# REFLECTIVE PRACTICE: THE ONLINE TEACHING QUALITY IN THE TIME OF THE CORONAVIRUS PANDEMIC

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## Abstract

*This research is focused on the necessity to determine the impact of reflective practice on the quality of teaching conducted by means of various network platforms since the beginning of the Covid-19 pandemic. The aim of this research was to examine teachers' attitudes towards the applicative potentials of reflective practice considering the improvement of online teaching and learning. These attitudes were studied by means of the empirical method, i.e. the quantitative research method and the scaling technique. The sample comprised Serbian primary school teachers and was voluntary. The results of the research showed that teachers' reflective practice influenced the quality of online teaching during the pandemic. The findings proved that the influence of reflective practice on the quality of online teaching was recognized by primary school teachers, but that it was not applied consistently and accordingly by all teachers. The obtained results confirmed that for the reflective practice to become an inherent attribute of contemporary teachers, it would be necessary that it be acquired both as part of teachers' university education and their continuous professional training. There has been little research on reflective practice and its impact on the quality of teaching. Therefore, this study contributes to a further understanding of the reflective practice aspects that directly influence online teaching within the framework of the Serbian educational system.*

**Keywords**: *contemporary teacher, Covid-19 pandemic, quality of online teaching, reflective practice*

## Introduction

The new millennium is characterized by continuous and rapid changes occurring in all spheres of social life. This is particularly evident in the sphere of education, which appears to be challenging and significant in the contemporary multicultural world. Notwithstanding the fact that modern technology, being a constitutive element of the modern age, has an enormous impact on planning, organizing and performing teaching, teachers are still *conditio sine qua non* in the process of teaching and lecturing. The accomplishment of the basic educational goal, the preparation of students for an adequate participation in the constantly changing and developing world, requires the teachers who are highly competent educators that can ensure high-quality teaching. The concept of reflective practice has been recognized as a vital instrument in teaching profession that definitely improves the quality of contemporary teaching and instruction. Bavaneh et al. (2019) determine that reflective practice is a cyclic strategy used for the assessment of the actual teaching efficiency as well as for its improvement.

The characteristics of contemporary life such as uncertainty and insecurity are unavoidably reflected in teaching profession, demanding that teachers adapt their knowledge, skills and experience to changeable and novel situations. For only a few weeeks, the newest danger caused by the global Covid-19 pandemic has had such a rapid and significant impact on

teaching that is unprecedented in the modern history. However, unlike other social activities that were generally terminated due to the pandemic, teaching only changed its form. The traditional classroom was soon replaced by digital and virtual classrooms and traditional teaching became online teaching (Pokhrel & Chhetri, 2021). Although teachers had already been familiar with the concept of online teaching, it was with the outbreak of the pandemic that they encountered serious challenges since this manner of teaching was implemented without any prior preparation or notice. The new circumstances demanded that teachers react quickly and master the tools necessary for online teaching. Adapting to the new conditions, teachers found themselves in the position that meant a persistent analysis and reevaluation of their competencies, skills and abilities for online teaching with the purpose of its improvement.

### Phenomenological and Epistemological Perspective of Reflexivity

Reflexivity (lat. *reflectere*) is the term with various meanings. In its broadest sense, it denotes reconsideration, contemplation and review of certain problems or mulling over various possible solutions (Bharuthram, 2018). The disparity between the theoretical and empirical definitions of reflexivity derives from both its own complexity and the impact of various learning taxonomies and multidisciplinary approaches to the origin of the term. As regards education, Higgins defines reflexivity (reflective practice, reflective thinking, reflective knowledge) as the practice of "turning (one's back) or focusing one's thoughts about a topic with the purpose of learning" (Higgins, 2011, p. 583). Therefore, reflective practice may be understood as the practice of retrospection, based upon introspection and self-evaluation, which presupposes the use of professional knowledge, acting in accordance with professional values and creating possibilities for continuous learning and improvement (Thompson & Pascal, 2012). According to Moghadam (2019), reflexivity encourages teachers to develop and maintain a critical and analytical approach to teaching.

Considering the fact that reflective practice is a dynamic and complex phenomenon, it can be best understood by reviewing it diachronically. Thus, the germs of reflective thinking are found in the works of the Greek philosophers Socrates and Plato, and later elaborated in the philosophy of the Enlightenment period by Jean Jacques Russeau and John Locke, the latter of whom determined the process of metacognition for reflexive action (Denton, 2011). Regarding the constructivism research paradigm, which defines learning as an active process of constructing understanding and knowledge of the world by action and reflection (Ma & Ren, 2011; Vijaya Kumari, 2014), the reflective practice was further influenced by Jean Piaget and his theory of cognitive development. He perceived the reflective process as a retrospection of past events and situations that enabled a critical introspection (Bruster & Peterson, 2012).

The concept of reflective practice was variously defined throughout history, from its perception of being the process of intelligent decision making, as stated by John Dewey (John Dewey, 1859-1957), the proponent of the concept of reflexivity in the field of education and teaching, to the perception of reflexivity of being a professional development strategy, as expressed by Donald Schön (Donald Schön, 1930-1997), whose term the reflective practitioner has gained its significance in contemporary society as a new term for teaching profession. The review of recent reference materials (Thompson & Pascal, 2012; Çimer, Odabaşi Çimer & Vekli, 2013; Jones & Jones, 2013; Mintz, 2016; Brady, 2020) proves that Schön's concepts of reflection in action and reflection on action were based on the use of the knowledge and competencies with the purpose of further understanding problematic situations and improving the existing knowledge about teaching and learning. Owing to the research and experimental study of David Kolb (1939 - ), the reflective practice integrates theoretical and practical knowledge. Learning is understood as a process that generates the ideas transformed and altered by experience, not the ideas that are *a priori* unchangeable and irreversible (Reynolds, 2011;

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Priddis & Rogers, 2017). The second phase of Kolb's 'experiential learning cycle' has a direct influence on the reflective practice since it presupposes that a teacher observes and reflects upon some actual and real experience of their student. Reflection allows the teacher to connect and integrate past and present experience and knowledge, which can be then applied in teaching (Zalipour, 2015). The above mentioned educational experts have contributed significantly to the reflective practice becoming a contemporary paradigm that assigns the teacher a central role in the process of learning, which means that the teacher becomes responsible for both their own personal improvement and for the improvement and academic achievement of their students.

## Reflective Online Teaching: Teachers as Reflective Practitioners

Reflective online teaching is a valid database used by teachers in their everyday teaching practice. The reflective action occurs once the teacher has identified the problem to be tackled and solved, or has encountered a confusing or upsetting situation (Kayapınar, 2013; Impedovo & Khatoon Malik, 2016; Priddis & Rogers, 2018). Solving problems and discovering relevant reasons are closely related to action research conducted with the purpose of identifying teachers' fossilized convictions regarding their teaching style and quality of teaching in order to change them with the application of efficient teaching methods (Ma & Ren, 2011; Çimer & Odabaşi Çimer, 2012; Çimer, Odabaşi Çimer & Vekli, 2013; Kayapınar, 2013; Fatemipour, 2013; Farell & Cirocki, 2017; Mathew et al., 2017). Online teaching is followed by teachers' post-reflection on and analysis of their further steps and teaching plans, which all results in their constant improvement (Mathew, 2012). Teachers are actually researchers who perform their profession in a structural, systematic and critical manner in order to improve it. The aspect of criticism is considered to be the most important aspect of the reflective practice since simple reflection on teaching does not increase teaching and learning efficiency. Critical reflection presumes thorough contemplation owing to which teachers are able to regard their own practice from a wider perspective, analyze causes and effects of teaching and learning and their interconnectedness, discern alternative ideas and attitudes that involve social (political, cultural) and socio-demographic factors (Çimer, Odabaşi Çimer, Sezen Vekli, 2013; Soisangwarn & Wongwanich, 2014; Glasswell & Ryan, 2017; Farell & Cirocki, 2017). Bharuthram (2018) emphasizes that critical thinking and lifelong learning of teachers represent a constitutive component of comprehensive and efficient teaching at all levels of education. A critical approach and efficiency assessment of teachers are particularly significant to examine at present when online teaching is based on the use of various internet applications (Mathew, 2012; Baporikar, 2016) as the resources that unavoidably contribute to the improvement of the quality of education.

Teachers who apply reflexivity in teaching are reflective practitioners who improve their methods of instruction by critical reflection on the contents of school subjects they teach, their curricula, teaching methods, i.e. pedagogical, methodological and didactic postulates (Ahmed & Al-Khalili, 2013; Soisangwarn & Wongwanich, 2014). Reflexivity enables teachers to reconsider their online teaching and search for the most adequate methods for testing their students' knowledge, the methods that are quantitative indicators, such as grading (James & Pollard, 2011; Çimer, Odabaşi Çimer & Vekli, 2013).

Regarding the premise that reflective practice involves "a metacognitive enterprise and personal engagement" (Sellars, 2012, p. 463), online teaching depends on the ingrained tenets of teachers as reflective practitioners, which, being a fusion of their personal characteristics, their systems of values and convictions, previous experience and ethical perspective, have become the subject of scientific research (Sellars, 2012; Devine, 2013). Teaching philosophy, or teaching tenets, is an important aspect of the teacher's reflective identity that actually represents a thorough reflection on the teacher's past, present, and future teaching experience within a

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particular social context (Farell & Cirocki 2017). The teachers who possess the reflective identity are able to contemplate the purpose and significance of their teaching profession, identify the advantages and limitations of the present mode of teaching in comparison to the traditional one and accordingly change the perception of their own role in the process of education. Online teaching has assigned the roles of mentors, moderators, and supervisors to teachers in a glowingly multicultural education community. Therefore, reflective practice helps teachers expand and improve their knowledge and skills, which they can use to promote tolerance and democracy in their classrooms, support their students to develop the appropriate techniques necessary for peaceful and nonviolent resolution of conflicts, their mutual respect and dignity (Vijaya Kumari, 2014). Moreover, reflective practice is a powerful tool that enables teachers to assess and evaluate the relevance and significance of teaching materials based on their students' individual needs, cognitive abilities and interests in order to create an enthusiastic, encouraging and interesting teaching and learning environment. The quality of that environment in which teachers reflect on their own teaching practice is a vital determinant of reflective practice (Çimer, Odabaşi Çimer & Sezen Vekli, 2013; Farell & Cirocki, 2017). Online teaching is a personalized mode of teaching that is focused on each individual student in the classroom (Mathew, 2012). Thus, teachers encourage their students to think, evaluate, analyze and improve their own studying, with the purpose of developing a sense of self-correction and better academic performance (Mathew, 2012). The quality of instruction largely depends on the analysis of crucial aspects of the teaching and learning environment, such as care for students' feelings and focus on communication between students and teachers (Impedovo & Khatoon Malik, 2016).

The discussion of reflective teaching in the context of online teaching implies two complementary processes, characterized by accessibility, flexibility in respect of everyone's needs, pedagogy of learning and lifelong learning. A reflective approach to online teaching enables both teachers and students to master the novel skills of learning, such as critical thinking, problem solving, collaborative learning, as well as the skills related to computer science, media and technological literacy, which appear to be of crucial importance for overcoming the challenges of the economy based on knowledge (Baporikar, 2016).

### Reflective Practice: Quality Component of Online Teaching

Educational systems have been affected globally by the Covid-19 pandemic, undergoing profound changes with far-reaching consequences. The paradigm related to the manner in which teachers give instruction has been altered, being transferred to various internet platforms (Pokhrel1&Chhetri, 2021). After more than a year of teaching in this manner, there has emerged the question of applying reflexivity in online teaching and of the quality of online teaching as such.

Recently published reference materials (Hrevnack, 2011; Ahmed & Al-Khalili, 2013; Belvis et al., 2013; Soisangwarn & Wongwanich, 2014; Farrell & Cirocki, 2017; Hashim & Mohd Yusoff, 2021) have confirmed that reflective practice is an extremely important component of quality teaching and learning, and that the fundamental quality of good teachers is their ability to revise and expand their knowledge continuously. According to Vijaya Kumari (2014), the primary task of reflective practice is to study the implications of all complex factors with the purpose of improving the quality of teaching. The research conducted with teachers by Pinski et al. (1998) showed that reflective practice was not only an integral part of planning and organizing teaching, but also of teachers' reflection on possibilities to improve the quality of teaching.

Reflection being a highly personalized cognitive activity, teachers apply various strategies that are beneficial for the quality of online learning and teaching. The teachers

who are reflection practitioners improve their skills of continuous learning by reading books and papers on teaching efficiency. They are intrinsically motivated to participate in online workshops and conferences about the quality of online teaching and learning, they are engaged in writing papers and articles based on their own personal experience. All this contributes to the development of their profession. The authors who study the concept of reflective practice (Fatemipour, 2013; Abedinia et al., 2013; Lane et al., 2014; Fakazli & Kuru Gönen, 2017; Farell & Cirocki, 2017) emphasize that writing articles in the field is an important reflective tool that helps in the achievement of self-awareness,  improvement of the deductive skills and clarification of problems and needs in a particular teaching environment.

Besides being personalized, reflective practice is also a group practical activity. It provides collaborative learning (Çimer, Odabaşi Çimer & Sezen Vekli, 2013; Vijaya Kumari, 2014; Mathew et al., 2017; Glasswell & Ryan, 2017), which presupposes a cooperation between teachers and their colleagues, students and all experts who could be helpful in critical reflection and in the attainment of feedback information on the quality of teaching in their mutual academic environment. Constructive feedback (Zalipour, 2015; Kayapinar, 2016; Farell & Cirocki, 2017; Mathew et al., 2017) induces teachers to ponder about their methods of teaching, their future plans and strategies in order to encourage students' improvement. Reflective capacity can be thus best developed by professionals in the context of their regular, mutual and certain reflective relationships (Farell & Cirocki, 2017; Priddis & Rogers, 2018).

Observing online classes taught by their colleagues, teachers are enabled to review their own experience, reshape their own theories, accept new perspectives and insights necessary for the improvement of their teaching skills (Ma & Ren, 2013; Mathew et al., 2017). A reflective approach actually gives teachers an opportunity to examine their personal convictions thoroughly and to think critically about the consequences of their teaching practice and, thus, become aware of their own strengths and weaknesses (Ahmed & Al-Khalili, 2013; Impedovo & Khatoon Malik, 2016; Fakazli & Kuru Gönen, 2017; Brady, 2020; Hashim & Mohd Yusoff, 2021) with the purpose of achieving better results in teaching. Being a means of professional development and continuous academic improvement, reflective practice creates in teachers a feeling of satisfaction with both their vocation and the results achieved. Reflective activity is a professional challenge that requires competence in teaching, which is in positive correlation with the teachers' sense of satisfaction with their vocation. Conducted research studies by (Thoonen, Sleegers, Oort, Peetsma & Geijsel, 2011; Ullah & Jundran, 2014) prove that those teachers who apply reflective practice in teaching display a high level of satisfaction with their teaching vocation. Portfolios are not only beneficial for exhibiting teachers' self-reflection but also for directing and instructing students in their further studies. Earlier research studies (Beecher et al., 1997) as well as the recent ones (Odabaşi Çimer, 2011; Vijaya Kumari, 2014; Zalipour, 2015) state that portofilio, owing to its numerous benefits for learning and grading students,  shapes and encourages reflective thinking as the platform that has become one of the most innovative learning tools in the last two decades.

Reflective practice increases the quality of teaching only if teachers act proactively and learn continuously, use their teaching experience and are encouraged and supported by authorities, parents and society as a whole. Devin et al. (Devin et al., 2013) emphasize that reflection on high-quality teaching should consider broad contextual and sociocultural factors that influence the manner in which teachers organize their classes and teach.

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*Research Problem*

It is evident the concept of reflective practice is an essential and significant tool that teachers can use in order to understand and improve the quality of teaching. The online teaching environment has become dominant since the beginning of the Covid-19 pandemic, which has put teachers in additionally burdensome circumstances (besides the already existing ones, such as the manner of devising curricula, cumbersome red tape, insufficient support from the relevant ministry, insufficient professional education in the field of reflective practice, etc.), but which has also created certain advantages related to digital learning and teaching. Regarding the fact that the application of reflective practice, as a crucial factor in the improvement of teaching, is still rather new in the Republic of Serbia, and considering this concept in the existing situation, there has arisen a problem of determining teachers' perception of reflective practice as the factor crucial in examining the quality of online teaching. The questions related to teachers' competency for online teaching, insufficient support from colleagues and the lack of straightforward and direct communication with students, on one hand, and accessibility to information sources and relevant training, flexibility in respecting students' needs and requirements, growing demand for lifelong learning, on the other hand, have resulted in the development and improvement of teachers' reflective skills and the quality of teaching. The subject matter of this research is to determine not only these issues and professional challenges that teachers encounter but also all the benefits of online teaching. The objective of the research is to define the interconnectedness of reflective practice and the quality of online teaching.

*Research Focus*

The concept of teachers, reflective practitioners, is theoretically defined as a dynamic entity comprising several dimensions (pedagogical, methodological, didactic, metacognitive, cognitive, practical, critical, and student). The research is based on the examination of teachers' attitudes towards the impact that these dimensions have on the quality of online teaching during the pandemic period and towards their correlativity.

*Research Aim and Research Questions*

The aim of this research is to determine teachers' perceptions of reflective practice as a predictor of online teaching quality during the coronavirus pandemic. Actually, the research strives to specify teachers' attitudes towards reflective practice and its application with the purpose of improving the quality of online teaching. The general hypothesis proposed that reflective practice of teachers, reflective practitioners, had a direct impact on the quality of online teaching during the global coronavirus pandemic. The special hypotheses assume that each dimension of reflective practice (pedagogical, methodological, didactic, metacognitive, cognitive, practical, critical and student), relevant to traditional teaching, particularly influenced the quality of online teaching during the pandemic period and that they are explicitly connected with this mode of teaching. It was also assumed that these dimensions were correlated with the independent variables: level of teachers' education, type of teachers' education, school subject taught by teachers, and type of employment.

The most significant limitation of this research is the online teaching environment in which the research was conducted, which was inevitably caused by the actual epidemiological issues. These circumstances meant insufficient control of variables and an inclination towards providing the answers that were expected from the participants. Therefore, it is necessary to compare the obtained results with the results of future research studies that will be conducted in a regular classroom atmosphere and under regular circumstances.

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## Research Methodology

*General Background*

The quality of online teaching represents the ideal of the educational policy adopted by the Republic of Serbia. The application of reflective practice in the online environment as an aspect of teachers' professional competencies is recognized as a multidimensional phenomenon that is of key importance for the accomplishment of the established standard. The methods used are the methods of data collection and analysis.

*Sample*

The research was conducted with a sample that comprised 409 teachers from the south of the Republic of Serbia. The research was conducted by means of the Google questionnaire and the participation in the research was voluntary. The list of schools was created and the school e-mails were collected from the schools' official sites. The research instruments were distributed to teachers by school principals and professional associates. The sample also involved the teachers from those schools with which the authors cooperate as a means to promote the Faculty of Philosophy, University of Niš. The Google questionnaire was anonymous and voluntary, filled exclusively by those teachers who were willing to do it.

Female teachers comprised the largest part of the sample ($f = 338$), whereas the number of male teachers was considerably smaller ($f = 71$). The research results prove that the largest number of the respondents were from 35 to 45 years of age ($f = 200$). Those aged from 25 to 35 were fewer in number ($f = 142$) as well as the teachers aged from 45 to 55 ($f = 46$). The smallest part was comprised of the teachers aged from 55 to 65 ($f = 21$). The sample included mostly teachers with less teaching experience, up to 10 years of experience ($f = 234$). There followed those with 10 to 20 years of teaching experience ($f = 104$), then the teachers with 20 to 30 years of experience ($f = 62$), and finally those whose teaching experience ranged from 30 to 40 years ($f = 9$). The sample did not include the teachers with more than 40 years of teaching experience. The majority of the teachers who participated in the research ($f = 314$) were full-time teachers. A considerably smaller number of the respondents ($f = 95$) were part-time teachers. The sample consisted mostly of the teachers who taught in schools located in large urban areas ($f = 252$). A smaller number of the teachers taught in both urban and rural areas ($f = 68$), whereas an almost identical number of the respondents taught in small towns ($f = 46$) and in rural areas ($f = 43$).

*Instrument and Procedures*

The instrument used was the RPEEQOT-DP (*RPFIKON-DP*) (Reflection Practice Employed in the Examination of Online Teaching during the Pandemic) five-level scale (1 = strongly disagree, 2 = disagree, 3 = neither agree nor disagree, 4 = agree, 5 = strongly agree). The instrument was constructed respecting the Reflective Teaching Attitude Scale (according to Moghaddam, 2019) and The Reflective Teaching Instrument (Faghihi & Sarab, 2016) but modified so as to be adapted to the educational system of the Republic of Serbia and the present mode of teaching during the global Covid-19 pandemic. The instrument RPEEQOT-DP consisted of 6 sub-scales of reflective practice employed to examine the quality of online teaching during the Covid-19 pandemic: pedagogical, methodological and didactic (Statements 1 to 6 refer to school subjects, curricula, teaching principles, methods and means, educational technology, grading system and evaluation); metacognitive (Statements 7 to 12 refer to teachers' awareness of their own personalities, their definition of learning and teaching, their attitude towards teaching profession); cognitive (Statements 13 to 18 refer to teachers' professional improvement

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and training, their participation in conferences, knowledge of professional reference materials, conducting researches); practical (Statements 19 to 24 refer to the critical attitude towards the current mode of teaching, communication with colleagues, documentation); critical (Statements 31 to 36 refer to the social and political aspects of teaching); students (Statements 25 to 30 refer to students' knowledge and their affective and cognitive state).

## Data Analysis

The obtained results were processed in the software package SPSS (Statistical Package for the Social Sciences 15.0). The data were processed by means of descriptive statistics and statistical conclusion. To be more precise, the prevalence of the basic variables of the research was determined by means of descriptive statistics – standard deviation, arithmetic mean, frequency and percentage. The connection between the basic variables was determined by means of the correlation technique, Pearson coefficient, while the predictive ability of the model was determined by the standard multiple regression.

## Research Results

The collected data were first analyzed using the descriptive analysis of the sub-scales of reflective practice, which was applied to examine the quality of online teaching.

**Table 1**
*Descriptive Measures of All Sub-scales*

|  | *N* | Min | Max | *AS* | *SD* |
|---|---|---|---|---|---|
| Pedagogical, methodological and didactic dimension | 409 | 6.00 | 30.00 | 23.54 | 4.63 |
| Metacognitive dimension | 409 | 14.00 | 30.00 | 24.44 | 4.06 |
| Cognitive dimension | 409 | 6.00 | 30.00 | 21.13 | 4.38 |
| Practical dimension | 409 | 6.00 | 30.00 | 21.83 | 4.14 |
| Students' dimension | 409 | 6.00 | 30.00 | 22.90 | 3.96 |
| Critical dimension | 409 | 6.00 | 30.00 | 22.70 | 4.56 |

Table 1 shows the descriptive and statistical data for all sub-scales used in the research – the empirical minimum and maximum, arithmetic mean and standard deviation, i.e. the total values of the arithmetic mean formed within each sub-scale.

**Table 2**
*Reliability of the instrument (RPEEQOT-DP scale)*

| *Cronbach's alfa* | *N* |
|---|---|
| .922 | 36 |

Table 2 displays the reliability of the RPEEQOT-DP scale, constructed by the combination of the Reflective Teaching Attitude Scale (according to Moghaddam, 2019) and the Reflective Teaching Instrument (according to Faghihi & Sarab, 2016). The obtained results imply that the research was conducted by the instrument with good reliability and internal consistency ($\alpha=0.9$).

**Table 3**

*Connection between Sub-scales and Independent Variables (Pearson coefficient)*

| | | Level of teachers' education | Type of teachers' education | School subject taught by teachers | Type of employment |
|---|---|---|---|---|---|
| Pedagogical, methodological, didactic dimensions | Correlative coefficient | **.19\*\*** | **-.19\*\*** | -.28 | -.001 |
| | *p* | .0001 | .0001 | .57 | .99 |
| Metacognitive dimension | Correlative coefficient | **.20\*\*** | **-.30\*\*** | -.17\*\* | -.19\*\* |
| | *p* | .0001 | .0001 | .0001 | .0001 |
| Cognitive dimension | Correlative coefficient | **.19\*\*** | **-.25\*\*** | -.62 | -.03 |
| | *p* | .0001 | .0001 | .21 | .60 |
| Practical dimension | Correlative coefficient | .09 | -.08 | .04 | .08 |
| | *p* | .053 | .09 | .35 | .08 |
| Students' dimension | Correlative coefficient | -.03 | -.09 | -.26 | **.11\*** |
| | *p* | .59 | .06 | .59 | .03 |
| Critical dimension | Correlative coefficient | **.22\*\*** | **-.13\*\*** | **-.13\*\*** | -.04 |
| | *p* | .0001 | .01 | .01 | .38 |

\* - statistically significant at .05
\*\* - statistically significant at .01

Table 3 exhibits the connection between the dimensions of reflective practice (pedagogical, methodological and didactic, metacognitive, cognitive, practical, students' and critical) and independent variables (level of teachers' education, type of teachers' education, school subject and type of employment).

The obtained results related to the connection of the pedagogical, methodological and didactic dimensions with the variable level of teachers' education demonstrated a statistically significant low positive correlation at .01. There was observed a statistically significant low correlation at .01 between the aforementioned dimension and type of teachers' education (natural or social sciences).

The obtained results related to the connection between the metacognitive dimension of reflective practice and independent variables demonstrated a statistically significant low positive correlation at 0.01 when compared to the variable level of teachers' education. There was observed a statistically significant medial negative correlation at .01 obtained in the comparison between the metacognitive dimension and the variables of a school subject and type of employment.

The comparison between the cognitive dimension of reflective practice and the variable level of teachers' education resulted in a statistically significant low positive correlation at .01, whereas there was observed a low negative correlation at .01 between the cognitive dimension and the independent variable type of teachers' education.

The analysis of the practical dimension of reflective practice displayed a statistically significant positive and negative correlation at .01 and .05 when compared to the independent variable level and type of teachers' education, school subject and type of employment.

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The comparison of the students' dimension and the independent variable type of employment showed a statistically significant low positive correlation at .05. This dimension did not demonstrate either positive or negative correlation with other variables.

As regards the critical dimension, there was observed a statistically significant low positive correlation with the independent variable level of teachers' education at .01, while this dimension showed a statistically significant low negative correlation at 0.01 with the independent variable type of teachers' education and school subject.

*Prediction of the Quality of Reflective Online Teaching Based On the Set of Predictive Research Variables*

The possibility predicting the reflective online teaching quality, based on the set of predictive variables, i.e. level and type of teachers' education, type of employment and school subject, was examined by means of the standard multiple regression.

**Table 4**

*Independent variables as predictors of the pedagogical, methodological and didactic dimension of the reflective practice online teaching quality*

| Predictors | Beta Coefficient (β) | p | Summary of models |
|---|---|---|---|
| Level of teachers' education | .31 | .0001 | $R = .33$ |
| Type of teachers' education | -.26 | .0001 | $R^2 = .11$ |
| Type of employment | .23 | .0001 | $df = 4$ $F = 12.71$ |
| School subject | -.11 | .042 | $p = .0001$ |

Table 4 proves the predictive strength of the independent variables (level and type of teachers' education, type of employment and school subject) which explains 11.2% variance in the dependent variable, pedagogical, methodological and didactic ($R^2 = .11$; $p = .0001$). The research proved that all independent variables, level of teachers' education ($p = .0001$; β = .31), type of teachers' education ($p = .0001$; β = -.26), type of employment ($p = .0001$; β = .232) and school subject ($p = .04$; β = -.11) were statistically significant predictors. The positive regression coefficient for the variable level of teachers' education and type of employment led to a higher value for the pedagogical, methodological and didactic dimensions. The negative regression coefficient indicated that a lower score for the variable type of teachers' education and school subject caused an increase in the value for the pedagogical, methodological and didactic dimensions. The obtained results confirmed the first of the special hypotheses, i.e., the interrelation between the independent variables and the pedagogical, methodological and didactic dimensions.

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**Table 5**

*Independent Variables as the Predictors of the Metacognitive Dimension of the Reflective Online Teaching Quality*

| Predictors | Beta Coefficient (β) | p | Summary of models |
|---|---|---|---|
| Level of teachers' education | .23 | .0001 | R = .42 |
| Type of teachers' education | .-34 | .0001 | R² = .17 |
| Type of employment | .06 | .34 | df = 4 |
| School subject | -.20 | .0001 | F = 21.32 |
| | | | p = .0001 |

Table 5 shows the predictive ability of the independent variables (level and type of teachers' education, type of employment and school subject), which explains 17.4% variance in the dependent variable, the metacognitive dimension ($R^2 = .17$; $p = .0001$). The following variables proved to be statistically significant predictors: level of teachers' education ($p = .0001$; $β = .23$), type of teachers' education ($p = .0001$; $β = .-34$) and school subject ($p = .0001$; $β = .-20$). The positive regression coefficient indicated that a higher score of the variable termed the level of teachers' education implied a higher score of the metacognitive dimension. The negative regression coefficient indicated that a lower score of the variable type of teachers' education and school subject led to a higher score of the metacognitive dimension. The obtained results confirmed the second hypothesis, i.e., the correlation between the independent variables and the metacognitive dimension.

**Table 6**

*Independent Variables as the Predictors of the Cognitive Dimension of the Reflective Online Teaching Quality*

| Predictors | Beta coefficient (β) | p | Summary of models |
|---|---|---|---|
| Level of teachers' education | .31 | .0001 | R = .37 |
| Type of teachers' education | -.31 | .0001 | R² = .14 |
| Type of employment | .23 | .0001 | df = 4 |
| School subject | -.14 | .01 | F = 16.12 |
| | | | p = .0001 |

Table 6 displays the predictive ability of the independent variables (level and type of teachers' education, type of employment and school subject), which explains 13.8 % variance in the independent variable, the cognitive dimension ($R^2 = .14$; $p = .0001$). The following independent variables proved to be statistically significant predictors: level of teachers' education ($p = .0001$; $β = .31$), type of teachers' education ($p = .0001$; $β = .31$), type of employment ($p = .0001$; $β = .23$) and school subject ($p = .006$; $β = .-14$). The positive regression coefficient indicated that higher scores of the variable level of teachers' education and type of employment implied a higher score of the cognitive dimension. The negative regression coefficient indicated that a lower score of the variable type of teachers' education and school subject led to an increased score of the cognitive dimension. The obtained results confirmed the third hypothesis, i.e., the interrelation between the independent variables and the cognitive dimension.

**Table 7**

*Independent Variables as the Predictors of the Practical Dimension of the Reflective Online Teaching Quality*

| Predictors | Beta Coefficient (β) | p | Summary of models |
|---|---|---|---|
| Level of teachers' education | .21 | .0001 | $R = .22$ |
| Type of teachers' education | -.14 | .01 | $R^2 = .05$ |
| Type of employment | .22 | .0001 | $df = 4$ $F = 5.25$ |
| School subject | -.03 | .58 | $p = .0001$ |

The data presented in Table 7 prove that the predictive ability of the independent variables (level and type of teachers' education, type of employment and school subject) explain 4.9% variance ($R^2 = .05$; $p = .0001$) in the dependent variable, the practical dimension. The independent variables that proved to be statistically significant predictors were the level of teachers' education ($p = .0001$; $β = .21$), type of teachers' education ($p = .01$; $β = -.14$) and type of employment ($p = .0001$; $β = .22$). The positive regression coefficient indicated that higher scores of the variables level of education and type of employment implied a higher score of the practical dimension. The negative regression coefficient indicated that a lower score in the variables termed the type of teachers' education and school subject implied an increased score in the practical dimension. The obtained results confirmed the fourth hypothesis, i.e., the independent variables, shown in the table, were correlated to the practical dimension.

**Table 8**

*Independent Variables as the Predictors of the Students' Dimension of the Reflective Online Teaching Quality*

| Predictors | Beta Coefficient (β) | p | Summary of models |
|---|---|---|---|
| Level of teachers' education | .07 | .20 | $R = .19$ |
| Type of teachers' education | -.14 | .01 | $R^2 = .04$ |
| Type of employment | .21 | .001 | $df = 4$ $F = 3.77$ |
| School subject | -.111 | .04 | $p = .01$ |

The results shown in Table 8 denote that the predictive ability of the independent variables (level and type of teachers' education, type of employment and school subject) explains 3.6 % variance ($R^2 = .04$; $p = .01$) of the dependent variable, the students' dimension. The following independent variables proved to be statistically significant predictors: type of teachers' education ($p = .01$; $β = -.14$), type of employment ($p = .001$; $β = .21$) and school subject ($p = .04$; $β = -.11$). The positive regression coefficient indicated that higher scores of the variables termed the level of teachers' education and type of employment implied a higher score of the students' dimension. The negative regression coefficient indicated that a lower score in the variable type of teachers' education and school subject led to an increased score of the students' dimension. The obtained results confirmed the fifth hypothesis, which implied a correlation between the independent variables and the students' dimensions.

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**Table 9**

*Independent Variables as the Predictors of the Critical Dimension of the Reflective Online Teaching Quality*

| Predictors | Beta coefficient (β) | p | Summary of models |
|---|---|---|---|
| Level of teachers' education | .33 | .0001 | $R = .35$ |
| Type of teachers' education | -.21 | .0001 | $R^2 = .12$ |
| Type of employment | -.21 | .0001 | $df = 4$ |
| School subject | .23 | .0001 | $F = 13.75$ |
| | | | $p = .0001$ |

The results shown in Table 9 denote that the predictive ability of the independent variables (level and type of teachers' education, type of employment and school subject) explains 1.2 % variance ($R^2 = .120$; $p = .0001$) of the dependent variable, the critical dimension. The following independent variables proved to be statistically significant predictors: level of teachers' education ($p = .0001$; $β = .33$), type of teachers' education ($p = .0001$; $β = -.21$), type of employment ($p = .0001$; $β = -.21$) and school subject ($p = .0001$; $β = .23$). The positive regression coefficient indicated that higher scores of the variables level of teachers' education and school subject implied a higher score of the critical dimension. The negative regression coefficient showed that a lower score in the variable type of teachers' education and type of employment led to an increased score of the critical dimension. The obtained results confirmed the sixth hypothesis, i.e., the correlation between the independent variables and the critical dimension.

## Discussion

The theoretical and empirical research presented in this paper further proves that the subject discussed is very complex and intricate. School teachers in our country as well as in other countries all over the world have encountered various challenges related to new modes of teaching performed by means of numerous internet platforms and caused by the global coronavirus pandemic. Therefore, this research aims to examine the influence of reflective practice on one important aspect of teaching – the aspect of the quality of online teaching. Prior to the analysis of the specific hypotheses, it is necessary to emphasize that, analogous to our expectations and recent research (Thoonen et al., 2011; Odabaşı Çimer, 2011; Faghihi et al., 2016; Fakazli & Kuru Gönen, 2017), the majority of the respondents were female teachers, which reflects the structure of teaching staff in the schools in which the research was conducted. Also, similar to previous research (Impedovo & Khatoon Malik, 2016; Faghihi et al., 2016; Priddis & Rogers, 2017), the majority of the respondents were teachers aged from 35 to 45 ($f = 200$) with 10 years of teaching experience ($f = 234$), who were full-time teachers ($f = 314$) in schools located in large cities ($f = 252$). This fact had an important and positive impact on their attitude to reflective practice and its application with the purpose of improving teaching quality.

This paper perceives reflective practice as a holistic approach which includes pedagogical, methodological, didactic, metacognitive, cognitive, practical, students' and critical dimensions of teaching. Each of these dimensions was examined by means of predictive variables: level of teachers' education (college, bachelor, master or doctoral degree), type of teachers' education (natural or social sciences), type of employment (full-time teachers or part-time teachers teaching in one or more schools) and school subjects taught by teachers (mandatory or elective).

The correlation technique results prove a statistically significant connection of the predictive variables with almost all of the reflective practice dimensions. The correlation was

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not observed only between the practical dimension and the independent variables. Considering the correlations between the dimensions of reflective practice and the predictive variables, it was observed that, apart from the predictive variable level of teachers' education and type of employment, all other dimensions displayed negative correlations, which only proves that teachers are still not aware of the significance that reflective practice has in the improvement of the teaching quality. The obtained results are congruent with our expectations that the reflective approach to teaching has not yet been accepted adequately in the Serbian educational system. The statistically significant positive correlation of all the dimensions of reflective practice with the variable level of teachers' education was in line with our expectations and the results obtained in previous research (e.g. Ghaye, 2011) regarding the fact that the majority of the respondents had a university education (i.e. master's degree). The priority of the educational policy adopted by the Republic of Serbia is that teachers should be highly qualified and competent enough in order to teach in schools, which is proved by the Law on the Fundamentals of the Education System (2017, Article 140, p. 1) which states that teachers who teach in schools have to possess a master's degree.

The first hypothesis proposed that the pedagogical, methodical and didactic dimensions had an impact on the quality of online teaching. The regression analysis results showed that all of the independent variables (level and type of teachers' education, type of employment and school subject) could principally predict the influence of the pedagogical, methodological and didactic dimensions on the quality of online teaching and explain around 11.2% variance regarding all four criteria. The obtained high values of the arithmetic mean $AS = 23.5$ ($SD = 4.6$) prove that teachers who participated in this research were reflective practitioners, who shared the opinion that reflective practice directly influenced the quality of online teaching. This means that the obtained results confirmed the results from the previously conducted research studies (James & Pollard, 2011; Ahmed & Al-Khalili, 2013; Çimer, Odabaşi Çimer & Vekli, 2013; Soisangwarn & Wongwanich, 2014 ) that the quality of teaching realized as online teaching during the pandemic was determined by teachers' awareness of reflective practice as a necessary teaching skill.

The second hypothesis proposed that the metacognitive dimension of reflective practice influenced the quality of online teaching. The research proved that the level and type of teachers' education, as well as a school subject, were significant predictors of the metacognitive dimension of reflective practice and its impact on the quality of online teaching, explaining around 17.4% variance in relation to all three variables. Considering the teachers' attitudes towards the influence of this dimension on the quality of online teaching, the average score was $AS = 24.4$ ($SD = 4.06$), which shows that the teachers who were university graduates, majors in either social or natural sciences, teaching either mandatory or elective school subjects contemplated profoundly about the influence of their teaching principles on the quality of online teaching. The majority of our sample was comprised of highly educated young teachers, regarding both their age and teaching experience, so that their academic research and skills obtained during their master studies helped them to recognize the potential of reflective practice aimed at solving problems identified in classes, which improves the quality of teaching. The results of the previously conducted research studies (Ahmed & Al-Khalili, 2013; Impedovo & Khatoon Malik, 2016; Fakazli & Kuru Gönen, 2017; Brady, 2020; Hashim & Mohd Yusoff, 2021) proved to be similar to those obtained in this research, i.e. school teachers identified their own strengths and weaknesses in teaching, based on their personal convictions and reflection, which was beneficial for the quality of online teaching. An important aspect of the metacognitive dimension proved to be the sense of satisfaction with teaching vocation, which was confirmed by the results obtained in both previous research studies (Thoonen, Sleegers, Oort, Peetsma & Geijsel, 2011; Ullah & Jundran, 2014) and by the results obtained in our research. Teachers' reflection on the importance of teaching vocation was additionally intensified by the online

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teaching environment, which proved to be a crucial determinant of the online teaching quality. The second hypothesis was confirmed.

The third hypothesis proposed that the cognitive dimension of reflective practice influenced the quality of online teaching. The results presented in Table 3 showed that the teachers with a university degree, majors in either natural or social sciences who taught either mandatory or elective school subjects in one or more schools recognized the important influence that the cognitive dimension had on the quality of teaching, which explains around 13.8% variance. The distribution of the replies ($AS$ = 21.1; $SD$ = 4.03) demonstrated that the respondents had positive attitudes towards the aspects of reflective practice which were defined as cognitive aspects. Even before the outbreak of the Covid-19 pandemic, certain aspects of the cognitive dimension of reflective practice were already included in the educational process through relevant referential materials and academic papers and participation in seminars and conferences. Also, they were required to write their own papers as part of their own professional advancement prescribed by the law. The new circumstances caused by the pandemic caused various changes in planning and organizing teaching, which provided easier access to information and teachers' training by means of internet platforms, already used by teachers. This situation only reinforced the necessity for lifelong learning as the only way in which teachers could continuously apply reflective practice with the purpose of improvement of the teaching quality. Considering the aforementioned and in line with the social and demographic characteristics of teachers, the obtained results were analogous to our expectations. Therefore, the third hypothesis was confirmed.

The fourth hypothesis proposed that the practical dimension of reflective practice influenced the quality of online teaching. The obtained results of the regression analysis showed that the variable level and type of teachers' education, as well as school subjects, were very significant predictors of the impact that this dimension of reflective practice had on the quality of teaching, proved by the fact that it explained 4.9% variance. Regarding the processive nature of this dimension, explored in the theoretical approach, and the obtained results ($AS$ = 21.8; $SD$ = 4.01), it was concluded that the teachers who participated in the research had an affirmative attitude towards this dimension of reflective practice that evidently influenced the quality of teaching. However, the circumstances created by the pandemic seemed to be most influential for this aspect of reflective practice on both quantitative and qualitative levels since it was founded on collaborative learning (Çimer et al., 2013; Vijaya Kumari, 2014; Mathew et al, 2017; Glasswell & Ryan, 2017), constructive feedback information (Zalipour, 2015; Kayapinar, 2016; Farell & Cirocki, 2017; Mathew et al., 2017), direct access to classes of peer teachers (Ma et al., 2013; Mathew et al., 2017), which is certainly not consistent with the real situation. It is assumed that the online context demanded that teachers, who are reflective practitioners, display high adaptability and flexibility in the application of the practical dimension in order to provide quality teaching. Similarly to the results obtained in previous research studies (Beecher et al., 1997; Odabaşı Çimer, 2011; Vijaya Kumari, 2014; Zalipour, 2015), our research confirmed that the portfolio was a significant reflective means used by teachers that contributed to the improvement of the learning quality. The fourth hypothesis was confirmed.

The fifth hypothesis proposed that the students' dimension of reflective practice influenced the quality of online teaching. The variable type of teachers' education, type of employment and school subjects were significant predictors of the students' dimension of reflective practice, which explained 3.6% variance. The obtained findings of the arithmetic mean ($AS$ = 22.9; $SD$ = 3.9) showed that the respondents perceived the students' dimension of reflective practice as one of the crucial preconditions for the improvement of teaching quality. Actually, the results demonstrated the teachers' convictions that the quality of teaching could be achieved by reflecting on the position of students in the novel circumstances, the teaching environment and its inspiring potential, which was in accordance with the results obtained in previous research

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studies (Çimer et al., 2013; Farell & Cirocki, 2017). Moreover, this research showed that the respondents recognized the necessity of a reflective and critical approach to the issue related to the adaptability of teaching materials to the cognitive and affective characteristics of their students, their interests and individual needs. This research also proved that the communication between teachers and students, as the aspect of the students' dimension of reflective practice aimed at stimulating students to reflect on their learning and its improvement, was rather qualitative.

The sixth hypothesis proposed that the critical dimension of reflective practice influenced the quality of online teaching. Analogous to the results obtained for other dimensions, all independent variables (level and type of education, type of employment and school subjects) proved to be statistically significant predictors of the critical dimension, which explained 1.2% variance. This means that the respondents comprehended the necessity to critically reconsider their current teaching activities and practice, analysis of causal relationships between teaching and students' academic achievement, pursuit of alternative propositions aimed at the improvement of the teaching quality. The teachers who participated in this research also recognized that critical reflection is inevitable in contemporary teaching ($AS = 22.7$; $SD = 4.5$) since the educational system has always been a point which mirrors all the strengths and weaknesses of one society. In addition, since schools are becoming multicultural communities due to constant migrations, this research also demonstrated that teachers were aware of the skills and knowledge with which to promote tolerance and democracy among their students, instruct them in the assertive resolution of conflicts, teach them how to respect cultural differences in their environment, which is of utter importance considering the increase of the electronic violence among peers.

The analysis which examined the 'influence' presupposed a certain correlation but not a definite cause and effect relationship between the examined phenomena, which is a limitation of this research since its results cannot be generalized to all of the respondents but also its advantage since this problem is prone to further examination in all of the aforementioned domains.

The analysis of the research results proves that the teachers mostly regard reflective practice as an important aspect of contemporary teaching activities and teachers' professional competencies but that they still apply reflective practice insufficiently. The general hypothesis, which proposed that reflective practice of teachers, who acted as reflective practitioners, had a direct impact on the quality of online teaching during the Covid-19 pandemic was partially confirmed.

## Conclusions and implications

This research is significant because the empirical study of reflective practice, and particularly of its influence on the quality of teaching, has been rarely conducted in the Republic of Serbia. This kind of research became necessary with the outbreak of the pandemic that created various changes in numerous social spheres and therefore, in the field of education. Although teachers in Serbian primary schools already had some knowledge about online teaching, it still represented something new, a real professional challenge that required a reflective approach to teaching and opened the question of its influence on the quality of online teaching. The results of this research are important since they indicate that teachers have an affirmative attitude towards the aspects, i.e. dimensions of reflective practice which improve the quality of teaching, but that reflective practice is insufficiently applied, which is proved by the negative correlations of these dimensions with the independent variables whereas these correlations with certain dimensions are nonexistent. The research results are in line with our expectations, considering the fact that reflexivity is still a new concept, particularly in online teaching. The reasons may be found in

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the fact that teachers are not yet prepared to teach in an online teaching environment but also in the fact that they are overburdened by plans and programs, administrative tasks, a large number of students in classes, etc. Reflexivity being a necessary skill of contemporary teaching that is progressing and advancing rapidly, the obtained results also reveal the weaknesses of the Serbian educational system reflected in teachers' insufficient training in the field of reflection and their ability to adapt to challenges and sudden changes that are becoming an integral part of contemporary education. Therefore, the obtained results may be beneficial for the creators of educational policy in our country, who are expected to support teachers as the pillars of education to further develop and apply reflective skills and to adapt education to the needs of the constantly changing and evolving society. Regarding the far-reaching consequences of the pandemic related to education and the tendency to continue online teaching in the future, the obtained results emphasize the necessity of conducting new research that would include teachers of different levels of education in order to examine their attitudes to reflective practice and its influence on the online teaching quality, compare obtained findings and thus contribute to the improvement of teaching performed by teachers in all educational stages, primary, secondary and tertiary. This research does not aspire to generalize its findings to include online teaching quality in other countries. However, it can contribute to some further studies in the field.

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## Declaration of Interest

The authors declare no competing interest.

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