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CHAPTER 26

TEACHING CHALLENGES IN TIMES OF THE COVID-19 PANDEMIC

Abstract: Changes that take place globally are reflected in the education system that should follow, and sometimes even antecede them. However, this is not always the case. Changes in the education system are often very slow and unable to follow global trends. 2006 was an important year in The Republic of Croatia when significant changes in the primary school's curriculum took place, and when goals and students' accomplishments for every subject were defined in the Catalogue of Knowledge (2005). The subject matter of some subjects was reduced so that, what was considered unnecessary, was removed. Despite that, Croatian students achieve excellent results at international competitions, such as testing reading competency (PIRLS 2021; PISA 2018), having at the same time rather negative attitudes towards school and school subjects, and not just the core subjects but also subjects like Music and Art. That clearly indicated that there was a need for additional changes which were started by preparing the project 'School for life', the experimental implementation of which ends with this school year of 2019/2020. The frontal implementation of the project in all the primary school grades starts in the next school year. The school subject's curricula have been changed considerably, but it remains to be seen to what extent this will change students' attitudes. The current situation of COVID-19 pandemic presents new challenges and tasks for the education system, one of which is online education. Hence, the goal of this research is

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to examine attitudes of students towards the quality of online classes, their positive and negative aspects and the maturity of participants in their realisation. The research conducted in two primary schools, the experimental and the control one. As we expected, online education changed attitudes towards learning and increased the awareness of the importance of teachers as mediators of knowledge and skills.

Keywords: online teaching, Croatian educational system, distance teaching, number of hours in learning, primary school students

1. INTRODUCTION

The year of 2020 will certainly be remembered in the history of mankind as the year in which the virus, professionally named SARS-CoV-2, changed the appearance of the world, people's behavior and their actions. We are talking about changes that did not affect one or only a few countries but encompassed the entire world and affected different spheres of human life in different ways. Given that it is a global pandemic, apart from the fact that the focus is on physical human health, the changes brought about by the situation "caused by the virus" are reflected in all areas of human life, including education. The economic consequences of the global pandemic are already visible, but unfortunately it is likely to be even more visible. Apart from the economic consequences, the most feared are the consequences that will be visible in the impaired mental health of people, especially children and young people who are just forming as personalities, and for this development, among other things, they also need social contacts, which are currently limited or even completely blocked. All this is a great challenge for the entire educational system that works with these vulnerable groups.

In the Croatian education system, a few years ago, significant changes in the contents and methods of teaching began, which gave rise to the Curriculum of teaching subjects, which were adopted at the end of 2018 and the beginning of 2019 for all elementary school and most of the secondary school subjects. One of the biggest changes is precisely the more active digitization within subjects and the encouragement of the use of information and communication technology in order to make teaching as close and interesting as possible to the students, and so that the environment in which they grow up with more "screens" and at school proves to be a good way of learning and teaching, or to critically observe the content that these same "screens" offer them. The results of external evaluations conducted in Croatian primary and secondary schools show interesting results, so, for example, Croatian students have well-developed reading strategies, but their attitude towards reading is not very positive. Likewise, research (PIRLS 2021) shows that reading competence will be influenced by the number of years a child spends in kindergarten (minimum three), the number of books he is surrounded by in his family, the parents' attitude to-

wards reading, but also computer skills. Even those students who are more computer literate will have better reading skills and a more positive attitude towards reading. Research conducted in Croatian schools at the beginning of the 21st century shows that students generally have a negative attitude towards school, especially towards the subject Croatian language and Mathematics. They are mostly at the bottom of the list of precious objects (Miljević-Ričički et al. 2000; Pavličević-Franić and Aladrović Slovaček 2011). Other studies, on the other hand, say that despite technology and its achievements, the functional literacy of pupils and students is getting worse, i.e. even students who are studying to be future teachers are still better in theoretical knowledge of, for example, language facts, but in their practical application in a concrete situation (Aladrović Slovaček and Čosić 2018). Precisely because of all of the above, the challenge of teaching in an exclusively digital, i.e. online form, was even greater. Following the above, the aim of this paper is to present a picture of the Croatian education system at the time of the outbreak of the coronavirus pandemic in the Republic of Croatia, as well as students' views on the implementation of online classes during the last three months of the 2019/2020 academic year.

2. THE CROATIAN EDUCATION SYSTEM DURING THE CORONAVIRUS PANDEMIC

In March 2020, the Croatian education system found itself in new and unforeseen circumstances, and almost everything changed overnight. Events that marked the second semester and the end of the 2019/2020 school year. can be divided into several key moments:

1. Start of distance learning on March 16, 2020.
2. Start of evaluation according to the Instructions for evaluation and assessment during distance learning (April 3, 2020) based on the Decision on the adoption of Instructions for evaluation and assessment during distance learning of the Ministry of Education on April 2, 2020.
3. Return of class students to school (May, 2020).
4. Decision that the students of the subject course finish the academic year with distance learning.
5. Action plan for distance learning in the 2020/2021 school year.

The Ministry of Science and Education makes its decisions, recommendations and instructions based on the decisions of the Government of the Republic of Croatia, the recommendations and instructions of the Ministry of Health, the Croatian Institute of Public Health and the National Headquarters of Civil Protection, which make their decisions based on scientific knowledge about the disease itself and on the basis of the number of patients in Republic of Croatia. In addition to the Ministry of Science and Education, Carnet also provides technical support to schools. With

the aim of protecting the population from infectious diseases, and based on the *Decision of the Minister of Health on the declaration of the epidemic of the disease COVID-19 caused by the SARS-CoV-2 virus* from March 11, 2020, the Government of the Republic of Croatia, in a telephone session held on March 13, 2020. Very soon passed the *Decision on the suspension of teaching in universities, secondary and primary schools*, as well as the regular work of preschool education institutions and the establishment of distance learning. With this Decision, teaching and work has been suspended, with the possibility of accepting children of kindergarten age and class classes (Article 3). The Ministry of Science and Education, headed by Minister Blaženka Divjak, is tasked with establishing a distance learning system. The decision began to be implemented on Monday, March 16, 2020. The exception is the schools of the County of Istria, which, due to the appearance of those infected with the coronavirus in the County of Istria, will not have classes at school as of Friday, March 13, 2020, but will start conducting classes remotely and follow the organized classes of Schools on the Third via the television channel HRT 3. Other schools joined the form of distance learning on Wednesday, March 18, 2020. During that first week of distance learning, a working method was agreed upon that includes all participants in the educational process: principals, teachers, professional associates, parents, children. According to the Guidelines for primary and secondary schools regarding the organization of distance learning with the help of information and communication technology, schools are directed to preparatory activities related to the organization of distance learning with the help of information technology in order to ensure students and teachers learning and teaching in the event of a possible change in the security situation. the distance. Schools establish communication channels in order to ensure the flow of accurate and complete information between the Ministry of Education and Culture and school principals, between school principals and educational staff, and between schools and students and parents. Principals in schools organize virtual assemblies in which all teachers and professional associates are included. Teachers, and above all class teachers, organize virtual classes for each class in the school. The subject teaching must necessarily be included in the virtual class, and the classroom teaching has the opportunity to connect with parents through the communication channels that suit them best (e-mail, WhatsApp, Viber, phone, virtual classroom, website...). The school is obliged to publish all important information on its website in a timely manner: class schedule, work organization and the like. Then, due to significantly changed circumstances with regard to the spread of the coronavirus, on March 19, 2020, the Ministry issued a Decision on the amendment of the Decision on the suspension of teaching in universities, secondary and primary schools and the regular work of preschool education institutions and the establishment of distance learning - primary and secondary schools. Each school had the opportunity to organize the way of work that suited them best. Teachers published teaching materials and work instructions daily, and students were required to access their virtual classrooms. If the student did not participate in the work in the virtual

classroom, the parent had to tell the student. The previously mentioned guidelines were used in the work. On May 8, 2020, the change in the epidemiological picture, i.e., its improvement, was followed by the Decision on the method of conducting classes in primary and secondary schools as well as in universities and the regular work of preschool education institutions, and accordingly for students from 1 to 4th grade classes are organized according to a mixed model until the end of the school year, and distance classes are still organized for students from 5th to 8th grades until the end of the school year. Epidemiological measures changed the organization of work in schools, and the students, who returned to school in May, had to adapt to new ways of working. In order for class students to be able to have classes at school from May 29, 2020, schools had to be prepared according to the instructions of the Croatian Institute of Public Health (Instructions for the prevention and suppression of the COVID-19 epidemic related to the work of preschool institutions and class classes from 1st up to 4th grades and special class departments and work with children with disabilities who have a teaching assistant), published on May 20, 2020. The Instructions prescribe physical distancing, hand hygiene, hand disinfection, organization of work with children (with special emphasis on not mixing groups and maintaining distance between students), arrival and departure from school, organization of work of employees who belong to risk groups with regard to the possibility of contracting the coronavirus, and the organization of the work of institutions. It is prescribed to measure the temperature of employees and students, monitor the appearance of symptoms of illness, wear masks in institutions, and clean the school premises. The schools failed to fully realize everything planned in the Annual Plan and Program and the School Curriculum because the epidemiological measures determined the possibilities. It was not possible to implement extracurricular classes, and a special difficulty was caused by already organized multi-day extracurricular classes because the parents paid the money before March, when the schools were closed and the circumstances changed. Part of that teaching will be attempted in the 2020/2021 school year. whose beginning is marked by the coronavirus. On August 24, 2020, the Croatian Institute of Public Health issued Instructions for the prevention and suppression of the COVID-19 epidemic related to the work of preschool institutions, primary and secondary schools in the 2020/2021 school year. which prescribes the measures that schools must adhere to in order to prevent the spread of the coronavirus. The main measures are non-mixing of groups, physical distance and hygiene and disinfection. On September 3, 2020, the Government adopted a Decision on the way of conducting classes in primary and secondary schools, as well as in universities and performing work in preschool education institutions in the conditions of the COVID-19 epidemic. Classes have started live in most schools, and individual cases of postponement and self-isolation are regulated by the Epidemiological Services of counties and cities. Due to the non-mixing of groups, the organization of extracurricular activities and additional classes is difficult. Students do not change classes for the needs of classroom teaching, but teachers come to the class

they are teaching. Students may not share teaching materials, teaching aids. If the school works in two shifts, the area must be cleaned between shifts. During the day, students must be taken out of the school for at least 10 minutes. Due to the ban on exchanging items and disinfecting all things that are touched by more than one person, the coronavirus in the new school year is redirecting and preventing the implementation of the activities brought by the School for Life, started in 2018/2019. year, based on the mutual cooperation of students through a lot of practical group work, with various teaching aids, through conducting experiments and constant social and physical connection. learning is the inspiration of much of the innovation, both pedagogically and technologically, in higher education.

3. RESEARCH

3.1. The sample, objectives and research hypotheses

466 upper elementary school students (N = 466) participated in the research, of which 217 were students of the Catholic elementary school in Požega (N = 217) and 249 were students of Dragutin Domjanić, Sveti Ivan Zelina (N = 249). No demographic data was collected about the students, only their attitudes. The students of the Catholic elementary school represented the control group, while the students of the Dragutin Domjanić elementary school represented the experimental group, since in that school from 2018/2019 year began to experimentally implement the so-called The School for Life is one of about seventy schools in the Republic of Croatia that started with this experiment, which will be carried out head-on in all elementary school classes from the next school year.

3.2. Research objectives and hypotheses

In accordance with the topic of the research, the basic goal was to examine students' attitudes about distance learning, and in accordance with the goal, the following research problems were set:

- Examine students' attitudes about the quality of distance teaching.
- Examine the advantages and disadvantages of distance learning.
- Examine the differences with regard to the beginning (April) and end (June) of online classes and the differences between the experimental and control schools.

In accordance with the basic objective of the research and the defined problems, the following hypotheses were set:

H1 - It is expected that students will be more satisfied with distance learning the longer it is carried out and the more successful the teachers themselves are in its implementation. However, it is expected that they will be mostly, not completely,

satisfied with distance learning. They are also expected to spend more hours in distance learning over time.

H2 - It is expected that the students of the experimental school will be more satisfied due to the implementation of the School for Life program and that their attitude towards the school and the teaching material will be more positive.

H3 - It is expected that the students will be more satisfied with the teaching as time goes on because over time the teachers will be able to prepare better, but the students themselves will get used to a certain way of working and the demands of individual teachers.

H4 - Students are expected to spend more than 4 hours a day in distance learning because the Ministry's recommendation is 6 hours a day, including writing homework and monitoring classes.

3.3. Instruments

For the purposes of the research, 2 online questionnaires were created in the "Google Forms" tool and were distributed electronically in two different phases of the online classes, where data collection lasted for five days. Participation in the research was voluntary and anonymous. The questionnaires consisted of a short instruction at the beginning and 12 questions, open and closed, to which respondents could offer one or more answers or determine the level of agreement with the stated statements on a Likert scale. The questions were divided into several categories that included satisfaction with online teaching, evaluation and assessment; comparison with contact teaching; clarity and ways of presenting teaching content, and the emotional state of students.

3.4. Methodology

The research was conducted in two different periods, in the month of April, one month after distance learning started, and in June, at the end of the academic year. The research was conducted with two online questionnaires, the results of which were processed in the SPSS program for statistics using the methods of non-parametric statistics. Namely, the Smirnov Kolmogorov test ($p < 0.05$) showed that the data is not normally distributed, and non-parametric statistical tests, as well as descriptive statistical measures, were used for the analysis.

3.5. The results

The first goal of the research was to examine satisfaction with the quality of distance teaching. The students were asked several questions related to the lesson itself and its segments, and they evaluated their satisfaction on different evaluation

scales. Table 1 shows the attitudes of the students through arithmetic means (AS), median (M) and with an emphasis on the evaluation scale.

Most of the students are quite satisfied with distance learning, they consider it as demanding as contact teaching. Although they were expected to spend five or more hours in class, most of them spent 3-4 hours in class. They were given enough assignments, that is, as much as they needed, and the material was clearly presented to them. The amount of material was optimal from their point of view, and the students were not really satisfied with the evaluation, nor with the written exams, which they considered less demanding (Table 1).

Table 1: Presentation of satisfaction with different segments of distance learning

I am very satisfied with distance learning	AS = 3,65; M = 4 (I am pretty satisfied); scale 1-5
Demand for distance learning	AS = 2,15; M = 2 (equally demanding); scale 1-3
Number of hours in learning	AS = 2,88; M = 3 (3-4 hours); scale 1-4
Homework	AS = 1,57; M = 2 (as many as needed); scale 1-3
Teaching content (clarity)	AS = 2,68; M = 3 (clear); scale 1-3
Amount of material	AS = 1,8; M = 2 (optimal); scale 1-3
Satisfaction with evaluation	AS = 2,38; M = 2 (average); scale 1-3
Written exams	AS = 1,74; M = 1 (less demanding); scale 1-3

As shown in the first graph, the majority of students are satisfied with distance learning (56.2%) or very satisfied (20%), while only 9% of students are not at all satisfied with distance learning (Chart 1)

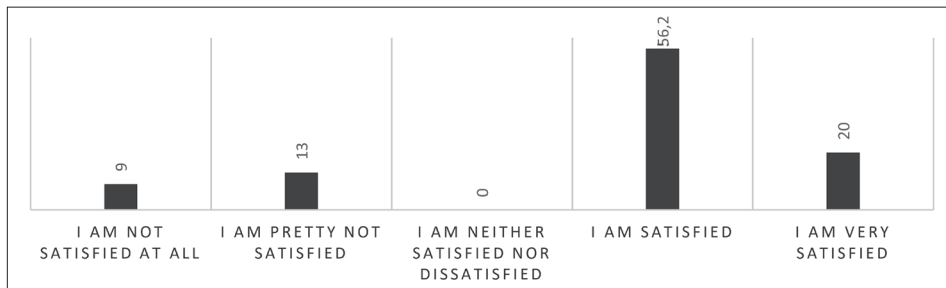


Chart 1. Students' attitudes about distance learning

In relation to the “normal” school, students to the greatest extent (41.2%) think that distance learning is equally demanding, while 36.8% of students think that it is more demanding, and 21% of students think that it is less demanding (Chart 2).

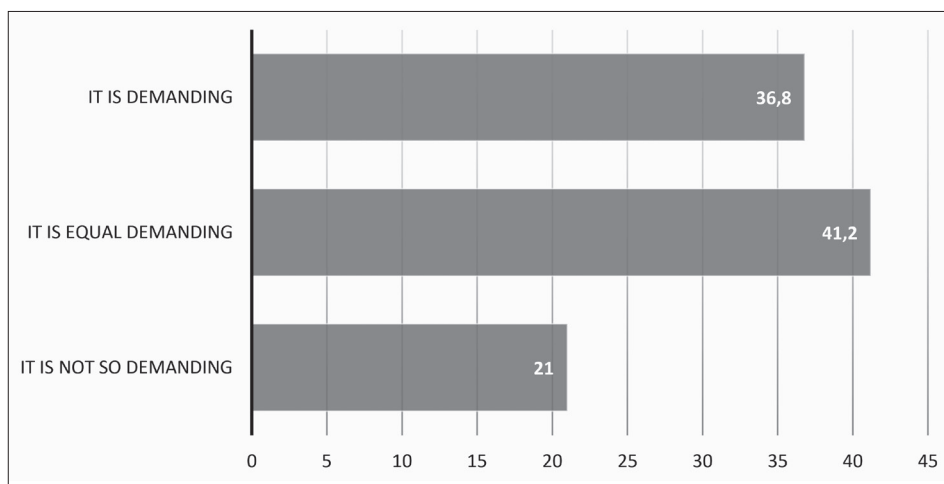


Chart 2. Students' attitudes about the demands of distance learning compared to contact classes

Although in the subject lesson it is foreseen that students of higher grades spend more than 5 teaching hours a day, the majority of students still spent a little less, i.e. 3-4 hours (35.4%). 31% of students spent more than 4 hours in class, 22.3% of students spent 2-3 hours, while as many as 10% of students spent less than 2 hours in class (Chart 3).

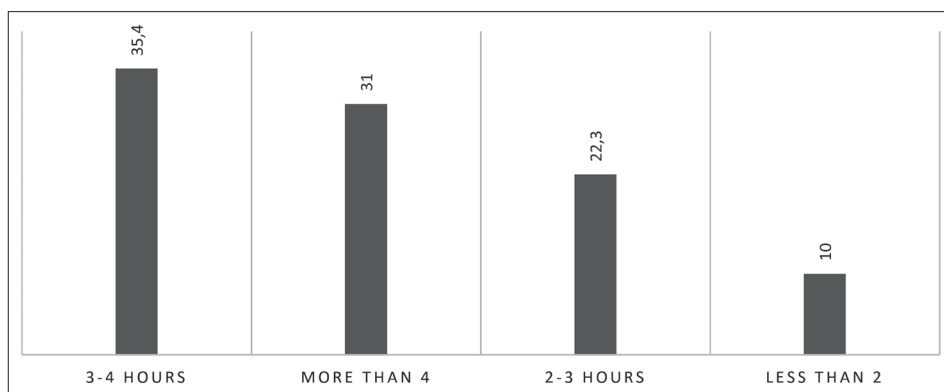


Chart 3. Number of hours students spent in classes during the day

We also asked the students which subjects were the most demanding for them. Most students think that it is Mathematics, immediately after Mathematics is Chemistry, followed by Geography and History. In the middle of the ranking are the Croatian language, as well as foreign languages: English and German. However,

some students also think that not a single subject was too demanding, some could not decide, and two students think that all subjects are quite demanding. Such answers were expected because the mentioned subjects (Mathematics, Physics and Chemistry) are specific due to the abstract nature of the content, and this is where the students most lack direct communication through which they can get additional explanations in case of difficulties in solving some tasks. Furthermore, students point out that it is easy for them to follow subjects that are concrete, easy to understand and in which “teachers do not need to explain much because everything is written in the textbook” (history, geography, religious education, Croatian language...) (Chart 4). It is also evident that it is easier for them to follow subjects that they can learn through educational materials (short video presentations, interesting quizzes, graphs, mind maps, etc.).

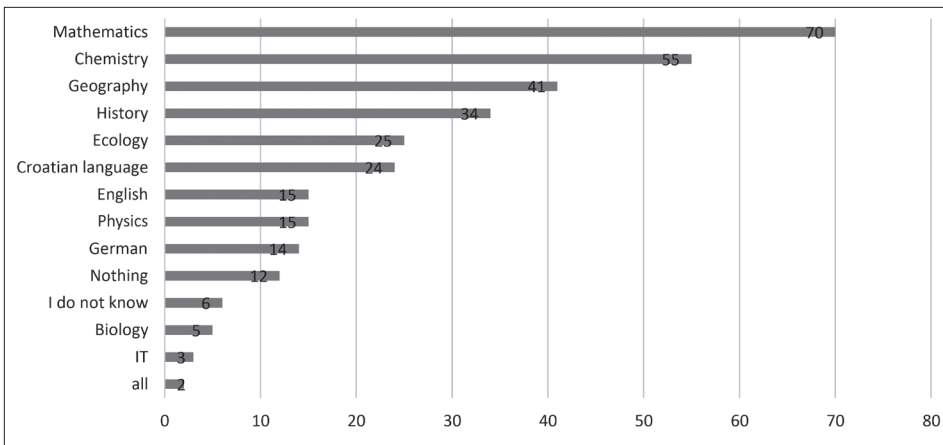


Chart 4. Presentation of students’ attitudes about the subject/subjects with which they had the greatest difficulty

The above answers point to the acceptance of the third hypothesis, which assumes that students will be satisfied with distance learning, but also that there will be certain difficulties in establishing this process, and that student satisfaction will increase as time goes on, that is, that teachers will eventually manage to find modes for their subjects, the students will learn about them and the teaching will work better.

The third goal of the research was to examine the differences with regard to the beginning (April) and end (June) of online classes and the differences between the experimental and control schools. According to the data (comparison of arithmetic means), it is evident that similar results were obtained in almost all categories in both tests. Distance learning included various ways of communicating between students and teachers. In most cases, there was one primary way of delivering the material and a secondary way of communicating between the participants. The

teachers most often addressed the students in writing, with a PPT presentation or a video recording, through an audio recording, through a video conference call, and the students got used to them and were satisfied with them (because the teachers explain in detail what they need to do, give them clear tasks, prepare links on which they can practice and repeat and are always available for any questions).

Based on the results, it is evident that there are differences between the control and experimental schools. Significant differences are visible in the satisfaction with distance learning, the number of hours spent in online classes and the attitude towards written exams. The students of the experimental school showed significantly less satisfaction with school, but in this form both groups perceive it to be approximately equally demanding. The students of the experimental school spent fewer hours on average in distance learning, and this difference is statistically significant. Equally, the students of the experimental school had a little less homework and the content was presented to them a little more clearly, but this difference is not statistically significant. The students of the experimental school also believe that the written exams in distance learning were significantly simpler, as well as the amount of material to which the students were exposed (Chart 5). As expected, part of the second hypothesis, in which it is expected that the students of the experimental school will be more satisfied due to the implementation of the School for Life (Škola za život)³ that their attitude towards the school will be more positive, was not confirmed. However, the second part of the hypothesis, in which the students of the experimental school are expected to be more positive towards the teaching material, was confirmed.

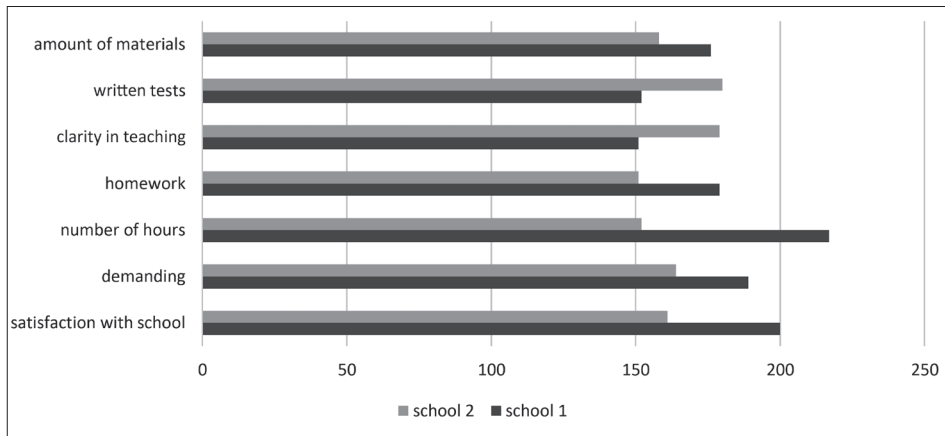


Chart 5. Comparison of control (school 1) and experimental groups (school 2) in students' attitudes

³ Program School for life started in 2016 in the first grade of primary school as an experimental program and preparing for the implementation of Curriculum in all grades in primary schools and grammar school.

4. DISCUSSION AND CONCLUSION

Distance learning or online learning has become the only way to transmit educational content during the coronavirus pandemic, not only in the Republic of Croatia, but throughout the world. Even though this form of teaching has been around for a long time as a way of teaching and learning new content, it still experienced its test right now. It seemed as if everything that could not be maintained remotely suddenly became possible. Suddenly distance work in all segments became possible and desirable with small technical difficulties that appeared with the increased number of users. Although there are different ideas about the benefits of this form of teaching, that is, about possible negative consequences, as well as weaker mastery of teaching content that is presented “online”. Nevertheless, the research, which was carried out for the purpose of implementing this work, showed that students are satisfied with this form of teaching, that they do not spend the prescribed number of hours in learning, and that they consider that this teaching is just as demanding as contact teaching, but also that written exams are somewhat simpler. Nevertheless, the social importance of teaching and even distance learning in this situation is immeasurable. Namely, it is interesting to emphasize that the data show that distance learning still has its positive effect, so 55.2% of students declare that in some parts of the day they completely forget about the situation with the coronavirus, but 44.8% of them still think about it often. There are some other positive indicators of the overall situation. Namely, a large part of the respondents mentions that they are happy because everyone is together at home and because the family is together, most of them relax by spending time on social networks, talking with friends via mobile phone, playing games, watching movies, reading, listening to music, playing music, drawing.

The research confirmed that distance learning was functional and expedient and that the students were satisfied with it. Also, the research confirmed that over time teachers progressed in their knowledge of possible ways of imparting knowledge and used different platforms to bring their subject closer and make it interesting. The students were also more satisfied with that. It is also interesting to note that most of the respondents emphasize that they miss school and teachers and that with their mentoring they would certainly show better results and understanding of the content of certain teaching subjects. This confirms the long-established thesis that teaching can be organized in different forms, but that its success will largely depend, not only on the motivation of the students, but on the teacher and his work, i.e. that the living word of the teacher is still irreplaceable. In the process of distance learning it is important to put innovation in pedagogical model and to know frame for doing it, as one the most important part is technology (Garrison 2017). These days, artificial intelligence has a very important role in this process (Harasim 2017) and influence and using this can have very bad consequences on

the process of learning but it is the idea for one new researching. Finally, distance learning changes the traditional view of teachers, and the authors Tomić and Jurčić (2018) state that changing the direction and/or role of the teacher through gamification or the flipped classroom and the use of digital technology completely changes the understanding of teaching and the main factors - teachers and students, but and space and time, and all of the above requires changes, among other things, in the process of teacher education.

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