teachers provide to children and students with disabilities. We should also mention the importance of personal and direct, direct support given to the mastering of skills, understanding of phenomena and concepts, and performing student activities by teachers and personal assistants of students during the learning process, which is lacking in the online environment.

Important for understanding the diversity of needs of students with disabilities in the online educational environment are the findings of studies by Russian authors who have experimentally proven that "that application of active training methods in the educational process increases educational motivation, makes active informative activity and improves interpersonal relations, that positively influence the process of professional adaptation in modern society "of students with disabilities (Naumova, Vytovtova, Mitiukov, & Zulfugarzade, 2017, p. 565). These authors developed a model of integrated educational methods of training matching the features of disabled students, which is also applicable to younger students, although it was created for older students.

In any case, there are differences between online learning, online education or teaching, distance learning, and home teaching. All of these forms of learning, teaching, and education can or must use an online environment. Yet each has its scope and meaning. For this research, we have defined only the last of the following terms: online education and learning, online teaching, distance education, and learning, home education, education in the online environment.

Education in the online environment, in the context of the educational needs of students with disabilities, includes educational measures, procedures, methods, and techniques applied over the Internet, through educational means of modern technology (computer, mobile phone, tablet, etc.) that use this connection, and whose purpose is to improve the knowledge, skills, abilities, and involvement of students. We emphasize that the use of television and radio broadcasts, as well as telephone conversations and correspondence methods (classic mail), belongs to the use of distance learning techniques, which are not necessarily e-learning techniques, so these techniques or only some of them are not always part of education in an online environment.

Method

In the context of the research, we considered "the online environment" to be all the actions that schools, ie teachers have been carried out towards their students with disabilities, and which have included the use of the Internet.

The research entitled "Online education of children and students with disabilities" was conducted from 9 to 15 May 2020 in the Republic of Serbia and in Montenegro. A total of 286 participants participated in the research, of which 105 parents of children and students with disabilities and 181 teachers who work with students with disabilities.

For both groups of participants (parents and teachers) were created an online questionnaire with ten questions for parents, and 13 questions for teachers. The questionnaires were created in the Google Questionnaires application and were distributed to respondents via personal email addresses or electronic social networks. The anonymous answers of the respondents were automatically collected in tables with an overview of the collected data, ie variables.

The questions on the questionnaires were the same, except that teachers were additionally asked for their opinion on cooperation with colleagues and the scope of student coverage during the application of education in the online environment. The questions were of the closed type, except for one question which was of the open type. The collected data are systematized and statistically processed by the program for statistical processing of research data. The Independent-Samples Mann-Whitney U Test was applied, as well as frequency measures.

Results

An overview of the key research results is presented in the tables and figures.

Table 1

Hypothesis Test Summary by Independent-Samples Mann-Whitney U Test

	Null Hypothesis	Sig.	Decision
1	The distribution of answers: <i>Children with disabilities are able for online learning</i> , is the same across categories of participants.	.096	Retained.
2	The distribution of answers: <i>Online learning was good replacement for real classes</i> , is the same across categories of participants.	.002	Rejected.
3	The distribution of answers: <i>Online learning was useful</i> , is the same across categories of Participants.	.029	Rejected.

4	The distribution of <i>Attitudes on online learning of children with disabilities</i> is the same across categories of Participants.	.812	Retained.
5	The distribution of <i>Contacts with teachers</i> is the same across categories of Participants.	.008	Rejected.

Asymptotic significances are displayed. The significance level is .05.

Table 1 shows *Hypothesis Test Summary* which indicates retained and rejected the null hypothesis of the research. Test results caused the rejection of three null hypotheses; there are statistically significant differences between answers of two participants groups to these three questions/statements: 1) online learning was a good replacement for real classes, 2) online learning was of use for children with disabilities, and 3) what kind of contacts had teachers with pupils.

Figure 1

The Ability of Children with Disabilities for Online Learning

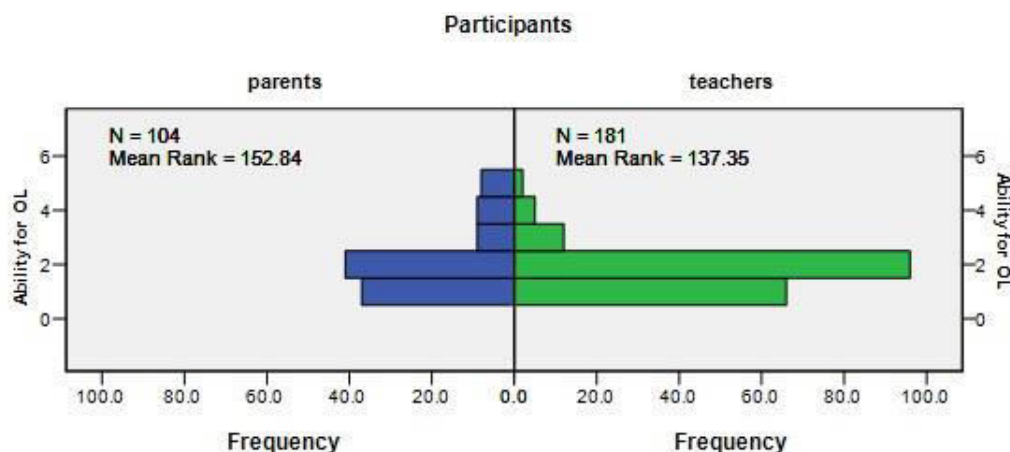


Table 2

Distribution of Answers about the Ability of Children with Disabilities for Online Learning

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	1 Can't learn online	103	36.0	36.1	36.1
	2 Need significant support	137	47.9	48.1	84.2
	3 Need support	21	7.3	7.4	91.6
	4 Can alone with a little support	14	4.9	4.9	96.5
	5 Can alone	10	3.5	3.5	100.0
	Total	285	99.7	100.0	
Missing	System	1	.3		
Total		286	100.0		

Figure 1 and Table 2 show the answers about the ability of children with disabilities for online learning and the distribution. It can be seen most of the participants (48.1%) answers that children with disabilities can use online learning but need significant support in that; also a lot of respondents declare children with disabilities can't learn online (36.1%).

Figure 2

An Online Learning as a Good Replacement for Real Classes

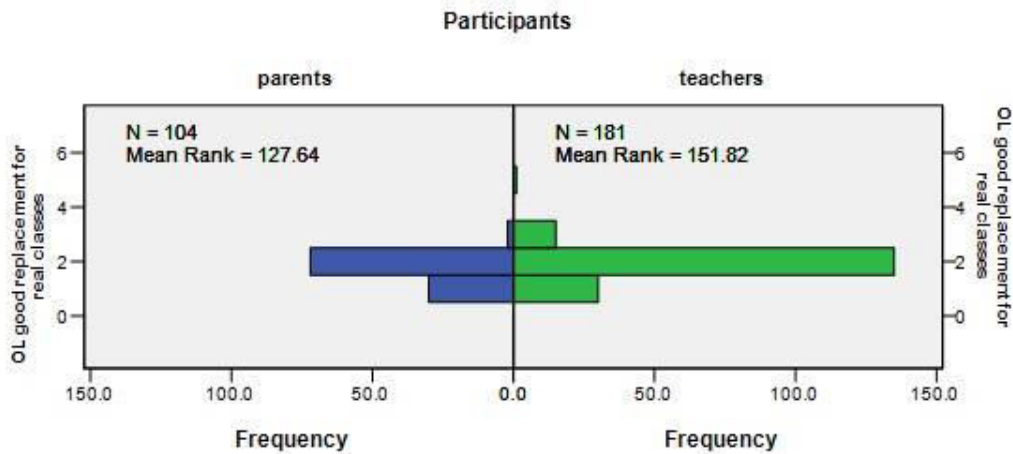


Table 3

Distribution of Answers about if Online Learning is a Good Replacement for Real Classes

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	Yes	60	21.0	21.1	21.1
	No	207	72.4	72.6	93.7
	Other	18	6.3	6.3	100.0
	Total	285	99.7	100.0	
Missing	System	1	.3		
Total		286	100.0		

Figure 2 and Table 3 show the answers about if online learning is a good replacement for real classes for children with disabilities, and the distribution of answers. It can be seen, with the significant statistical difference in distribution of answers between groups of participants, that the large major of respondents values online learning not to be a good replacement for real classes (72.6%) for children with disabilities.

Figure 3

Usefulness of Online Learning for Children with Disabilities

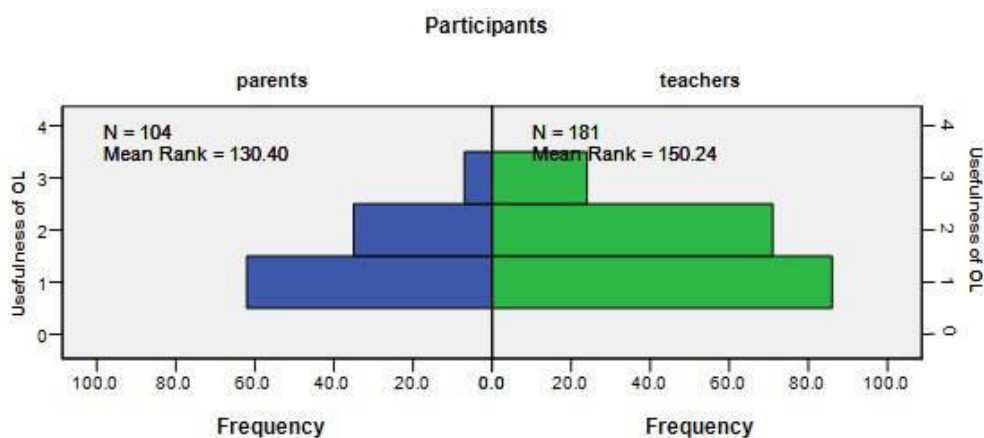


Table 4

Distribution of Answers about the Usefulness of Online Learning for Children with Disabilities

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	Yes	148	51.7	51.9	51.9
	No	106	37.1	37.2	89.1
	Partially	31	10.8	10.9	100.0
	Total	285	99.7	100.0	
Missing	System	1	.3		
Total		286	100.0		

Figure 3 and Table 4 show the answers about the usefulness of online learning for children with disabilities, and the distribution of answers. It can be seen, with the significant statistical difference between groups of participants, that over half of them (51.9%) think online learning was been useful for children with disabilities, but 37.2% respondents think it wasn't been useful.

Figure 4

Attitudes on Online Learning of Children with Disabilities

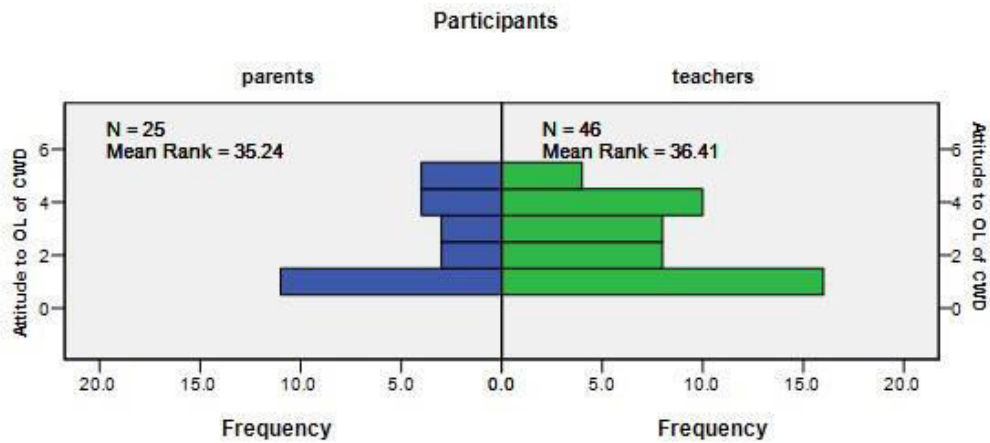


Table 5

Distribution of Answers about the Online Learning of Children with Disabilities

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	1 Can't be implemented	27	9.4	38.0	38.0
	2 Should be implemented by experts	11	3.8	15.5	53.5
	3 Direct work can't be replaced with online	11	3.8	15.5	69.0
	4 Special attitude and conditions needed	14	4.9	19.7	88.7
	5 Good experience	8	2.8	11.3	100.0
	Total	71	24.8	100.0	
Missing	System	1	.3		
	Total	215	75.2		
Total		286	100.0		

As can be seen from Figure 4 and Table 5 (answers about the online learning of children with disabilities, and the distribution of answers), 24.8% of all participants have answered to this open question. Most of the answers (38.0%) indicate that online learning for children with disabilities can't be implemented, and some of the respondents (19.7%) highlighted the need for special attitudes and conditions needed to fulfill for reaching success in online learning of children with disabilities.

Figure 5
Teachers' Contacts with Pupils

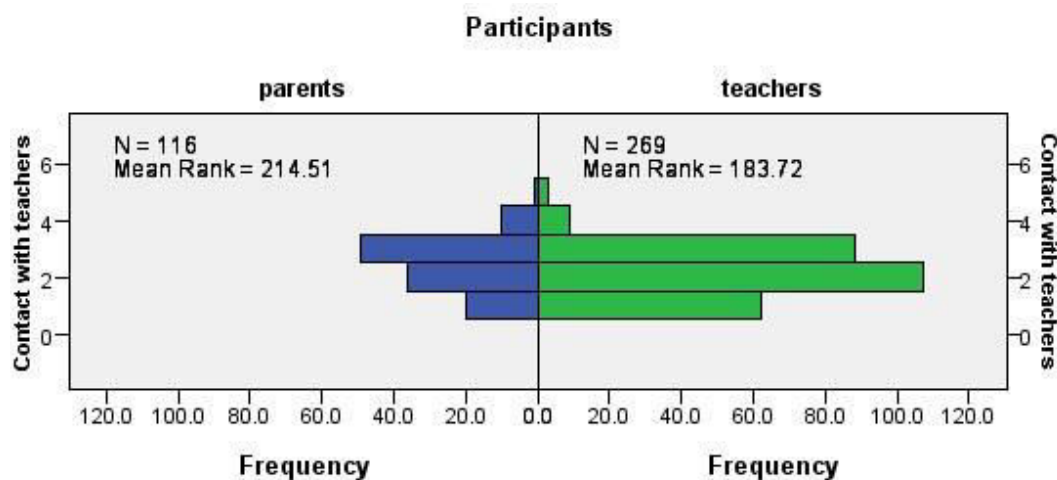


Table 6
Independent-Samples Mann-Whitney U Test for Variable "Teachers' Contacts with Pupils"

Total N	385
Mann-Whitney U	18,097.500
Standard Error	947.236
Standardized Test Statistic	2.635
Asymptotic sig. (2-sided test)	.008

Figure 5 and Table 6 show the results of the Mann-Whitney U Test for variable *Contacts with Teachers*, with the spreading of mean ranks for groups. As can be seen, there is a statistically significant difference in the distribution of answers about contacts of teachers with pupils between participant groups: teachers (Md=2, n=269) and parents (Md=3, n=114), $U=18097.5$, $z=2.64$, $p=.008$, $r=013$. Significance is of small impact by Cohen's (1988) criteria. But also, it can be seen that parents report of the most contacts realized across them, while teachers report the most contacts realized across working materials. Anyway, there were an insufficient number of direct contacts between teachers and pupils.

Discussion

Possibility of online education of children and students with disabilities. From the collected data, it can be seen that parents are somewhat more optimistic about the necessary support for their children in online education because more of them than teachers answer that children need less support and that they can be educated online with little support and completely independently. Respondents from Montenegro answer somewhat differently. It is noticeable that respondents from Montenegro, in smaller numbers express disbelief in the possibility of educating children with disabilities in the

online environment than respondents from Serbia, and in the larger number, they stress the possible online education with significant support for children with disabilities.

Is online learning a good replacement for real classes? 70% and more of the respondents believe that online learning has not replaced real classes well. Apart from the fact that online learning for students with disabilities was not organized as such in both countries (it hasn't existed as a special type of learning), there is a clear difference in the assessments of parents and teachers where teachers are significantly more critical to online learning which have been organized than to actual classes.

The usefulness of online learning. An almost equal number (more than half) of surveyed parents and teachers believe that such classes were been useful, while slightly more than a third of parents and teachers said that they believe online classes weren't been useful for students with disabilities. Parents find online learning more useful than teachers. The answers to this question indicate that the maintenance of some form of online teaching for children and students with disabilities could be and is useful by itself, as a kind of substitute to direct teaching (that was missing in these circumstances), and as a useful form of learning for maintenance working conditions, nurturing work obligations and keep the daily rhythm of work for children with disabilities.

Contacts of teachers with pupils. Parents report of the most contacts realized across them, while teachers report the most contacts realized across working materials. Anyway, there were an insufficient number of direct contacts between teachers and pupils.

By a survey conducted by the Ministry of Education, Science and Technological Development in cooperation with UNICEF in May 2020, and according to data collected from schools, points out that 93% of students in schools for the education of students with disabilities were "covered by the implementation distance teaching" (Ministry of Education, Science and Technological Development of the Republic of Serbia, 2020c). The source further states that distance learning refers to "watching TV lessons, using online learning platforms and alternative forms of distance learning" (ibidem, 2020c).

Our research showed that teachers managed to establish communication and contact with 0-50% of their students - 22% of teachers in Serbia and 25% of teachers in Montenegro, with 60-80% of their students - 28.4% of teachers in Serbia and 31.3% of teachers in Montenegro, and with 90-10% of their students - 49.3% of teachers in Serbia and 43.7% of teachers in Montenegro. These results differ significantly from those given by schools to the Ministry of Education in Serbia. It may be a matter of interpretation: if schools were asked how many students the teachers addressed, that number is certainly high because all teachers were obliged to address the parents of students with disabilities. But whether that contact was made, in what way and whether it had an educational character, the results of our research and the answers of the respondents (both teachers and parents) to all questions testify to that. The Ministry instructed to use available online tools and platforms for the development of specially adapted materials for students who "need a special structured individualized approach to work" according to individual educational plans 1, 2 and 3 (Ministry of education, science and technological development of the Republic of Serbia, 2020b). Teachers were instructed to prepare content, a "learning guide" and to agree on how to obtain feedback for "monitoring

progress and providing additional support” (ibidem, 2020b). The mentioned "content and instructions for learning" serve to train parents on how to teach their children, which is absurd in the case of children with disabilities. The development of special materials for teaching children with disabilities (and not the implementation of teaching and learning with them in the online environment) was the first recommendation of the Ministry when introduced a state of emergency and suspension of schools (Ministry of education, science, and technological development of the Republic of Serbia, 2020a). These materials were to be made available to students in agreement with the parents. The Ministry did not have a vision that teachers should have direct contacts and train and teach children with disabilities in an adapted way.

Conclusions

During the COVID 19 virus pandemic and the temporary closure of schools, it was organized the so-called online teaching which consisted of two segments: 1) broadcasting TV lessons according to the national program (according to the contents provided for all students) and 2) creating and delivering learning materials to students from their teachers, who later received back and evaluated the materials/tasks. Exceptionally, where it was possible, online classes were held. Classes organized in this way represented classes at home, with online mentoring or teacher support in various forms. For students with developmental disabilities and disabilities, only home classes were realized, which were conducted by parents. In this learning, materials were used that the parents received from the special education teacher and which were aimed at practicing previously acquired knowledge and skills, because the children and students did not have appropriate learning classes. Unnecessarily, there was a double, absurd overload of teachers and parents.

Online learning of children with disabilities can be applied with significant support to students, while with some students it is not applicable in any form because it excludes much-needed personal contact between students and teachers and the usual school routine. The online learning applied during the pandemic was not well organized and did not replace real teaching well; the teachers were in indirect contact with the students (mostly across parents and working materials), but it was a useful experience and challenge in some way.

It is necessary to raise the level of awareness and information of all actors in the education and upbringing of children and students with disabilities about the educational needs of children and students, as well as the capacities, purposes, and possibilities of applying online tools and instruments in their education.

It is necessary to establish a plan and rules for such work on a uniform basis and at the state level. The quality of such planned and organized work will certainly be better, but only if it is based on the application of the doctrine of special education as a science that professionally and professionally ensures the satisfaction of needs and establishing conditions for quality and fulfilled life in the community for all persons with disabilities based on equality.

As there have been no similar situations at the global level so far, but only locally, it is necessary to collect data and research experiences in the education of children with disabilities in the online environment in previous crises. Also, it is necessary to develop a model of learning, mastering life skills, and inclusion of children with disabilities that will be able to be implemented in the online environment, which has not been achieved so far.

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