

The Experiences of Learning Selfregulation in Distance Education

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Abstract

The aim of the research was to examine the experiences of learning self-regulation and the attitude towards distance learning of the students in the upper grades of elementary schools and in high schools. The research included 1463 students from eight counties throughout the Republic of Croatia. The data were collected by using the Sociodemographic Data Questionnaire, the Scale of Attitudes about Distance Education and the Scale of Components of Self-Regulated Learning. The results showed the students' moderately negative attitude towards distance learning, the moderately to highly explicit components of proactive self-regulation, the slightly lower components of defensive self-regulation, and very good school success. Differences in the attitude towards distance learning, the components of learning self-regulation and school success were determined with regard to the type of school, the student gender and place of residence. The learning of elementary school students in distance education is more self-regulated than the one in traditional classes. It was also determined that the components of learning self-regulation and the time spent in classes were the significant predictors of school success in distance learning.

Key words: *attitudes towards distance learning; distance learning; self-regulation of learning.*

Introduction

The outbreak of the COVID-19 pandemic resulted in the widespread shut-down of educational institutions, causing the urgent and unplanned transition to distance learning in the process. Distance education involves teaching and learning in which the student and the teacher are physically remote (Keegan, 2013), and communicate using technology (Moore, 2013). Distance learning is a form of teaching defined in relation to the space where classes are conducted, while e-learning implies the use

of electronic media and the information and communication technology (ICT) in teaching and, as such, is often associated with distance learning. Before the outbreak of the COVID-19 pandemic, a traditional “face-to-face” form of learning with the help of ICT had prevailed in schools. The main goal of using ICT in learning was to improve the quality of education and help students achieve learning outcomes. When the pandemic was officially declared, we were forced to switch to distance learning (during March 2020), and it soon became the only form of education. Over time, depending on epidemiological measures, a combined form of teaching was also implemented, i.e., a combination of classroom teaching and distance learning. Moore (2013) has developed the transactional distance theory as a framework for understanding distance learning, which describes distance learning in terms of three interrelated variables: interaction, structure, and autonomy. The first two variables refer to the way in which teaching is designed and carried out, and is in the domain of the teacher, that is, the one who creates distance learning. The third variable relates to the student and his/her ability to control his/her own learning. Distance learning can be synchronous when it takes place in real time via video conference or direct correspondence, and asynchronous when participants are both spatially and temporally distant, meaning that tasks are delivered to students who then solve them independently. Barnard and associates (2009) emphasize that distance learning surpasses the usual limitations of physical space, time and classroom materials, putting students in control over their own learning. In other words, distance learning brings students to the centre of the education process and requires them to be independent, especially in the asynchronous context, in which students decide for themselves what, when, how and for how long they will learn. The social-cognitive perspective of learning self-regulation provides a framework for distance learning research and may give further insights into the functioning of the autonomous learner (Lynch and Dembo, 2004).

Research shows that distance learning can be just as successful as traditional teaching if appropriate teaching methods and technologies are used, if there is an interaction between students and teachers, and if teachers give students timely feedback (Ross, Morrison and Lowther, 2010; Kulik, 2003). Students who spend more time learning with the help of a computer score above average on the PISA tests (OECD, 2005). Students who started using digital devices and the Internet at an earlier age and students who learned less about the use of the Internet in school but used digital devices when learning certain subjects have better developed digital competencies and have better results in reading, math and science literacy (Markočić Dekanić et al. 2020). E-learning can have a great impact on increasing students’ motivation to work and adopt the necessary learning outcomes (Bulić et al. 2017, Harandi, 2015), and students perceive such learning very positively (Kotzer and Elran, 2012). Bulić and associates (2017) have determined that elementary school students in the 5th and the 6th grade make better progress when adopting outcomes in distance learning than students who attended classes in the traditional way, while these differences have not

been established for the 7th and the 8th graders. The authors conclude that e-learning is no less effective than traditional learning with the older group of students. Bulić and Kostović-Vranješ (2019) have found that e-learning affects the self-responsibility of students when doing homework. Namely, students in the 7th and the 8th grade performed tasks more often in e-learning situations than in traditional classes. Based on the meta-analysis by Voutilainen and associates (2017), e-learning methods result in slightly higher test scores than traditional methods, so the authors conclude that the magnitude and direction of these effects are highly situational. Similarly, Bernard and associates (2004) have found the small but positive effects of distance learning on the student achievement and attitudes towards technology, while they have found the small but negative effects on retention, attitudes towards the subject and the teacher.

Within the social-cognitive perspective, self-regulated learning (SRL) is defined as a self-directed process in which students consciously plan and monitor their own cognitive, behavioral and effective processes important for the successful performance of academic activities (Zimmerman and Schunk, 2001). It includes the processes of: setting specific and attainable goals, adopting effective strategies for achieving goals, monitoring the learning progress, restructuring the physical and social context in accordance with one's own goals, self-evaluation, attributing the causes of one's own (failure) in learning, changing strategies for future learning purposes (Zimmerman, 2002). Lončarić (2014) proposes a model of proactive and defensive self-regulation, which encompasses: a) cognitive (proactive and defensive) control beliefs; b) motivational beliefs (proactive: academic self-efficacy, proactive attributions, intrinsic motivation; extrinsic motivation, defensive: lack of motivation, defensive attributions and test anxiety); c) motivational strategies (proactive: encouraging learning and defence: maintaining self-esteem); and d) (meta) cognitive strategies of learning and coping (proactive: deep cognitive processing, (meta) cognitive control cycle, external resource management, troubleshooting, instrumental social support; defensive: cognitive processing surface, disengagement to protect self-esteem and emotional social support and disengagement). Research shows that the learning of a significant part of students is not optimally self-regulated because they lack the knowledge and skills needed to effectively manage their own learning (Kramarski and Michalsky, 2009). Research also shows stagnation or decline in learning self-regulation with respect to the student age (Lončarić, 2010; Šimić Šašić, 2012), and higher scores in female students on proactive components, and male students on the defensive components of self-regulation (Lončarić, 2010; 2014). According to the PISA project results (Markočić Dekanić et al. 2020), vocational and industrial high school students have significantly worse achievements than the students in schools with prevailing general and art programs, and the students in schools from smaller settlements, while on average the best results in each of the surveyed areas are recorded in city schools.

If SRL skills are important for the learning success in traditional classes, the authors believe, these skills can be expected to play an even more important role in distance

learning (Barnard et al., 2009; Kramarski and Michalsky, 2010). The fact that distance learning is more flexible, student-centred, and more autonomous than face-to-face teaching implies the student independence and responsibility, i.e., students are required to use SRL strategies (Kuo et al., 2014). Barak and her colleagues (2016) claim that students in an online environment describe online learning in terms of cognitive strategies and the regulation of cognition, better planning, control and evaluation (metacognition) to a greater extent than students in the traditional classroom setting. On the other hand, students in a classroom setting describe online learning in terms of metacognition (the awareness of cognition) and resource management; they feel that they lack self-discipline for online learning, and are concerned about the lack of interaction. Research confirms that self-regulated students are more successful in distance learning (Kuo et al., 2014). Hong and Jung (2011) have determined that management skills (resources, behaviour and schedule) and (meta)cognitive skills (the regulation of learning, the use of effective learning strategies, the application of prior knowledge), in addition to goal setting skills, motivation, interaction and communication skills, beliefs in one's own abilities, etc., explain the student success in distance learning in the best possible way. Barak and her colleagues (2016) have found that students in an online environment achieved higher results on the scales of self-regulated learning than students in traditional classes, however, they have also found that only a third of students chose online classes, while the majority preferred the traditional classroom-based setting. Ali and Leeds (2009) have discovered a significantly higher drop-out rate from online courses than in traditional face-to-face courses, while Lee and Choi (2011) have found that the cause of online students dropping out is actually the lack of ability to self-regulate their learning. Studies also show that most distance learners have difficulties managing their own learning, so they experience failure (Barnard-Brak et al., 2010; Lehmann et al., 2014). Those students who are not motivated, who have not developed self-control and do not use effective learning strategies, are precisely the ones that can misinterpret autonomy in distance learning, which in turn does not contribute to the realization of learning outcomes (Barnard et al, 2009). The transition to distance education removes many motivational and supportive factors, such as peer pressure, familiar learning situation, social factors, teacher leadership (Zvacek, 1991, according to Sharma et al., 2007). Sharma and associates (2007) believe that a) motivation in terms of goal orientation and self-efficacy, b) time and learning environment management, and c) seeking help are the key self-regulatory skills in both traditional and distance learning. Studies have also shown that technology-enhanced learning environments can support self-regulated learning skills by providing students with opportunities for self-monitoring, mastery learning, peer interactions, and cognitive learning methods (Barnard et al., 2009; Cho and Heron, 2015; Kramarski and Michalsky, 2010). Although SRL skills in the online environment have been researched in recent years, Barak and her colleagues (2009) believe that the understanding of self-regulated learning in the online environment is still in its infancy. It seems that distance learning requires developed self-regulation

learning skills, but distance learning also strengthens them. Nevertheless, most of the research cited so far was conducted before the Covid-19 pandemic. Research conducted within the last two years (during the pandemic) indicates that the majority of students coped well with the challenges of distance learning. The analysis of studies in the German-speaking world has shown that 37 % – 70 % of students (depending on the study, the student age, and the school type) actually like distance learning (Berger et al., 2021). When it comes to Croatia, Ristić Dedić and Jokić (2021) have determined that 41 % of elementary school students in Zagreb are satisfied with distance learning. However, during this distance learning period, a significant percentage of students had problems with learning, and the risk factors included the following: a poorer family socioeconomic status (poorer resources and family support), the lower school achievement and the lower motivation, the gender (boys), the quality of interaction and the teacher competence (Berger et al., 2021). Teachers have also expressed their concerns regarding the fact that students do not have enough knowledge and skills to learn in their absence, and that this could lead to a disruption in learning during the pandemic (Nepal and Kumar, 2020). The overall research conclusion is that developed self-regulated learning skills can ensure the effectiveness of online learning (Carter et al., 2020; He et al., 2022). Pelikan and associates (2021) have determined that students who believe that they are more competent often use self-regulated learning strategies (goal setting, planning, time management, metacognitive strategies); they are also more intrinsically motivated and less likely to delay learning. Sutarni and associates (2021) have found that students with better self-regulation skills can better optimize the digital learning environment and make a better progress in view of their academic achievement. Abtokhi and associates (2021) did not establish a connection between SRL and students' problem-solving skills in physics during the distance learning period, they additionally cited technological limitations and the competencies of teachers and students as possible obstacles to effective learning. Cai and associates (2020) conclude that the effectiveness of SRL in distance learning depends on the subject, and that it is more effective when a SRL protocol is used when compared to cases in which students simultaneously watch the teacher on the Internet platform. On the other hand, Atmojo and associates (2020) have reported that online learning can make students more independent in learning, more self-aware, and that they can achieve good results. The students themselves (40 % - 70 %) have reported that their learning during the distance learning period was more self-regulated than in face-to-face learning (Berger et al., 2021).

Method

Aim and problems of the research

The aim of this research was to examine self-regulated learning experiences in the students of upper elementary and high school classes during distance learning at the time of the first wave of the Covid-19 pandemic. More precisely, we wanted to:

a) examine how teaching was conducted, what was the attitude of students towards distance learning, and what were some aspects of proactive and defensive learning self-regulation in distance learning conditions; b) examine the differences in attitudes towards distance learning, aspects of learning self-regulation and school success with regard to the type of school, the gender and the place of residence; c) compare these research results in certain aspects of self-regulation learning of elementary school students with the research conducted by Lončarić (2014); d) examine whether certain components of self-regulation learning (and which of them), the time spent on learning and the attitudes towards distance learning were the significant predictors of school success.

Hypotheses

a) It is expected that, due to the workload of the technical support system, there will be no interactive, synchronous communication; because of the absence of interaction, motivational and supporting factors, it is expected that students will have a negative attitude towards distance learning, with lower results on the scales of proactive self-regulation, but higher results on the scales of defensive self-regulation.

b) It is expected that higher results on the components of proactive self-regulation and lower results on the components of defensive self-regulation will be achieved by elementary school and high school students (when compared to vocational/craft school students), female students (when compared to male students), and students in the city (when compared to the ones who live in the rural areas);

c) Considering that the learning of a considerable number of students is not optimally self-regulated, and that the distance learning mode implies a lack of interaction, motivational and supporting factors from teachers and peers, it is not expected that increased independence in distance learning will lead to students demonstrating better learning self-regulation skills.

d) It is expected that the skills of self-regulated learning (esp. cognitive and metacognitive), the time spent in classes, and the attitudes towards distance learning will significantly predict school success.

Respondents

The current research has involved 1463 elementary school students in higher grades along with high school students. The participants were chosen from eight counties throughout the Republic of Croatia (Zadar, Istria, Dubrovnik-Neretva, City of Zagreb, Međimurje, Bjelovar-Bilogora, Osijek-Baranja and Lika-Senj), two elementary schools from each (one in the city, the other in a smaller town/village), and two high schools (general school and vocational / craft school).

Equal representation of the students with regard to the type of school is evident in Table 1; when it comes to grades, the lowest number of students attended the 4th high school grade. The sample comprised of 46.62 % of males, and 53.38 % of females. Most of them lived in the city - 64.52 %, while 35.48 % of them came from the rural area.

Table 1.
Structure of the sample with regard to the type of school and class

	N	%	Grade	N	%
Elementary school	486	33.22	5.	121	8.27
			6.	181	12.37
			7.	90	6.15
			8.	93	6.36
High school (general)	533	36.43	1.	377	25.77
High school (vocational/craft)	444	30.35	2.	362	24.74
			3.	204	13.94
			4.	35	2.39

Measuring instruments

Sociodemographic data questionnaire – the collected data referred to the county in which the students lived, the type of school they attended, the grade they had, their gender and place of residence (village/city).

Teaching methods questionnaire – the students indicated how distance learning had been conducted, and how much time they had spent on distance learning every day.

School success – using a scale of school grades from 1 - insufficient to 5 - excellent, the students estimated the final school success they expected to achieve.

Scale of attitudes towards distance learning – constructed for the purposes of this research, including 9 statements, which covered the assessment of interest, the possibility of monitoring and understanding, the level of activity and concentration, and the stress of distance learning. The students were asked to rate how much each statement applied to them during the distance learning period by using a five-point scale (1 – not at all; 5 – completely yes). Factor analysis (on common factors) determined the one-factor structure of the scale (40.06 % of the variance explained), and the reliability coefficient (Cronbach alpha) amounted to 0.84. The three statements positively defined (Distance learning is interesting to me.) were scored in reverse. The total result was formed as a linear combination of assessments on individual statements, and measures a Negative attitude towards distance learning. In order to have a more precise insight into the given students' attitudes, individual statements will be analysed, as well as the overall result.

Scale of self-regulated learning components (Lončarić, 2014) – used to measure components from the field of motivational and cognitive beliefs and strategies:

– General control beliefs – used to measure the students' general expectations about the possibility of achieving desired results (n=4, I can do well in school if I choose it., $\alpha = 0.88^1$)

– Self-efficacy in the learning process – refers to the expectations of success in the learning process (n=4, I do my homework easily and regularly., $\alpha = 0.79$)

¹ Reliability coefficients determined in this research.

– Motivational strategies: a) effort regulations – the strategy used to encourage the learning process (n=4, If I get stuck on a material that is difficult, I encourage myself and tell myself that I can handle it., $\alpha=0.85$); b) setting goals – the strategy used to encourage the learning process (n=4, I learn everything by setting goals for myself and trying to accomplish the goals that I set for myself., $\alpha=0.86$); c) self-handicapping – the strategy used to protect self-esteem (n=5, I always leave learning for the last minute., $\alpha=0.85$)

– Learning strategies: a) control flow and learning outcomes – refers to the cycle of (meta) cognitive control (n=4, After learning, i check my knowledge and understanding of the material., $\alpha=0.85$); b) focus on the minimum requirements – measures the surface of cognitive processing (n=4, i never learn more than what I have to., $\alpha=0.78$); c) organization – deep cognitive processing (n=6, i try to divide large materials into several small units that are understandable and meaningful., $\alpha=0.83$); d) elaboration – deep cognitive processing (n=4, i try to understand the new material by connecting it with what i already know and what i understand., $\alpha=0.91$)

– Seeking instrumental and emotional support from: a) friends; b) parents; c) teachers (n=3, When i do not understand something or do not know how to solve the task, i ask for help from friends / parents / teachers., $\alpha_a=0.75$, $\alpha_b=0.77$, $\alpha_c=0.71$).

– Anxiety was assessed with one general statement: “I am a very anxious student”.

The students were asked to assess how much the given statements applied to them during the distance learning period, and the numbers had the following meaning: 1 – not at all, 2 – somewhat not, 3 – moderately, 4 – somewhat yes, and 5 – completely yes.

Procedure

The research was conducted in June, 2020. According to the Decision of the Government of the Republic of Croatia from May 7, 2020, distance learning was conducted for elementary school students from the 5th to the 8th grade, and for high school students. The data were collected online via the LimeSurvey platform. The research was conducted with the permission of school principals, specialist services in schools and parents. The school principals were asked to participate by telephone, and a link to the questionnaire was sent to them, they forwarded it to their class teachers, while the class teachers forwarded it to their students. The class teachers gathered the parental consents. The participation was voluntary and anonymous.

Results

Table 2 shows the students' answers with regard to distance learning methods.

We can see that the participating teachers mostly gave instructions for using textbooks and doing assignments, prepared pictorial-and-textual presentations, and sent links to ready-made lessons.

Table 2.
Students' answers on teaching methods in percentages (N=1463)

	Yes
Teachers instruct us how to use the textbook and do assignments.	86.33
Teachers prepare presentations (with pictures and text).	82.09
Teachers prepare presentations with voice or video recordings.	40.05
Teachers record their own video lessons.	28.43
Teachers send us links to ready-made video lessons.	78.88
We follow classes via TV.	4.10
We return to our student training/practical work (in schools, workshops).	1.16

Table 3.
Time spent on distance learning

	N	%
1 hour or less	140	9,57
2 – 3 hours	434	29,67
3 - 5 hours	453	30,96
5 - 7 hours	296	20,23
more than 7 hours	140	9,57

The majority of the participating students spent 3 to 5 hours (Table 3) on distance learning. The general high school students spent most of the time learning like this, to be followed by the elementary school students, while the vocational/craft school students spent the least amount of time ($\chi^2=67.12$, $df=2$, $p=0.00$) this way. The students in their 2nd high school year spent significantly more time on distance learning than the ones in their 3rd high school year ($\chi^2=23.72$, $df=7$, $p=0.00$), just as the female students spent more time than the male students ($Z=-10.83$, $p=0.00$). No difference was found in the time spent on distance learning with regard to the place of residence.

Table 4.
Attitudes towards distance learning (%) and an average value for each statement

	Not at all	Somewhat not	Mediocre	Somewhat yes	Completely yes	M
Distance learning is interesting to me.*	20.64	14.76	29.46	20.37	14.76	2.94
It is hard for me to follow distance learning.	21.19	22.21	25.15	18.73	12.71	2.80
Distance learning requires more efforts.	7.66	9.30	22.69	22.69	37.66	3.73
I am more active in distance learning.*	11.62	11.21	27.34	20.71	29.12	3.44
It is too hard for me to follow classes like this.	29.80	19.75	26.73	12.44	11.28	2.56
I do not understand the contents presented in distance learning.	25.84	22.76	30.01	14.15	7.25	2.54
It is hard for me to concentrate on learning.	19.75	17.84	25.36	19.75	17.29	2.97
Distance learning is stressful for me.	20.78	15.58	21.53	16.20	25.91	3.11
Independent work in distance learning suits me.*	13.12	12.44	27.27	19.14	28.02	3.37

* statements scored in reverse when forming the overall score on the Scale of Attitudes Towards Distance Learning.

The participating students rated their interest in distance learning as average, except for the estimation according to which distance learning requires more efforts (Table 4).

Table 5.

Descriptive statistics for distance learning attitudes, components of self-regulated learning, anxiety and school achievement

	M	SD	Skewness	Kurtosis
Negative attitude towards distance learning	2.88	0.89	0.10	-0.49
General control belief	4.34	0.77	-1.56	2.85
Self-efficacy in the learning process	3.38	0.89	-0.35	-0.33
Effort regulation	3.34	0.97	-0.26	-0.51
Self-handicapping	3.58	0.97	-0.49	-0.27
Control flow and learning outcomes	2.46	0.98	0.45	-0.47
Focus on minimum requirements	3.85	0.92	-0.82	0.49
Organization	2.48	1.02	0.49	-0.42
Elaboration	3.66	0.92	-0.54	-0.23
Friend support	3.81	0.97	-0.62	-0.10
Parental support	3.52	1.09	-0.38	-0.74
Teacher support	3.10	1.23	-0.15	-1.06
Anxiety	2.29	0.99	0.73	-0.02
School success	3.20	1.48	-0.19	-1.33
School success	4.22	0.71	-0.68	0.65

Based on the results in Table 5, it is evident that the students showed a moderately negative attitude towards distance learning, high beliefs in control, and moderate self-efficacy beliefs. Motivational strategies were also moderately expressed, the goal-setting strategy was the most obvious, while self-handicapping was the least obvious. When it comes to learning strategies, the given students mostly used elaboration, and organization, being the least focused on minimum requirements. They wanted support mainly from their friends, then from their parents, and the least from their teachers. The participating students also showed a moderate level of anxiety, and expected very good results at the end of the school year.

The Kolmogorov-Smirnov test shows that the distributions of the results significantly deviate from the normal distribution, however, the skewness and kurtosis indices are in the acceptable range (<1 and <3), except for the general control belief skewness. The homogeneity of variance was tested by the Levene test when considering the significance of the differences, and the inhomogeneous variance was found for half of the variables (*). An appropriate non-parametric test was additionally performed. Since the results of the non-parametric and parametric tests were identical, the results of the parametric tests are presented for the uniformity of result presentation (Tables 6 and 7).

Table 6.

Variance analysis results for the attitude towards distance learning, components of self-regulated learning, anxiety and school performance with respect to the type of school

	Elementary school	High school general	High school vocational / craft	F	p
Negative attitude towards distance learning	2.72	2.99	2.95	13.68	0.00
General control belief *	4.47	4.33	4.22	12.03	0.00
Self-efficacy in the learning process *	3.75	3.24	3.16	69.08	0.00
Effort regulation	3.74	3.27	3.00	78.06	0.00
Setting goals *	3.89	3.57	3.24	56.15	0.00
Self-handicapping	2.15	2.59	2.65	38.59	0.00
Control of learning flow and outcomes *	4.15	3.87	3.50	64.85	0.00
Focus on minimum requirements *	2.52	2.23	2.72	30.35	0.00
Organization*	3.73	3.91	3.29	63.09	0.00
Elaboration*	3.92	3.88	3.60	14.99	0.00
Friend support*	3.29	3.90	3.31	53.95	0.00
Parental support*	3.63	2.96	2.68	82.83	0.00
Teacher support*	2.48	2.08	2.33	21.80	0.00
Anxiety	3.16	3.29	3.14	1.46	0.23
School success*	4.43	4.37	3.82	119.68	0.00

The elementary school students had a less negative attitude towards distance learning, greater control beliefs and self-efficacy than high school students. In effort regulation, goal setting, as well as in the control of learning flow and outcomes the differences were statistically significant among the groups. The elementary school students achieved the highest scores, while the vocational/craft school students achieved the lowest scores. The elementary school students used self-handicapping significantly less than the high school students. The differences in a focus on minimum requirements were statistically significant among the three groups. The vocational/craft school students were mostly focused on minimum requirements, but the students from the general high schools were less focused on minimum requirements. The vocational/craft school students used elaboration less (statistical significance) than the elementary school students and the ones from the general high schools. The general high school students were more likely to seek support from their friends, which was proved by statistical significance. The differences in seeking parental support were statistically significant among the three groups; the elementary school students and the vocational/craft school students asked parents for support the least. The general high school students required significantly less support from their teachers than the elementary school students and the vocational/craft school students. No statistically significant differences in anxiety were registered when it comes to the type of school. The elementary school students had a significantly better school performance than the high school students.

Table 7.

Results of t-tests for the attitude towards distance learning, components of self-regulated learning, anxiety and school performance with regard to the student gender and place of residence

	Male students N=682	Female students N=781	t	p	Village N=519	City N=944	t	p
Negative attitude towards distance learning	2.86	2.91	-1.06	0.29	2.88	2.89	-0.10	0.92
General control belief*	4.27	4.40	-3.31	0.00	4.36	4.33	0.71	0.48
Self-efficacy in the learning process*	3.30	3.46	-3.27	0.00	3.37	3.39	-0.59	0.55
Effort regulation	3.19	3.48	-5.75	0.00	3.29	3.37	-1.62	0.11
Setting goals	3.40	3.73	-6.71	0.00	3.54	3.60	-1.04	0.30
Self-handicapping	2.51	2.43	1.50	0.13	2.61	2.38	4.19	0.00
Control of learning flow and outcomes*	3.64	4.03	-8.23	0.00	3.72	3.92	-4.11	0.00
Focus on minimum requirements	2.64	2.34	5.62	0.00	2.58	2.42	2.79	0.01
Organization*	3.30	3.98	-15.08	0.00	3.61	3.69	-1.76	0.08
Elaboration	3.70	3.91	-4.10	0.00	3.71	3.86	-2.99	0.00
Friend support*	3.11	3.87	-13.99	0.00	3.57	3.49	1.26	0.21
Parental support	2.28	3.29	-6.28	0.00	2.98	3.16	-2.77	0.01
Teacher support	2.32	2.26	1.28	0.20	2.29	2.29	0.13	0.90
Anxiety	2.90	3.46	-7.38	0.00	3.30	3.15	1.85	0.06
School success	4.03	4.39	-10.14	0.00	4.11	4.28	-4.39	0.00

There is no difference between students in their attitude towards distance learning, self-handicapping, and seeking support from teachers, while in all the other variables there are statistically significant gender differences. The male students were more focused on minimum requirements; as for all the other variables, the female students achieved higher scores and showed a more proactive pattern of self-regulation (except for greater anxiety). There were statistically significant differences in self-handicapping, control of learning flow and outcomes, focus on minimum requirements, elaboration, parental support and school success between the students living in villages and the students living in cities. The former were more likely to use self-handicapping and have less control of learning flow and outcomes. They were more likely to focus on minimum requirements and less likely to use elaboration. These students had less parental support and poorer success in school.

In order to test the hypothesis about the influence of increased independence on learning self-regulation skills during the distance learning period, we tested the differences in some aspects of learning self-regulation both in this research and the one conducted by Lončarić (2014). Since Lončarić studied elementary school students, the results were compared only for them. In order to maintain an optimal length of the entire questionnaire in this research, we omitted certain statements in some subscales, analysing only those variables that fully corresponded to the original form of the subscale.

Table 8

Results of simple t-tests for the components of self-regulated learning in this research and the research conducted by Lončarić (2014)

	M ₁	SD ₁	N ₁	M ₂	SD ₂	N ₂	t	p
General belief about control	17.87	2.71	486	16.49	3.67	442	-603.77	0.00
Self-efficacy in the learning process	15.00	3.20	486	14.24	3.37	445	-468.29	0.00
Setting goals	15.56	3.50	486	14.69	3.41	443	-437.18	0.00
Self-handicapping	10.77	4.83	486	12.10	5.19	443	-375.11	0.00
Focusing on minimum requirements	10.09	4.35	486	9.09	4.57	445	-248.34	0,00
Elaboration	15.70	3.64	486	14.56	3.63	445	-422.68	0,00

M₁; SD₁; N₁ – results in this research

M₂; SD₂; N₂ – results in the research by Lončarić (2014)

In this research (Table 8), the elementary school students showed significantly higher general beliefs concerning control, higher self-efficacy in the learning process, greater use of the goal-setting strategies and elaboration, but at the same time they maintained a greater focus on minimum requirements. Furthermore, the students used self-handicapping less in distance learning.

In order to answer the last research question, we performed a stepwise regression analysis with the components of self-regulated learning, the time spent on learning, and the attitude towards distance learning as predictor variables, while school success was a criterion variable (Table 9). The correlation coefficients were first analyzed (Table 1 in the Annex), and it was determined that school success positively correlated with proactive self-regulation strategies and learning time, but also negatively correlated with defensive self-regulation strategies.

The significant predictors of school success in distance learning were the following: general beliefs about control, self-efficacy in the learning process, control of the learning process and outcomes, focus on minimum requirements, elaboration, support from parents and teachers, as well as time spent on distance learning and a negative attitude towards distance learning. This set of variables explains 30 % of the variance when it comes to school success.

Table 9

The results of regression analysis with school success as a criterion variable; the components of learning self-regulation, the time spent on distance learning and a negative attitude towards distance learning as predictor variables (backward method, final step; N=1463)

Predictors	β	t(1453)	p	
General belief about control	0.25	9.98	0.00	R=0.55, R ² =0.30, F _(9,1453) =70.39, P=0.00
Self-efficacy in the learning process	0.16	4.92	0.00	
Control of the learning process and outcomes	0.13	4.55	0.00	
Focusing on minimum requirements	-0.20	-8,83	0.00	
Elaboration	0.06	2.53	0.01	
Parental support	0.06	2.55	0.01	
Teacher support	-0.07	-3.13	0.00	
Time spent on distance learning	0.16	7.01	0.00	
Negative attitude towards distance learning	0.18	6.15	0.00	

Discussion

Following the transition to distance learning during the first wave of the Covid-19 pandemic, the teachers in the upper grades of elementary schools and high schools mostly provided instructions regarding textbooks and assignments, prepared presentations containing illustrations and text, and sent links to lessons previously composed. In the largest percentage, the students spent 3 to 5 hours on distance learning; they mostly came from general high schools, attended the 2nd high school year, and were females. These differences are expected, and in total, the students spent less time on distance learning than on traditional teaching/learning. However, the students reported that distance learning required more effort and that they were more active than in traditional teaching. Most of the students did not find it difficult to follow distance learning, they had no problems with understanding the presented contents, and assessed the interest, concentration difficulties and stress of distance learning as average. However, approximately 20 % of the students were not active and it was difficult for them to follow the lessons as they tended to have problems with understanding the contents of the lessons. One quarter of the students estimated that distance learning was very stressful for them. The majority of students estimated that independent work in distance learning was suitable for them, while for a quarter of them this was not the case. The obtained results are consistent with the results of other studies conducted during the Covid-19 pandemic (Berger et al., 2021; Ristić Dedić and Jokić, 2021). Generally speaking, students show a moderate negative attitude towards distance learning. In addition, students tend to show moderate to high levels of proactive self-regulation, with a more explicit general control belief, and less explicit components of defensive self-regulation (self-handicapping, focus on minimum requirements). Other studies conducted in traditional teaching situations show similar results (Lončarić, 2010; 2014, Šimić Šašić, 2012), as well as the research conducted during the Covid-19 pandemic (Atmojo et al., 2020). Pelikan and associates (2020) have found relatively high levels of goal setting, planning, time management, metacognitive skills, and intrinsic motivation, and relatively low levels of procrastination in Austrian high school students during the Covid-19 pandemic. The hypotheses related to the first problem were partially confirmed. The students believe that they can achieve learning success if they want to, which makes them very optimistic. Given the lower values in the other components of proactive self-regulation, the question that arises is why they do not want this? Based on the assessments on how interesting distance learning is (as well as the traditional way in other research, e.g., Bezinović et al., 2010), when most of the tasks and instructions for using the textbook are previously given, and presentations prepared, it seems as if teaching, in general, is not interesting and challenging enough. The obsolescence of the Croatian education system is cited as one of the causes of the below average results in reading, mathematics and science literacy of Croatian students. Students do not know how to apply their acquired knowledge in new situations and it is a common practice to evaluate student knowledge based on content reproduction, which, in the

PISA program, is equivalent to a lower level of achievement (Markočić Dekanić et al., 2020). Therefore, it is imperative to improve the ways of teaching and evaluating the outcomes of learning, it is necessary to encourage self-regulated learning in students using adequate (interactive) teaching methods in both traditional and distance learning.

Differences in the components of self-regulated learning more explicitly indicate the strategies of proactive self-regulation in elementary school students compared to high school students, that is, more explicit strategies of defensive regulation among vocational/craft school students. Results also indicate more explicit proactive self-regulation strategies in female students, while differences in the self-regulation of learning with regard to the place of residence are not abundant and are in favor of the better self-regulation learning when it comes to the city students. These findings correspond to the findings of research conducted in traditional education (Lončarić, 2010; Šimić Šašić, 2012). Female students generally achieve better results on the measures of self-regulated learning and school success (Jokić and Ristić Dedić, 2010; Lončarić, 2010; Šimić Šašić, 2012). According to the results of a PISA project (Markočić Dekanić et al., 2020), schools from the smallest settlements recorded the worst average achievements, while, on average, city schools recorded the best results in all the surveyed areas. The same source indicates significantly worse achievements of vocational-industrial high schools, while high schools with a dominant general and art programs achieve, on average, the best results. The second hypothesis was confirmed; particularly vulnerable groups of students who need some additional support in the context of distance learning are of the ones from vocational/craft schools, male students and students from rural areas.

On one hand, research shows that a significant portion of students do not optimally self-regulate learning, and that interaction, motivation, and supporting factors usually provided by teachers and peers are absent in distance education. On the other hand, research reveals that technology-enhanced learning environments can support the skills of learning self-regulation. Therefore, in this research we compared the assessment results considering some components of self-regulation learning with the ones obtained by Lončarić (2014) on a sample consisting of elementary school students. It has been shown that the learning of elementary school students in distance education is more self-regulated, apart from a greater focus on minimum requirements. These results are consistent with the results of other studies confirming that online learning can make students more independent, i.e., that a technology-enhanced environment can support self-regulated learning skills (Atmojo et al., 2020; Barnard et al., 2009; Berger et al., 2021; Cho and Heron, 2015; Kramarski and Michalsky, 2010). However, we have to be careful when drawing conclusions, especially because we could not compare the remaining variables because of a difference in the number of statements on the subscales we have shortened. It is possible that the reforms of the Croatian education system in general have contributed to an increase in the student self-regulation learning skills. This should be verified in future research.

The research shows a positive correlation between the proactive forms of self-regulation learning and the time spent on studying, and a negative correlation between the defensive forms of self-regulation and school success. In other words, the more students showed proactive and less defensive patterns of self-regulation of learning, and the more time they spent on distance learning, the better academic performance they had. In the end, it has been shown that, even in the context of distance learning, the components of self-regulated learning are the significant predictors of school success, along with the time spent in classes and attitudes towards distance learning, which is in line with the results of other studies (see Atmojo et al., 2020; Berger et al., 2021; Cai et al., 2020; Carter et al., 2020; He et al., 2022; Pelikan et al., 2021; Sutarni et al., 2021). A higher assessment of beliefs about the possibility of control, self-efficacy in the learning process, control of the learning process and outcomes, elaboration, parental support, learning time, negative attitudes towards distance learning, a lower focus on minimum requirements and teacher support significantly predicted a better student school performance in the context of distance learning. All the variable relationships with school success were expected, except for teacher support and negative attitudes towards distance learning. Obviously, this might be due to the suppression effects since the correlation coefficients show that the proactive patterns of self-regulation positively associate with seeking support from teachers, and negatively with a negative attitude towards distance learning, while the defensive patterns of self-regulation show the opposite correlation directions. It is interesting to note that motivational strategies were not a significant predictor of school success, when compared to learning strategies (metacognitive and cognitive), which aligns well with the results of Hong and Jung (2011), who have found that these skills explained the success of distance learners in the best possible way. Therefore, the fourth hypothesis was confirmed.

This research provides an insight into the learning of self-regulation when it comes to elementary and high school students in the context of distance learning, or more specifically, in the context of the crisis situation caused by the corona virus pandemic where the usual teacher support was not given. The current research also provides an insight into the student perspective on the benefits of distance learning. Its main shortcomings, apart from the reliance on self-assessment, online research, and voluntary participation, lies in the fact that it utilized a transversal and a correlational approach. Future research should rely on longitudinal data in order to test the differences between self-regulated learning skills in relation to the methods of distance learning and traditional teaching, and clarifies whether distance learning enhances the learning of self-regulation skills. It is also necessary to study in more detail the methods of distance teaching, the type of tasks administered, and the methods of evaluating learning outcomes and their effects on the student learning of self-regulation skills. The data confirms the importance of self-regulated learning when it comes to school success in a distance learning setting, and has important practical implications. It is necessary

to strengthen the student self-regulation skills through teaching and evaluating both in distance learning and traditional teaching, that is, to encourage the self-regulation of learning in students through using a high-quality design of teaching content, as well as through using a design of diverse and creative activities, quality interaction, timely feedback on student work, and appropriate evaluation of learning outcomes.

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Appendix

Table 1
Correlations among measured variables (N=1463)

	1.	2.	3.	4.	5.	6.	7.	8.
1. School success	1.00							
2. General belief about	0.35*	1.00						
3. Self-efficacy in the learning process control	0.27*	0.47*	1.00					
4. Effort regulation	0.32*	0.32*	0.56*	1.00				
5. Setting goals	0.31*	0.33*	0.52*	0.74*	1.00			
6. Self-handicapping	-0.25*	-0.08*	-0.30*	-0.43*	-0.39*	1.00		
7. Control flow and learning outcomes	0.35*	0.29*	0.42	0.56*	0.65*	-0.40*	1.00	
8. Focus on minimum requirements	-0.35*	-0.11*	-0.13*	-0.25*	-0.20*	0.40*	-0.24*	1.00
9. Organization	0.23*	0.23*	0.28*	0.38*	0.48*	-0.14*	0.52*	-0.06*
10. Elaboration	0.28*	0.25*	0.27*	0.41*	0.46*	-0.21*	0.50*	-0.18*
11. Friend support	0.12*	0.11*	0.06*	0.10*	0.16*	0.04	0.18*	-0.05
12. Parental support	0.00	0.14*	0.24*	0.36*	0.31*	-0.21*	0.32*	-0.06*
13. Teacher support	0.18*	0.10*	0.15*	0.26*	0.21*	-0.07*	0.17*	0.08*
14. Anxiety	0.01	-0.12*	-0.10*	-0.08*	-0.05*	0.08*	0.04	0.08*
15. Time spent in distance learning	0.25*	-0.05	-0.01	0.16*	0.13*	-0.19*	0.18*	-0.20*
16. Negative attitude towards distance learning	-0.04	-0.29*	-0.64*	-0.34*	-0.30*	0.24*	-0.21*	0.10*

*p<0.05

	9.	10.	11.	12.	13.	14.	15.	16.
1. School success								
2. General belief about								
3. Self-efficacy in the learning process control								
4. Effort regulation								
5. Setting goals								
6. Self-handicapping								
7. Control flow and learning outcomes								
8. Focus on minimum requirements								
9. Organization	1.00							
10. Elaboration	0.49*	1.00						
11. Friend support	0.33*	0.18*	1.00					
12. Parental support	0.27*	0.23*	0.28*	1.00				
13. Teacher support	0.19*	0.17*	0.19*	0.37*	1.00			
14. Anxiety	0.09*	0.00	0.15*	0.03	-0.04	1.00		
15. Time spent in distance learning	0.15*	0.11*	0.12*	0.15*	-0.01	0.21*	1.00	
16. Negative attitude towards distance learning	-0.14*	-0.14*	0.04	-0.11*	-0.06*	0.14*	0.12*	1.00

Iskustva samoregulacije učenja u nastavi na daljinu

Sažetak

Cilj istraživanja bio je ispitati iskustva samoregulacije učenja i stav prema nastavi na daljinu učenika viših razreda osnovne i učenika srednje škole. U istraživanju je sudjelovalo 1463 učenika iz osam županija s područja Republike Hrvatske. Podatci su prikupljeni pomoću: Upitnika sociodemografskih podataka, Skale stavova o nastavi na daljinu i Skale komponenti samoreguliranoga učenja. Rezultati su pokazali da učenici imaju umjereno negativan stav prema nastavi na daljinu, umjereno do visoko izražene komponente proaktivne samoregulacije, nešto niže komponente obrambene samoregulacije i vrlo dobar uspjeh. Utvrđene su razlike u stavu prema nastavi na daljinu, komponentama samoregulacije učenja i školskom uspjehu s obzirom na vrstu škole, spol i mjesto življenja učenika. Učenje učenika osnovne škole u nastavi na daljinu više je samoregulirano nego učenje učenika u klasičnoj nastavi. Također je utvrđeno da su komponente samoregulacije učenja i vrijeme provedeno u nastavi značajni prediktori školskoga uspjeha u nastavi na daljinu.

Ključne riječi: nastava na daljinu; samoregulacija učenja; stavovi prema nastavi na daljinu.

Uvod

Pojava pandemije koronavirusa, između ostaloga, izazvala je zatvaranje škola te hitan i neplaniran prelazak na nastavu na daljinu. Obrazovanje na daljinu podrazumijeva poučavanje i učenje u kojem su učenik i učitelj fizički udaljeni (Keegan, 2013), a komuniciraju pomoću tehnologije (Moore, 2013). Nastava na daljinu predstavlja oblik nastave s obzirom na mjesto izvođenja, a e-učenje korištenje elektroničkih medija i informacijsko-komunikacijske tehnologije (IKT) u nastavi, a najčešće se vezuje za nastavu na daljinu. Do pojave pandemije koronavirusa, u školama se provodila klasična nastava „licem u lice” i nastava pomoću IKT-a. Glavni cilj primjene IKT-a u nastavi bio je unaprjeđenje kvalitete obrazovanja i pomoć učenicima u ostvarenju ishoda učenja. Proglašenjem pandemije, tijekom ožujka 2020. bili smo prisiljeni u potpunosti prijeći na nastavu na daljinu i ona je postala jedini način obrazovanja. S vremenom se, ovisno o epidemiološkim mjerama, koristila i mješovita nastava,

odnosno kombinacija nastave u učionici i nastave na daljinu. Moore (2013) je razvio teoriju transakcijske udaljenosti kao okvir za razumijevanje nastave na daljinu, prema kojoj se nastava na daljinu opisuje u terminima triju međusobno povezanih varijabli: interakcije, strukture i autonomije. Prve dvije varijable odnose se na način na koji je nastava dizajnirana i izvedena te je u domeni nastavnika, tj. onoga koji kreira nastavu na daljinu. Treća se odnosi na učenika i njegovu sposobnost kontrole vlastitoga učenja. Nastava na daljinu može biti sinkrona, kada se odvija u realnom vremenu putem videokonferencije ili neposrednoga dopisivanja i asinkrona, kada su sudionici i prostorno i vremenski udaljeni, u smislu da se isporučuju zadatci koje učenici rješavaju samostalno. Barnard i suradnici (2009) naglašavaju da nastava na daljinu eliminira ograničenja mjesta, vremena i fizičkih materijala, a daje učenicima kontrolu nad vlastitim učenjem. Drugim riječima, nastava na daljinu učenika stavlja u središte odgojno-obrazovnoga procesa i zahtijeva samostalnost učenika, posebice asinkrona kada učenici sami odlučuju što će, kada, kako i koliko dugo učiti. Upravo, socijalno-kognitivna perspektiva samoregulacije učenja nudi okvir za istraživanje nastave na daljinu i može pružiti uvid u funkcioniranje autonomnoga učenika (Lynch i Dembo, 2004).

Istraživanja pokazuju da nastava na daljinu može biti jednako uspješna kao i tradicionalna nastava ako se koriste odgovarajuće nastavne metode i tehnologije, ako postoji interakcija između učenika i učitelja i pravovremena povratna informacija koju učitelj daje učeniku (Ross i sur., 2010; Kulik, 2003). Učenici koji više vremena provedu u učenju pomoću računala postižu iznadprosječne rezultate na PISA testu (OECD, 2005). Bolje rezultate u čitalačkoj, matematičkoj i prirodoslovnoj pismenosti postižu učenici koji su se ranije počeli koristiti digitalnim uređajima i internetom, učenici razvijenijih digitalnih kompetencija, učenici koji su manje učili o uporabi interneta u školi te koji su se koristili digitalnim uređajima u nastavi određenih predmeta (Markočić Dekanić i sur., 2020). E-učenje može imati velik utjecaj na povećanje motivacije učenika za rad i usvajanje potrebnih ishoda učenja (Bulić i sur., 2017, Harandi, 2015), a učenici takvo učenje percipiraju vrlo pozitivno (Kotzer i Elran, 2012). Bulić i suradnici (2017) su utvrdili da učenici 5. i 6. razreda OŠ bolje napreduju u usvajanju obrazovnih ishoda u nastavi na daljinu, nego učenici koji su pratili nastavu na tradicionalan način, dok te razlike nisu utvrđene za učenike 7. i 8. razreda. Autori zaključuju da u starijoj grupi učenika e-učenje nije manje učinkovito od tradicionalnoga. Bulić i Kostović-Vranješ (2019) su utvrdile da e-učenje utječe na samoodgovornost učenika u izvršavanju domaćih zadaća. Učenici 7. i 8. razreda češće su izvršavali zadaće u situacijama e-učenja nego u klasičnoj nastavi. U metaanalizi koju su proveli Voutilainen i suradnici (2017), pokazalo se da metode e-učenja rezultiraju nešto višim rezultatima na testovima nego klasične metode te zaključuju da su veličina i smjer efekata jako situacijski uvjetovani. Slično, Bernard i suradnici (2004) su utvrdili male, ali pozitivne efekte nastave na daljinu na učeničko postignuće i stavove prema tehnologiji, dok su utvrdili male, ali negativne efekte na retenciju, stav prema predmetu i nastavniku.

U sklopu socijalno-kognitivne perspektive, samoregulirano učenje (SRU) definira se kao samousmjeravajući proces u kojem učenici svjesno planiraju i prate vlastite kognitivne, ponašajne i afektivne procese važne za uspješno obavljanje akademskih aktivnosti (Zimmerman i Schunk, 2001). Ono uključuje procese: postavljanja specifičnih, bliskih ciljeva, usvajanja učinkovitih strategija postizanja ciljeva, nadgledanja napredovanja u učenju, restrukturiranja fizičkoga i socijalnoga konteksta u skladu s vlastitim ciljevima, samovrednovanja, atribuiranja uzroka vlastitoga (ne)uspjeha u učenju, prilagodbu strategija za buduće učenje (Zimmerman, 2002). Lončarić (2014) je postavio Model proaktivne i obrambene samoregulacije koji uključuje: a) kognitivna (proaktivna i obrambena) uvjerenja o kontroli i b) motivacijska uvjerenja (proaktivna: akademska samoeфикаsnost, proaktivne atribucije, intrinzičnu motivaciju; ekstrinzičnu motivaciju; obrambena: nemotiviranost, obrambene atribucije i ispitnu anksioznost), c) motivacijske strategije (proaktivne: poticanje učenja i obrambene: očuvanje samopoštovanja) i d) (meta)kognitivne strategije učenja i suočavanja (proaktivne: duboko kognitivno procesiranje, (meta)kognitivni ciklus kontrole, upravljanje vanjskim resursima, rješavanje problema, instrumentalna socijalna podrška; obrambene: površinsko kognitivno procesiranje, dezangažman za zaštitu samopoštovanja i emocionalna socijalna podrška i dezangažman). Istraživanja pokazuju da učenje značajnoga dijela učenika nije optimalno samoregulirano jer im nedostaju znanja i vještine potrebne za učinkovito upravljanje vlastitim učenjem (Kramarski i Michalsky, 2009). Istraživanja također pokazuju stagnaciju ili pad u procjeni samoregulacije učenja s obzirom na dob učenika (Lončarić, 2010; Šimić Šašić, 2012) te više rezultate kod učenika na komponentama proaktivne, a učenika na obrambenim komponentama samoregulacije (Lončarić, 2010; 2014). Prema rezultatima PISA projekta (Markočić Dekanić i sur., 2020), učenici strukovno-industrijskih srednjih škola postižu značajno lošija postignuća, nego učenici škola s dominantno gimnazijskim i umjetničkim programom te učenici škola iz manjih naselja dok prosječno najbolje rezultate u svim ispitivanim područjima bilježe škole iz gradova.

Autori smatraju da, ako su vještine SRU važne za uspjeh u učenju u tradicionalnoj nastavi, onda se može očekivati da će ove vještine igrati još važniju ulogu u učenju u nastavi na daljinu (Barnard i sur., 2009; Kramarski i Michalsky, 2010). Činjenica da je učenje na daljinu fleksibilnije, učeniku usmjereno i autonomnije nego nastava „licem u lice“, zahtijeva samostalnost i odgovornost učenika, tj. da učenici koriste strategije SRU (Kuo i sur., 2014). Barak sa suradnicima (2016) je utvrdio da studenti u *online* okruženju u većoj mjeri opisuju *online* učenje u terminima kognitivnih strategija i regulacije kognicije, boljega planiranja, kontrole i vrednovanja (metakognicija), nego studenti u klasičnoj nastavi. S druge strane, studenti koji su nastavu pratili u učionici, *online* učenje su opisivali u terminima znanja o kogniciji (metakognicija) i upravljanja resursima, smatrali su da imaju manjak samodiscipline za *online* učenje te su bili zabrinuti zbog manjka interakcije. Istraživanja potvrđuju da su samoregulirani učenici uspješniji u nastavi na daljinu (Kuo i sur., 2014). Hong i Jung (2011) su utvrdili da su vještine

upravljanja (resursima, ponašanjem i rasporedom) te kognitivne i metakognitivne vještine (reguliranje učenja, korištenje učinkovitih strategija učenja, primjena prethodnoga znanja), pored vještina postavljanja ciljeva, motiviranja, interakcijskih i komunikacijskih vještina, vjerovanja u vlastite sposobnosti itd., najsnažnije objašnjavale uspjeh učenika na daljinu. Barak i suradnici (2016) utvrdili su da su studenti u *online* okružju ostvarili više rezultate na skalama samoreguliranoga učenja, nego studenti koji su polazili klasičnu nastavu, međutim, utvrdili su da samo trećina studenata bira nastavu *online*, dok većina preferira tradicionalnu nastavu u učionici. Ali i Leeds (2009) pronašli su značajno veće odustajanje od *online* tečajeva nego u klasičnim „licem u lice” tečajevima, a Lee i Choi (2011) da je uzrok odustajanja *online* studenata upravo nedostatak sposobnosti samoregulacije učenja. Studije također pokazuju da većina učenika na daljinu ima teškoće u upravljanju vlastitim učenjem, stoga doživljavaju neuspjeh (Barnard-Brak i sur., 2010; Lehmann i sur., 2014). Upravo učenici koji nisu motivirani, nemaju razvijenu samokontrolu i ne koriste učinkovite strategije učenja mogu pogrešno protumačiti autonomiju u nastavi na daljinu što ne dovodi do ostvarenja ishoda učenja (Barnard i sur., 2009). Prelazak na nastavu na daljinu uklanja brojne motivacijske i podržavajuće čimbenike kao što su pritisak grupe, poznata situacija učenja, socijalni čimbenici, nastavničko vođenje (Zvacek, 1991, prema Sharma i sur., 2007). Sharma i suradnici (2007) smatraju da su a) motivacija u terminima usmjerenosti prema cilju i samoefikasnost, b) vrijeme i upravljanje okruženjem učenja te c) traženje pomoći ključne samoregulirajuće vještine kako u klasičnoj tako i u nastavi na daljinu. Studije su također pokazale da bi tehnologijom poboljšano okruženje za učenje moglo podržavati samoregulacijske vještine učenja pružanjem učenicima mogućnosti za samokontrolu, učenje ovladavanjem, vršnjačke interakcije i metode kognitivnoga naukovanja (Barnard i sur., 2009; Cho i Heron, 2015; Kramarski i Michalsky, 2010). Iako se posljednjih godina istražuju vještine SRU u *online* okružju, Barak i suradnici (2009) smatraju da je razumijevanje samoreguliranoga učenja u *online* okružju još uvijek u početnoj fazi. Čini se da nastava na daljinu zahtijeva razvijene vještine samoregulacije učenja, a s druge ih strane dodatno jača. Većina citiranih istraživanja provedena je prije pandemije Covid-19. Istraživanja provedena u posljednje dvije godine, tijekom pandemije, ukazuju da se većina učenika dobro nosila sa izazovima nastave na daljinu. Analize studija na njemačkom govornom području pokazale su da 37 % - 70 % učenika (ovisno o studiji, dobi učenika i vrsti škole) voli nastavu na daljinu (Berger i sur., 2021). U Hrvatskoj su Ristić Dedić i Jokić (2021) utvrdili da je 41 % učenika OŠ u Zagrebu zadovoljno nastavom na daljinu. Međutim, značajan dio učenika tijekom nastave na daljinu imao je problema s učenjem, a čimbenici rizika su bili: lošiji SES obitelji (lošiji resursi i podrška obitelji), niži školski uspjeh i niža motivacija, spol učenika (dječaci), kvaliteta interakcije i kompetencije nastavnika (Berger i sur., 2021). Nastavnici su također izražavali zabrinutost da učenici nemaju dovoljno znanja i vještina za učenje u odsutnosti nastavnika te da bi to moglo uvjetovati prekid u učenju tijekom pandemije (Nepal i Kumar, 2020). Generalni je zaključak provedenih

istraživanja da razvijene vještine SRU osiguravaju učinkovitost *online* učenja (Carter i sur., 2020; He i sur., 2022). Pelikan i sur. (2021) utvrdili su da učenici koji se percipiraju kompetentnijim češće koriste strategije samoreguliranoga učenja (postavljanje ciljeva, planiranje, upravljanje vremenom, metakognitivne strategije), više su intrinzično motivirani i manje odgađaju učenje. Sutarni i suradnici (2021) utvrdili su da učenici s boljim samoregulacijskim sposobnostima mogu bolje optimizirati digitalno okruženje za učenje i bolje napredovati u akademskom postignuću. Abtokhi i suradnici (2021) nisu utvrdili povezanost između SRU i učeničkih vještina rješavanja problema u fizici tijekom nastave na daljinu, a kao moguće prepreke učinkovitom učenju navode tehnološka ograničenja i kompetencije nastavnika i učenika. Cai i suradnici (2020) zaključuju da učinkovitost SRU u nastavi na daljinu ovisi o predmetu te da je učinkovitije kada se koristi protokol za SRU, nego kada su učenici uživo gledali nastavnika na internetskoj platformi. S druge strane, Atmojo i suradnici (2020) izvještavaju da *online* učenje može učenike učiniti samostalnijim u učenju, samosvjesnijim te da mogu ostvariti dobar uspjeh. I sami su učenici (njih 40 % - 70 %) izvještavali da je njihovo učenje tijekom nastave na daljinu bilo više samoregulirano nego tijekom nastave „licem u lice” (Berger i suradnici, 2021).

Metoda

Cilj i problemi istraživanja

Cilj ovoga istraživanja bio je ispitati iskustva samoregulacije učenja učenika viših razreda osnovne i učenika srednje škole za vrijeme nastave na daljinu tijekom prvoga vala pandemije Covid-19. Preciznije, željelo se: a) ispitati kako se izvodila nastava, kakav je stav učenika prema nastavi na daljinu te neke aspekte proaktivne i obrambene samoregulacije učenja u uvjetima nastave na daljinu; b) ispitati razlike u stavu prema nastavi na daljinu, aspektima samoregulacije učenja i školskom uspjehu s obzirom na vrstu škole, spol i mjesto življenja učenika; c) usporediti rezultate u pojedinim aspektima samoregulacije učenja učenika osnovne škole u ovom istraživanju i istraživanju koje je proveo Lončarić (2014) i d) ispitati jesu li i koje komponente samoregulacije učenja te vrijeme provedeno u učenju i stav prema nastavi na daljinu značajni prediktori školskoga uspjeha učenika.

Hipoteze

a) Očekuje se da je zbog opterećenosti sustava za tehničku podršku izostala interaktivna, sinkrona komunikacija, zbog izostanka interakcije, motivacijskih i podržavajućih čimbenika očekuje se da će učenici imati negativan stav prema nastavi na daljinu te niže rezultate na skalama proaktivne samoregulacije učenja, a više na skalama obrambene samoregulacije.

b) Očekuje se da će više rezultate na komponentama proaktivne, a niže na komponentama obrambene samoregulacije pokazivati učenici osnovne škole (OŠ) i gimnazije u odnosu na učenike srednjih strukovnih/obrtničkih škola, učenice u odnosu na učenike te učenici koji žive u gradu u odnosu na učenike koji žive na selu;

c) S obzirom da učenje značajnoga dijela učenika nije optimalno samoregulirano, te da u nastavi na daljinu izostaju interakcija, motivacijski i podržavajući čimbenici koje daju nastavnici i vršnjaci ne očekuje se da će učenici u nastavi na daljinu zbog pojačane samostalnosti pokazati bolje vještine samoregulacije učenja.

d) Očekuje se da će vještine samoreguliranoga učenja (posebice kognitivne i metakognitivne) te vrijeme provedeno u nastavi i stav prema nastavi na daljinu biti značajni prediktori školskoga uspjeha.

Ispitanici

U istraživanju je sudjelovalo 1463 učenika viših razreda osnovne škole i učenika srednjih škola. Slučajno su izabrane škole iz osam županija s područja Republike Hrvatske (Zadarska, Istarska, Dubrovačko-neretvanska, Grad Zagreb, Međimurska, Bjelovarsko-bilogorska, Osječko-baranjska i Ličko-senjska) i to po dvije osnovne škole (jedna u gradu, druga u manjem mjestu/selu) i dvije srednje škole (gimnazija i strukovna/obrtnička škola).

Tablica 1

Iz Tablice 1 vidljiva je podjednaka zastupljenost učenika s obzirom na vrstu škole, a najmanje je bilo učenika 4. razreda srednjih škola. U uzorku je bilo 46,62 % učenika i 53,38 učenica. Većina učenika, njih 64,52 % živi u gradu, a 35,48 % na selu.

Mjerni instrumenti

Upitnik sociodemografskih podataka – prikupljeni su podaci o županiji u kojoj učenici žive, vrsti škole, razredu koji pohađaju, spolu i mjestu življenja (selo/grad).

Upitnik načina izvođenja nastave - učenici su označili na koji se način izvodila nastava na daljinu, te koliko su vremena dnevno trošili na nastavu na daljinu.

Školski uspjeh – učenici su pomoću skale školskih ocjena od 1 – nedovoljan do 5 - odličan procijenili uspjeh koji očekuju na završetku razreda.

Skala stavova o nastavi na daljinu – konstruirana je za potrebe ovoga istraživanja i uključivala je 9 tvrdnji koje su se odnosile na procjenu zanimljivosti, mogućnosti praćenja i razumijevanja, razine aktivnosti i koncentracije te stresnosti nastave na daljinu. Učenici su trebali procijeniti koliko se svaka tvrdnja odnosila na njih tijekom nastave na daljinu pomoću skale od pet stupnjeva (1 – uopće ne; 5 – u potpunosti da). Faktorskom analizom (na zajedničke faktore) utvrđena je jednofaktorska struktura skale (objašnjeno 40,06 % varijance), sve tvrdnje su imale zadovoljavajuće faktorsko zasićenje izoliranim faktorom, a koeficijent pouzdanosti (Cronbachov alfa) iznosio je 0,84. Tri tvrdnje koje su bile definirane u pozitivnom smjeru („Nastava na daljinu mi je zanimljiva”) bodovane su obrnuto. Ukupan rezultat formiran je kao linearna kombinacija procjena na pojedinim tvrdnjama te mjeri Negativan stav prema nastavi na daljinu.

Skale komponenti samoreguliranog učenja - (Lončarić, 2014) mjere komponente iz područja motivacijskih i kognitivnih uvjerenja i strategija:

– Opće uvjerenje o mogućnosti kontrole – mjeri opća očekivanja učenika o mogućnosti postizanja željenih rezultata (n = 4, „Mogu imati dobar uspjeh u školi ako se odlučim na to”, $\alpha = 0,88^1$)

– Samoefikasnost u procesu učenja – odnosi se na očekivanje uspjeha u procesu učenja (n = 4, „Lako i redovito rješavam domaće zadatke”, $\alpha = 0,79$)

– Motivacijske strategije: a) reguliranje truda – strategija poticanja procesa učenja (n = 4, „Ako zapnem na teškom gradivu, sam se ohrabrujem i kažem si da ja to mogu riješiti”, $\alpha = 0,85$); b) postavljanje ciljeva – strategija poticanja procesa učenja (n = 4, „Sve učim tako da si sam postavim ciljeve i potrudim se izvršiti ono što sam si zadao”, $\alpha = 0,86$); c) samohendikepiranje – strategija za zaštitu samopoštovanja (n = 5, „Učenje uvijek ostavim za zadnji trenutak”, $\alpha = 0,85$)

– Strategije učenja: a) kontrola tijeka i ishoda učenja – odnosi se na ciklus (meta) kognitivne kontrole (n = 4, „Nakon učenja provjerim svoje znanje i razumijevanje gradiva”, $\alpha = 0,85$); b) usmjerenost na minimalne zahtjeve – mjeri površinsko kognitivno procesiranje (n = 4, „Nikada ne učim više od onoga što je zadano”, $\alpha = 0,78$); c) organizacija – duboko kognitivno procesiranje (n = 6, „Velika gradiva pokušavam podijeliti u više malih cjelina koje su razumljive i smislene”, $\alpha = 0,83$); d) elaboracija – duboko kognitivno procesiranje (n = 4, „Pokušavam razumjeti novo gradivo povezujući ga s onim što već znam i što mi je jasno”, $\alpha = 0,91$).

– Traženje instrumentalne i emocionalne podrške od: a) prijatelja, b) roditelja i c) nastavnika (n = 3, „Kada nešto ne razumijem ili ne znam riješiti zadatak, tražim pomoć od prijatelja/roditelja/nastavnika”, $\alpha_a = 0,75$, $\alpha_b = 0,77$, $\alpha_c = 0,71$).

– Anksioznost je procijenjena pomoću jedne tvrdnje „Općenito, ja sam jako anksiozan učenik”.

Učenici su trebali procijeniti koliko se tvrdnje odnose na njih za vrijeme nastave na daljinu, a brojevi su imali značenje: 1 - uopće ne, 2 - donekle ne, 3 - osrednje, 4 - donekle da i 5 - u potpunosti da.

Postupak

Istraživanje je provedeno u lipnju 2020. Prema Odluci Vlade Republike Hrvatske od 7. svibnja 2020. za učenike od 5. do 8. razreda i za učenike srednjih škola provodila se nastava na daljinu. Prikupljanje podataka provedeno je *online* pomoću platforme LimeSurvey. Istraživanje je provedeno uz dopuštenje ravnatelja i stručne službe u školama i roditelja. Ravnatelji škola zamoljeni su za suradnju telefonski, te im je prosljeđena poveznica s upitnikom, koju su oni prosljedili razrednicima, a razrednici učenicima. Razrednici su prikupili suglasnosti roditelja. Sudjelovanje je bilo dobrovoljno i anonimno.

¹ Koeficijenti pouzdanosti utvrđeni u ovom istraživanju.

Rezultati

U Tablici 2 prikazani su odgovori učenika o načinima izvođenja nastave na daljinu.

Tablica 2

Nastavnici su u najvećoj mjeri zadavali upute za rad s udžbenikom i zadatke, pripremali prezentacije sa slikama i tekстом te slali poveznice na gotove lekcije.

Tablica 3

Najveći postotak učenika u nastavi na daljinu provodio je 3 do 5 sati (Tablica 3). Gimnazijski učenici su provodili najviše vremena u učenju, zatim učenici OŠ, a najmanje učenici srednjih strukovnih/obrtničkih škola ($x^2 = 67,12$, $df = 2$, $p = 0,00$). Učenici 2. razreda srednje škole provodili su značajno više vremena u učenju od učenika 3. razreda srednje škole ($x^2 = 23,72$, $df = 7$, $p = 0,00$), djevojčice više nego dječaci ($Z = -10,83$, $p = 0,00$). Nije utvrđena razlika u vremenu provedenom u nastavi na daljinu s obzirom na mjesto življenja.

Tablica 4

Učenici su stav prema nastavi na daljinu procijenili srednjim ocjenama, osim procjene da nastava na daljinu zahtijeva više truda (Tablica 4).

Tablica 5

Na temelju rezultata u Tablici 5 vidimo da učenici pokazuju umjereno negativan stav prema nastavi na daljinu, visoka uvjerenja o kontroli, umjerena uvjerenja o samoeфикаsnosti. Umjereno su izražene i motivacijske strategije, najizraženija je strategija postavljanja ciljeva, a najslabije izraženo samohendikepiranje. Od strategija učenja učenici najviše koriste elaboraciju, pa organizaciju, a najmanje su usmjereni na minimalne zahtjeve. Podršku najviše traže od prijatelja, zatim roditelja, a najmanje od učitelja. Učenici također pokazuju umjerenu razinu anksioznosti, te očekuju vrlo dobar uspjeh na kraju školske godine.

Kolmogorov-Smirnov test pokazao je da distribucije rezultata odstupaju značajno od normalne, međutim indeksi asimetričnosti i spljoštenosti u prihvatljivom su rasponu (asimetričnost < 3 , spljoštenost < 8 , Kline, 2011), osim asimetričnosti za opće uvjerenje o kontroli. Testirana je homogenost varijance Levenovim testom te je za polovicu varijabli utvrđena nehomogena varijanca (*označeno u tablici). U tom slučaju dodatno je proveden odgovarajući neparametrijski test. Kako su rezultati neparametrijskih i parametrijskih testova bili identični, radi jednoobraznosti prikazivanja rezultata prikazani su rezultati parametrijskih testova (Tablice 6 i 7).

Tablica 6

Učenici OŠ imaju manje negativan stav prema nastavi na daljinu, veća uvjerenja o kontroli i samoeфикаsnosti od učenika srednjih škola. U reguliranju truda, postavljanju ciljeva, kontroli tijeka i ishoda učenja razlike su statistički značajne između svih grupa,

najviše rezultate ostvaruju učenici OŠ, a najniže učenici strukovnih/obrtničkih škola. Učenici OŠ značajno manje koriste samohendikepiranje nego učenici srednjih škola. Razlike u usmjerenosti na minimalne zahtjeve statistički su značajne između sve tri grupe, najviše su na minimalne zahtjeve usmjereni učenici srednjih strukovnih/obrtničkih škola, a najmanje učenici gimnazija. Učenici strukovnih/obrtničkih škola statistički značajno manje koriste elaboraciju nego učenici OŠ i učenici gimnazija. Učenici gimnazija statistički značajno češće traže podršku od prijatelja. Razlike u traženju podrške roditelja statistički su značajne između sve tri grupe, učenici OŠ najviše, a učenici strukovnih/obrtničkih škola najmanje traže podršku roditelja. Učenici gimnazija statistički značajno manje traže podršku učitelja od učenika OŠ i učenika strukovnih/obrtničkih škola. Nema statistički značajnih razlika u anksioznosti s obzirom na vrstu škole. Učenici OŠ imaju statistički značajno bolji školski uspjeh nego učenici srednjih škola.

Tablica 7

Nema razlike između učenika i učenica u stavu prema nastavi na daljinu, samohendikepiranju i traženju podrške od učitelja, dok u svim preostalim varijablama postoje statistički značajne razlike. Učenici su više usmjereni na minimalne zahtjeve, dok u svim preostalim varijablama učenice ostvaruju više rezultate i u većoj mjeri pokazuju proaktivan obrazac samoregulacije (osim veće anksioznosti). Utvrđene su statistički značajne razlike u samohendikepiranju, kontroli tijeka i ishoda učenja, usmjerenosti na minimalne zahtjeve, elaboraciji, podršci roditelja i školskom uspjehu između učenika koji žive na selu i učenika koji žive u gradu. Učenici sa sela češće koriste samohendikepiranje, slabije kontroliraju tijek i ishode učenja, češće su usmjereni na minimalne zahtjeve, rjeđe koriste elaboraciju, imaju slabiju podršku roditelja i slabiji školski uspjeh.

Kako bi se testirala hipoteza o utjecaju pojačane samostalnosti tijekom nastave na daljinu na vještine samoregulacije učenja, testirane su razlike u nekim aspektima samoregulacije učenja u ovom istraživanju i istraživanju koje je proveo Lončarić (2014). Kako je Lončarić istraživanje proveo s učenicima osnovne škole, uspoređeni su rezultati samo za učenike osnovne škole. U ovom istraživanju, radi optimalne duljine cijeloga upitnika, u nekim podskalama izostavljene su pojedine tvrdnje te su u analizama uzete u obzir samo varijable koje su u potpunosti odgovarale izvornom obliku podskale.

Tablica 8

Učenici OŠ u ovom istraživanju (Tablica 8) imaju statistički značajno više opće uvjerenja o kontroli, veću samoefikasnost u procesu učenja, više koriste strategije postavljanja ciljeva i elaboraciju, ali su ujedno više bili usmjereni na minimalne zahtjeve. Učenici u nastavi na daljinu manje su koristili samohendikepiranje.

Kako bismo odgovorili na zadnji istraživački problem, provedena je stupnjevita regresijska analiza s komponentama samoregularanoga učenja, vremenom provedenim u učenju i stavom prema nastavi na daljinu kao prediktorskim varijablama, a školski uspjeh učenika bio je kriterijska varijabla (Tablica 9). No prije toga analizirani su

koeficijenti korelacija (Tablica 1 u Prilogu) te je utvrđeno da školski uspjeh pokazuje pozitivnu povezanost s proaktivnim strategijama samoregulacije i vremenom provedenim u učenju, a negativnu s obrambenim strategijama samoregulacije.

Tablica 9

Značajni prediktori školskoga uspjeha u nastavi na daljinu su opće uvjerenje o mogućnosti kontrole, samoeфикаsnost u procesu učenja, kontrola tijeka i ishoda učenja, usmjerenost na minimalne zahtjeve, elaboracija, podrška roditelja i nastavnika te vrijeme provedeno u nastavi na daljinu i negativan stav prema nastavi na daljinu. Ovaj set varijabli objašnjava 30 % varijance školskoga uspjeha.

Rasprava

Prelaskom na nastavu na daljinu tijekom prvoga vala pandemije Covid-19 nastavnici u višim razredima osnovne i u srednjoj školi u najvećoj su mjeri zadavali upute za rad s udžbenikom i zadatke, pripremali prezentacije sa slikama i tekstom te slali poveznice na gotove lekcije. Učenici su u najvećem postotku u nastavi na daljinu provodili 3 do 5 sati, najviše gimnazijski učenici, učenici 2. razreda srednje škole i učenice. Ove su razlike očekivane, a gledano ukupno učenici su vremenski u nastavi na daljinu bili manje nego u tradicionalnoj nastavi. Međutim, učenici su procijenili da je nastava na daljinu zahtijevala više truda i da su bili aktivniji nego u tradicionalnoj nastavi. Većini učenika nije bilo teško pratiti nastavu na daljinu, nisu imali problema s razumijevanjem prezentiranih sadržaja, osrednjom su procijenili zanimljivost, teškoće u koncentraciji i stresnost nastave na daljinu. Međutim, oko 20 % učenika nije bilo aktivno, bilo im je teško pratiti nastavu, imali su problema s razumijevanjem nastavnih sadržaja. Jedna četvrtina učenika procijenila je da im je nastava na daljinu bila jako stresna. Većina učenika procijenila je da im je odgovarao samostalan rad u nastavi na daljinu, dok za četvrtinu učenika to nije tako. Utvrđeni rezultati u skladu su s rezultatima drugih istraživanja provedenih tijekom pandemije Covid-19 (Berger i sur., 2021; Ristić Dedić i Jokić, 2021). Učenici su pokazali umjeren (osrednje) negativan stav prema nastavi na daljinu. Učenici su, općenito obrasce proaktivne samoregulacije procijenili umjerenim do visokim, uz izraženije opće uvjerenje o kontroli te slabije izražene komponente obrambene samoregulacije (samohendikepiranje, usmjerenost na minimalne zahtjeve). Slične rezultate pokazuju i druga istraživanja provedena u tradicionalnoj nastavi (Lončarić, 2010; 2014, Šimić Šašić, 2012), ali i istraživanja provedena tijekom pandemije Covid-19 (Atmojo i sur., 2020). Pelikan i suradnici (2020) utvrdili su relativno visoke razine postavljanja ciljeva, planiranja, organizacije vremena, metakognitivnih vještina i intrinzične motivacije, a relativno nisku razinu odgađanja kod srednjoškolskih učenika u Austriji tijekom pandemije Covid-19. Hipoteze vezane uz prvi problem djelomično su potvrđene. Učenici smatraju da mogu ostvariti uspjeh u učenju ako to žele, što je vrlo optimistično. S obzirom na niže vrijednosti u ostalim komponentama proaktivne samoregulacije, pitanje je zašto ne žele? Na temelju procjena o zanimljivosti nastave na daljinu (ali i klasične u drugim istraživanjima npr., Bezinović i sur., 2010), kada

su u najvećoj mjeri zadavani zadatci i upute za rad s udžbenikom te su se pripremale prezentacije, čini se da nastava općenito, nije dovoljno zanimljiva, izazovna i poticajna. Kao jedan od uzroka ispodprosječnih rezultata u čitalačkoj, matematičkoj i prirodoslovnoj pismenosti hrvatskih učenika navodi se zastarjelost hrvatskoga obrazovnog sustava, učenici ne znaju primijeniti stečena znanja u novim situacijama, a učestala je praksa vrednovanje učeničkih znanja na temelju reprodukcije sadržaja, što je u PISA programu ekvivalent nižoj razini postignuća (Markočić Dekanić i sur., 2020). Stoga je nužno potrebno poboljšati načine poučavanja i vrednovanja ishoda učenja, drugim riječima, potrebno je potaknuti samoregulirano učenje kod učenika adekvatnim (interaktivnim) načinima poučavanja, kako u klasičnoj nastavi tako i u nastavi na daljinu.

Razlike u procjenama komponenti samoreguliranoga učenja ukazuju na izraženije strategije proaktivne samoregulacije kod učenika osnovne škole u odnosu na učenike srednjih škola, odnosno izraženije strategije obrambene regulacije kod učenika srednjih strukovnih/obrtničkih škola. Rezultati također ukazuju na izraženije proaktivne strategije samoregulacije kod učenica, dok razlike u samoregulaciji učenja s obzirom na mjesto življenja nisu velike i govore u prilog boljoj samoregulaciji učenja učenika iz grada. Ovi su nalazi u skladu s rezultatima istraživanja provedenim u klasičnoj nastavi (Lončarić, 2010; Šimić Šašić, 2012). Učenice tradicionalno ostvaruju bolje rezultate na mjerama samoreguliranoga učenja i školskoga uspjeha (Jokić i Ristić Dedić, 2010; Lončarić, 2010; Šimić Šašić, 2012). Prema rezultatima PISA projekta (Markočić Dekanić i sur., 2020) najlošija prosječna postignuća bilježe škole iz najmanjih naselja dok prosječno najbolje rezultate u svim ispitivanim područjima bilježe škole iz gradova. Isti izvor ukazuje na značajno lošija postignuća strukovno-industrijskih srednjih škola, dok škole s dominantno gimnazijskim i umjetničkim programom postižu u prosjeku najbolje rezultate. Druga hipoteza je potvrđena, a posebice ranjive skupine učenika, koje trebaju dodatnu podršku u učenju u nastavi na daljinu su učenici srednjih strukovnih/obrtničkih škola, učenice i učenici sa sela.

S jedne strane, istraživanja pokazuju da učenje značajnoga dijela učenika nije optimalno samoregulirano te da u nastavi na daljinu izostaju interakcija, motivacijski i podržavajući čimbenici koje daju nastavnicima i vršnjacima. S druge strane, istraživanja pokazuju da bi tehnologijom poboljšano okruženje za učenje moglo podržavati samoregulacijske vještine učenja. Stoga su uspoređeni rezultati u procjenama nekih komponenti samoreguliranoga učenja u ovom istraživanju s procjenama koje je dobio Lončarić (2014) na uzorku učenika osnovnih škola. Pokazalo se da je učenje učenika OŠ u nastavi na daljinu više samoregulirano, osim veće usmjerenosti na minimalne zahtjeve. Ovi su rezultati u skladu s rezultatima drugih istraživanja koja govore da *online* učenje učenike može učiniti samostalnijim, odnosno da tehnologijom poboljšano okruženje može podržavati samoregulacijske vještine učenja (Atmojo i suradnici, 2020; Barnard i sur., 2009; Berger i sur., 2021; Cho i Heron, 2015; Kramarski i Michalsky, 2010). Međutim, moramo biti oprezni u zaključku, posebice zato što nismo (zbog različitoga broja tvrdnji na podskalama koje smo kratili zbog duljine upitnika) mogli usporediti i preostale varijable. Moguće je da je zbog reformi obrazovnoga sustava u

Hrvatskoj općenito došlo do povećanja samoregulacijskih vještina učenja kod učenika. To bi svakako trebalo provjeriti u budućim istraživanjima.

Istraživanje je pokazalo pozitivnu povezanost proaktivnih obrazaca samoregulacije učenja i vremena provedenoga u učenju, a negativnu obrambenih obrazaca samoregulacije sa školskim uspjehom. Drugim riječima, što su učenici više pokazivali proaktivne, a manje obrambene obrasce samoregulacije učenja i što su više vremena provodili u nastavi na daljinu, to su imali bolji školski uspjeh. Na kraju se pokazalo da su i u nastavi na daljinu komponente samoreguliranoga učenja značajni prediktori školskoga uspjeha, uz vrijeme provedeno u nastavi i stav prema nastavi na daljinu, što je u skladu s rezultatima drugih istraživanja (Atmojo i sur., 2020; Berger i sur., 2021; Cai i sur., 2020; Carter i sur., 2020; He i sur., 2022; Pelikan i sur., 2021; Sutarni i sur., 2021). Više procjene uvjerenja o mogućnosti kontrole, samoefikasnosti u procesu učenja, kontrole tijeka i ishoda učenja, elaboracije, podrške roditelja, vremena provedenoga u učenju i negativnoga stava prema nastavi na daljinu, a niže razine usmjerenosti na minimalne zahtjeve i podrške nastavnika značajni su prediktori boljega školskog uspjeha učenika u nastavi na daljinu. Svi odnosi varijabli sa školskim uspjehom su očekivani, osim odnosa podrške učitelja i negativnoga stava prema nastavi na daljinu. Očito se radi o supresijskim efektima jer koeficijenti korelacije pokazuju da su proaktivni obrasci samoregulacije pozitivno povezani s traženjem podrške nastavnika, a negativno s negativnim stavom prema nastavi na daljinu, dok su obrambeni obrasci samoregulacije pokazali obrnute obrasce povezanosti. Zanimljivo je primijetiti da motivacijske strategije nisu bile značajan prediktor školskoga uspjeha, ali zato jesu strategije (metakognitivne i kognitivne) učenja, što je u skladu s rezultatima Hong i Jung (2011) koji su utvrdili da su upravo ove vještine najsnažnije objašnjavale uspjeh učenika na daljinu. Stoga je četvrta hipoteza potvrđena.

Provedeno istraživanje daje uvid u samoregulaciju učenja učenika osnovnih i srednjih škola u nastavi na daljinu, u specifičnoj, kriznoj situaciji uzrokovanom pandemijom koronavirusa kada je izostala uobičajena podrška nastavnika, kao i vrednovanje nastave na daljinu iz perspektive učenika. Glavni nedostaci provedenoga istraživanja (uz nedostatke samoprocjena, *online* istraživanja, dobrovoljnoga sudjelovanja) su transversalni i korelacijski pristup. Buduća istraživanja trebala bi biti longitudinalne prirode kako bi se moglo ispitati razlike u vještinama samoregulacije učenja za vrijeme nastave na daljinu i klasične nastave te pojačava li nastava na daljinu vještine samoregulacije učenja. Također trebalo bi detaljnije ispitati način izvođenja nastave na daljinu, vrstu zadataka, kao i načine vrednovanja ishoda učenja te njihove efekte na vještine samoregulacije učenja kod učenika. Provedeno istraživanje potvrđuje važnost samoreguliranoga učenja u školskom uspjehu u nastavi na daljinu, te ima važne praktične implikacije za praksu. Potrebno je jačati samoregulacijske vještine učenika kroz poučavanje i vrednovanje kako u nastavi na daljinu, tako i u nastavi općenito, odnosno poticati samoregulaciju učenja kod učenika kroz kvalitetno oblikovanje nastavnih sadržaja, osmišljavanje raznovrsnih i kreativnih aktivnosti, kvalitetnu interakciju, pravovremenu povratnu informaciju o učeničkom radu i prikladno vrednovanje ishoda učenja.