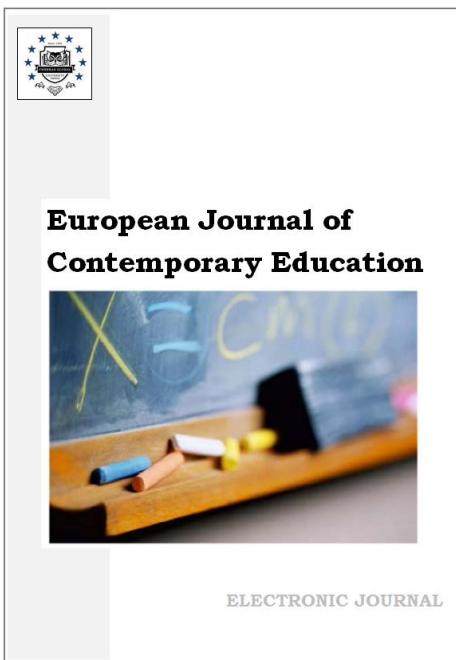




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An Examination of Students Online Learning Satisfaction, Interaction, Self-efficacy and Self-regulated Learning

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Abstract

Despite constantly growing, many educational institutions have not been prepared to shift from traditional to online learning environments until the pandemic. Current research aims to examine online students' satisfaction, interactions, internet self-efficacy and self-regulated learning among 210 high school students. The questionnaire has been used to collect the data from the participants. The findings suggested that the participants feel confident while using the Internet and are quite self-directed and do not lack interactions or satisfaction with online learning. Furthermore, the findings indicated that while grade level and GPA insignificantly influence students' satisfaction, time spent online and gender influence it significantly, with males reporting higher levels of satisfaction. While GPA and grade level significantly affect online interaction, gender and time spent online have no impact. Moreover, students who invest extra efforts into learning and obtain high grades feel significantly more satisfied with online learning than those with lower grades. The time spent online significantly affect internet self-efficacy and self-regulated learning, while the influence of grade level, GPA and gender is insignificant. This study findings may help instructors create an online classroom environment conducive to improving online students' satisfaction, interaction, internet self-efficacy and self-regulated learning and, as a result, improve the effects of online education.

Keywords: online learning satisfaction, learner interactions, self-efficacy, self-regulation.

1. Introduction

Without a doubt, constantly growing globalization has given rise to a rapid escalation in the benefit of 'information and communication technology (ICT)' in every sector, economics, politics, business, particularly in the educational sector, resulting in different ways of learning, teaching and

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training as well. The physical "brick and mortar" classroom is losing its domination as the place of learning (Nguyen, 2015). What is more, rapid developments in technology and the usefulness of online learning have made distance education easy (McBrien et al., 2009) and enhanced teachers' ideas on forming student-oriented and flexible learning environments (Bećirović et al., 2021; Kim, Hannafin, 2005). Being aware that in order to help learners gain knowledge and open-ended learning environment, only implementation of different instructional methods is far from being sufficient (Mašić, Bećirović, 2020), specifically in language learning (Jabeen, 2014), educators, scholars, and practitioners make a special effort to use the digital online learning tools as a bridge to encourage learning. Thus, the qualified programmers directed with incorporating proper technologies combined with those pedagogical approaches that boost ICT use in the process of teaching/learning are so far needed (Kim, Hannafin, 2005). As a result, many educational institutions have established diverse online learning programs not just to please the higher requirement of flexible learning conditions but rather as an instrument to convey knowledge and experience in order to attain the highest learners' outcome of learning, which will stimulate learners' creativity, innovation, comprehensiveness, and durability (Luankaew, 2016; Vilmolsiri, 2016). Since online learning is so popular, many researchers and teachers are interested in strengthening and improving learners' learning outcomes while fighting the decline in resources, strikingly in higher education (Pape, 2010). It is suggested that e-learning contributes to the fundamental and meaningful rich and actual learning environment, cooperative learning and social intercourse, the experience of enhancing motivation (Richards et al., 2014) and also empowers learners to have self-regulation (Chairprasurt, Esichaikul, 2013; Shen et al., 2013). Not to mention the possibility of giving classes all over the world to anyone with an internet connection (De la Varre et al., 2009; Koller, Ng, 2014). Researchers suggest that e-learning learners have the objective of decreasing their ambiguity toward formal instruction by expanding comprehension of an attentively outlined path to achievement (Long, 2011; Young, Dziuban, 2000). Bearing in mind that learners would rather have an active than passive learning environment, and considering that they participate in a highly collaborative world regularly, they count on the same in their course (Bećirović, Akbarov, 2015; Dziuban et al., 2003). However, e-learning has been encountered by unease about quality from the created educational settings and society in general (Akdemir, Koszalka, 2008); consequently, learners' opinions become an alternate for learning engagement in the light of satisfaction (Swan, 2001; Bolliger, 2004). This might be due to contemporary learners' perception of information as a product that can be exchanged openly between a society of learners, and cooperation turns out to be essential to a diversity of educational results (Dziuban et al., 2013). Although the value of e-learning is remarkable, surprisingly, its fruitfulness has been doubted, and some studies have criticized its effectiveness (Istifci et al., 2016; Khan, 2016). Some of the main barriers to e-learning are lack of interaction, technical issues, and difficulties in comprehending instructional aims (Song et al., 2004).

While the concept of e-learning is more and more accepted and implemented in different universities and schools in the world (Dautbašić, Bećirović, 2022; Ghaffari, Abbas, 2011), education in Bosnia and Hercegovina (BiH) is far from being so. Only recently, due to the pandemic COVID-19 regarded as a public health emergency of universal concern in January 2020 (Mahase, 2020), all schools and higher education worldwide were imposed to e-learning. Rapid transitions to remote learning, particularly in state schools where online learning was not an urgent need for educational institutions in developing countries, learners and teachers found themselves in difficult situations.

Although numerous problems are linked to online learning, we cannot ignore its privileges in times of such emergency. As a result of its significance for education and attaining the best practice in the future, it is undeniably crucial to conduct a clear understanding of not only how efficiently online learning education is made available but also how convenient learners involve when getting into that program. As many studies (Kuo et al., 2013) argue that the interaction concept plays the most critical part in both classroom and online learning procedures, the current study aims to reveal whether high school students in Bosnia are satisfied with online learning, their interaction with teachers and other learners as well as learners' content-interaction and self-regulated learning, and learners' confidence while using the Internet.

2. Literature review

Although the first online learning started 15-20 years ago, in accordance with Matthews (1999) and Watson et al. (2017), distance education has been known to students for over 100 years.

Recent studies show that a large number of students willingly sign in online courses at the secondary as well as postsecondary levels, with the latest statistics displaying enrollments inclining to the top (Allen, Seaman, 2017; Graham, 2019; Mašić, Tarabar, 2021). However, the 2020 and the widespread COVID-19, have entirely transformed face-to-face learning to online learning, bringing high demands on mainstream teaching and learning. Considering the continuous development and growing communication tools (Kahrimanović, 2021), it is significant to seek out ways to improve learners' satisfaction in every instance.

Students' understandings of their course proficiency frequently become a substitute for learning engagement in the light of satisfaction (Bolliger, 2004). According to Moore (2011), learners' satisfaction can be observed in learners being successful and having good competence while learning online. This alludes to that satisfaction is a crucial indicator of effectiveness in diverse learning circumstances, particularly online courses. Not to mention that satisfied learners are more likely to be engaged, responsive and motivated, and conducive to a productive learning environment. More importantly, their achievement level is higher; however, teachers seem to have much more trouble fostering beneficial learning outcomes with dissatisfied students. Although it is not an easy task to measure learners satisfaction (Graham, 2019), it is of crucial importance as students spend a great time, money, and energy not only to obtain a proper education but also to make their online learning as being highly useful (Bollinger, Erichsen, 2013). Learners' satisfaction, as one of the crucial predictions of the success of a course as well as the effectiveness of distance learning (Allen, Seaman, 2003), is connected with numerous factors, including self-efficacy, technology, students' autonomy, interaction, and self-regulation as well (see Rodriguez Robles, 2006; Yukselturk, Yildirim, 2008). In particular, the focus of this study is on interaction, self-regulated learning, and Internet-self efficacy, all of which are assumed to be an indication of learners' satisfaction. Undoubtedly, interaction plays a crucial part in online and face-to-face learning programs (Kuo et al., 2013), as collaboration is essential to a diversity of educational developments (Dziuban et al., 2013).

Collaborative interaction is a crucial component in the internet learning environment. Students' interaction, as a factor that can predict satisfaction (Rodriguez Robles, 2006; Bray, Aoki, Dlugosh, 2008) is usually observed in three relations (Bray et al., 2008; Wanstreet, 2006): learner-learner, learner-content and learner instructor (Kuo, 2010), although extended options are known (Anderson, 2003). Online learning mainly focuses on learner-content interaction as integral (Kuo, 2010) because the content is exposed as multimedia (Yaman, Bećirović, 2016). Furthermore, what most affects online learning satisfaction as a predictor is learner-learner interaction, especially learner-instructor interaction (Rodriguez Robles, 2006). In addition, due to its integrating learner-learner and learner-instructor interaction, learner-content relation could be an even better predictor of student satisfaction (Chejlyk, 2006; Keeler, 2006). All three types of interaction affect and shape self-efficacy as they produce certain feelings that generate it.

As a psychological category, self-efficacy leans on Bandura's social-cognitive theory (1977) as pivotal for understanding self-efficacy. Self-efficacy is also defined as a self-appraisal of one's ability to master/accomplish a task or confidence in skill to perform a task (Pintrich et al., 1991). Based on one's belief, judgment, or conviction (Bandura 1977a, Bandura 1997b) and varied upon context and tasks, self-efficacy is not measurable through an omnibus test (Hodges, 2008). Instead, it subordinates to student-regulated learning (SRL). Bandura (1997b) and Schunk (1995) agree that self-efficacy beliefs influence effort, task choice, persistence, resilience, and achievement. Modern understanding of self-efficacy considers metacognition and motivational processes (Zimmerman, Campillo, 2003; Zimmerman, Moylan, 2009). Furthermore, influenced by the Information Processing Theory (Winne, 2001; Greene, Azevedo, 2007), Winne (2011) exposes cognitive and metacognitive aspects of SRL: 1) task definition (understanding of the task), 2) goal setting and planning (establishing goals and how to achieve them), 3) enacting study tactics and strategies (preprocessing set of actions), and 4) metacognitively adapting studying (making long term changes in motivation, strategies and beliefs) (Panadero, 2017: 10). The models emphasize self-efficacy as a crucial SRL process (Panadero, 2017: 13), and teachers should gain SRL expertise as learners (Moos, Ringdal, 2012). SRL considered as one of the most influential individual skills in current time (Eroglu, Ozbek, 2018), originates in Socrates' focus on independent learning, as well as continuous awareness of the best learning method with teachers as a leader for learners to develop independent learning and critical thinking skills (Bećirović et al., 2021). Furthermore, some

authors believe that self-regulatory skills can be pre-taught in the online environment (Dembo et al., 2006), whilst others suggest embedding those within the course (Chang, 2005; Cho, 2004).

While research in online learning favored computer self-efficacy and Internet self-efficacy (Hodges, 2008), Kuo (2010), conducted by Lim's idea (2001), included computer self-efficacy. He argues that using a computer successfully as a tool is a significant predictor of course satisfaction in online learning. Self-regulation is positively related to achievement in online learning (Shih, Gamon, 2001; Yukselturk, Bulut, 2005; Bell, 2006). Many authors agree that reaching high scores and grades is a reflection of students' achievement (Sinanović, Bećirović, 2016; Barnard et al., 2008; Edvardsson, Oskarsson, 2008; Wadsworth et al., 2007) and it is a common goal for both learners and instructors. Course satisfaction and achieving desired goals correlate, and they are communicated through feedback (Anderson, 2003) in learner-instructor interaction. Based on the presented theoretical ground, the study was guided by the following research questions:

1. Is there a statistically significant difference in students' satisfaction in online learning based on GPA, gender, average time spent online for courses each week, and grade level?
2. Is there a statistically significant difference in students' interaction in online learning based on GPA, gender, average time spent online for courses each week, and grade level?
3. Is there a statistically significant difference in internet self-efficacy and student-regulated learning based on GPA, gender, average time spent online for courses each week, and grade level?
4. Are internet self-efficacy, student-regulated learning, and satisfaction a predictor of students' achievement?

3. Methodology

3.1. Participants

The examination sample consisted of 210 selected participants from high schools in Bosnia and Herzegovina. Participants were selected from different grade levels, and a convenience sampling method was employed. Thus, there were 68 (32.4 %) first grade students, 47 (22.4 %) second grade students, 45 (21.4 %) third grade students, and 50 (23.8 %) fourth grade students. 107 (51 %) female and 103 (49 %) male students with ages ranging from 15 to 19 ($M = 16.77$ $SD = 1.10$), and the assumption of a minimum of 10 participants per group (McMilan, 2012: 269) was fulfilled.

Table 1. Descriptive analysis of the research sample

		N	%
Gender	Female	107	51.0
	Male	103	49.0
Grade levels	First	68	32.4
	Second	47	22.4
	Third	45	21.4
	Fourth	50	23.8
Average time spent online for course each week	Less than 5 hours	61	29.0
	6-10 hours	56	26.7
	11-15 hours	42	20.0
	16-20 hours	31	14.8
	above 20 hours	20	9.5
	GPA	2.5-3.5=3.0 (low)	24
3.5-4.5=4.0		114	54.4

	(medium)		
	4.5-5.0=5.0 (high)	72	36.0
Total		210	100.0

3. 2. Instruments and Procedures

The instrument comprised five parts. The first part incorporated demographic questions such as gender, age, overall GPA, grade level, average time spent online for their course each week. The second part is comprised of learners' interaction scale developed and validated by Kuo et al. (2009). The aim of this instrument was to obtain more detailed information about students' satisfaction towards online learning with the five-point Likert scale ranging from 1 (strongly disagree) to 5 (strongly agree). The instrument comprised 18 items divided into three subscales, namely learner-learner interaction (8 items, e.g., Overall, I had numerous interactions related to the course content with fellow students); learner-instructor interaction (6 items, e.g., I had numerous interactions with the instructor during the class); and learner-content interaction (4 items, e.g., Online course materials helped me to understand better the class content). The Cronbach's alpha reliability analysis of the instrument displayed an acceptable level of reliability $\alpha = .84$ for overall learner's interactions, as well as for its subscales, namely learner-learner interaction $\alpha = .76$; learner-instructor interactions $\alpha = .69$; learner-content interactions $\alpha = .58$.

The third part included the internet self-efficacy scale developed and validated by Eastin and LaRose (2000) with the purpose of measuring students' confidence while using internet-based technology. This instrument included eight items (e.g., I feel confident explaining why a task will not run on the Internet) with seven possible answers ranging from 1 (very unlikely) to 7 (very likely). The next was the self-regulated scale with twelve items (e.g., When I study for this class, I set goals for myself in order to direct my activities in each study period) developed by Pintrich et al. (1993). This scale was used to measure the degree to which the monitoring, regulating, and planning strategies students employed during online learning. According to Pintrich et al. (1993), planning (activities as goal setting and task analysis), monitoring (such as paying attention to other readers, self-testing, questioning, etc.), and regulating (for example, continuous adjustment to course requirements) are three usual features that form metacognitive self-regulatory activities. In order to answer questions related to this part, a 7-point Likert scale ranging from 1 (not at all true of me) to 7 (very true of me) was utilized. Finally, the last part was about students' overall satisfaction towards online learning (e.g., overall, I am satisfied with this class). This instrument developed by Kuo et al. (2009) comprised five items based on a 5-point Likert scale starting from 1 (strongly disagree) to 5 (strongly agree). Also, the instrument showed the consistency reliability for the following variables, internet self-efficacy $\alpha = .82$; self-regulated learning $\alpha = .85$, as well as learners' satisfaction $\alpha = .67$.

After obtaining the informed consent from the schools' administration and students themselves, the data online collections instruments were provided and adjusted in accordance with high schools by the investigators themselves. Participants were not left without a proper clarification on how to complete a Likert-type scale and were enlightened that the data gained from these instruments would be anonymous, voluntary, and confident.

3.2. Data Analysis

To examine the data, The Statistical Package for Social Science (SPSS) version 23.0 was utilized, and three different statistical methods were employed. To determine the degree of students' satisfaction as well as their interaction, self-efficacy, and self-regulated learning, the means (M) and the standard deviation (SD) were utilized. Further, a One-way ANOVA was performed to see the influence of GPA on learners' interactions, and factorial ANOVA was run to analyze the effect of gender, average time spent online for courses weekly, and grade level on learners' satisfaction. Finally, standard multiple regression was applied to investigate students' satisfaction, self-efficacy, and self-regulated learning impact on students' achievement in online learning.

4. Results

4.1. Initial analyses

The results displayed in Table 2 showed that the high school students generally felt confident in the online learning environment, with a mean ($M = 4.63$, $SD = 1.08$) being pretty high. More interestingly, the results suggested that students were quite self-regulated learners, with a self-regulation level being quite high ($M = 4.34$, $SD = 1.04$). When it comes to students' interaction the most used one seemed to be learner-instructor interaction ($M = 3.42$, $SD = .75$), however, only a slightly differences were observed as other two scales, learner-content ($M = 3.41$, $SD = .81$) and learner-learner ($M = 3.38$, $SD = .75$) interaction showed almost the same results. The lowest mean among these scales was observed on the side of learners' satisfaction towards online learning, with the mean being moderate ($M = 3.29$, $SD = .76$). The analysis showed that all variables above are normally distributed using skewness and kurtosis values (ranging from -2 to +2, as proposed by Hair et al., 2010).

Table 2. Descriptive results and correlation

	N	M	SD	1	2	3	4	5	6	α	Skewness	Kurtosis
1. Learner-learner interaction	210	3.38	.75	1	.67**	.58**	.53**	.65**	.78**	.76	.445	-.132
2. Learner-instructor interaction	210	3.42	.75	-	1	.65**	.62**	.62**	.60**	.69	.379	-.538
3. Learner-content interaction	210	3.41	.81	-	-	1	.64**	.62**	.63**	.58	.149	-.408
4. Internet self-efficacy	210	4.63	1.08	-	-	-	1	.70**	.63**	.82	.348	-.245
5. Self-Regulated learning	210	4.34	1.04	-	-	-	-	1	.69**	.85	.762	.291
6. Learners' satisfaction	210	3.29	.76	-	-	-	-	-	1	.67	.600	-.111

** Correlation is significant at the 0.01 level (2-tailed)

* Correlation is significant at the 0.05 level (2-tailed)

Additionally, correlation analyses demonstrated that all scales were positively and significantly correlated with each other ($p < .05$). In particular, it is found that learners' satisfaction is positively and significantly correlated with learner-learner interaction ($r = .78$ $p = .00 < .01$), learner-instructor interaction ($r = .60$ $p = .00 < .01$), learner-content interaction ($r = .63$ $p = .00 < .01$), internet self-efficacy ($r = .63$ $p = .00 < .01$), and self-regulated learning ($r = .69$ $p = .00 < .01$). Thus, the more learners interact, the more confident they feel, and the more self-regulated and self-efficient, the more likely they will be satisfied with online learning.

4.2. Learners' satisfaction based on gender, general GPA, grade level, and average time spent online

The four-way analysis of variance (factorial ANOVA) was performed to investigate learners' differences in satisfaction with online learning based on gender, general GPA, grade level, and average time spent online on courses each week. In particular, the factorial ANOVA analysis indicates significant interaction effect only between GPA and average time spent online $F(58, 128) = 6.998$, $p = .023$, partial $\eta^2 = .107$ while other interaction effects on learners' satisfaction with online learning have been insignificant. On the contrary, significant main effect was found for gender $F(58, 128) = 5.304$, $p = .023$, with low effect size partial $\eta^2 = .040$ and average time spent online $F(58, 128) = 3.241$, $p = .014$, having moderate effect size partial $\eta^2 = .092$, while main effects of grade level $F(58, 128) = 2.477$, $p = .064$, $\eta^2 = .055$, and GPA $F(58, 128) = 2.358$, $p = .099$, with effect size being low partial $\eta^2 = .036$, were statistically insignificant (Table 4).

Table 4. Learners' satisfaction based on gender, general GPA, grade level, and average time spent online

Source	SS	df	F	p	partial η^2
Gender	2.427	1	5.304	.023	.040
GPA	2.158	2	2.358	.099	.036
Grade level	3.400	3	2.477	.064	.055
Average time spent online	5.930	4	3.241	.014	.092
Gender x GPA	1.187	2	1.297	.277	.020
Gender x grade level	2.173	3	1.583	.197	.036
Gender x average time spent online	1.415	4	.773	.545	.024
GPA x grade level	2.430	6	.885	.508	.040
GPA x average time spent online	6.998	6	2.550	.023	.107
Grade level x average time spent online	3.888	12	.708	.741	.062
Gender x GPA x grade level	3.227	4	1.764	.140	.052
Gender x GPA x average time spent online	.950	4	.519	.722	.016
Gender x GPA x grade level x average time spent online	1.774	4	.444	.427	.029

In order to determine which average time spent online groups were significantly different in satisfaction towards online learning, Bonferroni's post hoc test was conducted. Results revealed that learners who spent less than five hrs ($p = .004$) and 6 to 10 hrs ($p = .004$) as well were significantly more satisfied than those of 11 to 15 hrs spent online while other groups were not significantly different.

In regards to the level of satisfaction, the results showed that males were significantly more satisfied with online learning ($M = 3.33$, $SD = .80$) when compared to female counterparts ($M = 3.26$, $SD = .72$). Further, the results suggested that learners with high GPA scores were more satisfied ($M = 3.45$, $SD = .72$) than learners with medium ($M = 3.21$, $SD = .73$), and low GPA scores ($M = 3.21$, $SD = .94$), whose level of satisfaction was the same. When considering grade levels it is found that the highest score of satisfaction was obtained by the participants in the 4th grade ($M = 3.51$, $SD = .81$), next was the 2nd grade ($M = 3.44$, $SD = .67$), followed by the 1st graders ($M = 3.27$, $SD = .77$), while the lowest was among the 3rd graders ($M = 2.93$, $SD = .64$). Moreover, learners who spent less than 5hrs ($M = 3.46$, $SD = .79$), as well as 6-10 hrs ($M = 3.46$, $SD = .78$), were the most satisfied with online learning. Interestingly, learners who spent above 20hrs online ($M = 3.35$, $SD = .85$) were more satisfied than those with 16-20hrs online ($M = 3.08$, $SD = .66$). However, the lowest level was generally shown by participants who spent 11-15hrs online ($M = 2.96$, $SD = .55$).

4.3. Learners' interaction based on gender, general GPA, grade level, and average time spent online

A factorial MANOVA was also conducted to investigate the impact of gender, GPA, grade level, and average time spent online on learner-learner interaction, learner-instructor interaction, and learner-content interaction. Multivariate MANOVA showed significant interaction effect between Gender, GPA, Grade level and Average time spent online *Wilks' Lambda* $\lambda = 0.846$, $F(12, 374) = 1.846$, $p = .044$, $\eta^2 = .054$, GPA and Average time spent online *Wilks' Lambda* $\lambda = 0.799$, $F(18, 357) = 1.639$, $p = .049$, $\eta^2 = .072$, GPA, Grade level, and Average time spent online *Wilks' Lambda* $\lambda = 0.644$, $F(36, 373) = 1.666$, $p = .011$, $\eta^2 = .137$ on the combined variables of learners' interactions. As for the main effect on the combined variables of learners' interactions it was a significant for GPA *Wilks' Lambda* $\lambda = 0.862$, $F(6, 252) = 3.228$, $p = .005$, $\eta^2 = .071$ and grade level *Wilks' Lambda* $\lambda = 0.866$, $F(9, 307) = 2.078$, $p = .031$, $\eta^2 = .047$. Furthermore, results revealed significant interaction between gender and grade level on learner-instructor interaction F

(3, 128) = 4.141, $p = .008$, $\eta^2 = .088$, as well as, GPA and average time spent online $F(6, 128) = 2.884$, $p = .011$, $\eta^2 = .119$, and gender, GPA, and average time spent online $F(4, 128) = 4.357$, $p = .002$, $\eta^2 = .120$ on learner-content interaction. On the other hand, the results showed that GPA significantly affect learner-learner interaction $F(2, 128) = 10.003$, $p = .000$, $\eta^2 = .135$, and learner-instructor interaction $F(2, 128) = 3.361$, $p = .038$, $\eta^2 = .050$, and grade level also significantly affects learner-instructor interaction $F(3, 128) = 4.121$, $p = .008$, $\eta^2 = .088$. However, main effects of gender and average time spent online were statistically insignificant on all dependent variable. All interactions and main effects on lerners' interactions are presented in the [Table 5](#).

Bonferroni's post hoc test further reveals that learners-learners interaction is significantly more used by learners with a high GPA than learners with low GPA $p = .001$ or medium GPA $p < .001$. Also, in interaction with an instructor, learners with medium GPA significantly differ from those with high GPA $p = .016$, while learners with low GPA significantly less interact with content compared with learners with high GPA $p = .047$. Considering grade level, Bonferroni's post hoc test revealed a significant difference in all variables of learners' interaction between 3rd graders on one side and the 2nd and 4th graders on the other side $p < .05$.

Table 5. Learners' interaction based on gender, general GPA, grade level, and average time spent online

Source		SS	df	F	p	partial η^2
Gender	Learner-learner interaction	.413	1.128	1.061	.305	.008
	Learner-instructor interaction	.195	1.128	.491	.485	.004
	Learner-content interaction	.035	1.128	.080	.777	.001
GPA	Learner-learner interaction	7.784	2.128	10.003	.000	.135
	Learner-instructor interaction	2.672	2.128	3.361	.038	.050
	Learner-content interaction	1.233	2.128	1.437	.241	.022
Grade level	Learner-learner interaction	1.470	3.128	1.260	.291	.029
	Learner-instructor interaction	4.915	3.128	4.121	.008	.088
	Learner-content interaction	2.022	3.128	1.571	.200	.036
Avarage time spent online	Learner-learner interaction	3.570	4.128	2.294	.063	.067
	Learner-instructor interaction	3.282	4.128	2.064	.089	.061
	Learner-content interaction	.874	4.128	.509	.729	.016
Gender * GPA	Learner-learner interaction	.915	2.128	1.176	.312	.018
	Learner-instructor interaction	.484	2.128	.608	.546	.009
	Learner-content interaction	.258	2.128	.301	.740	.005
Gender * Grade level	Learner-learner interaction	2.317	3.128	1.985	.119	.044
	Learner-instructor interaction	4.939	3.128	4.141	.008	.088

Gender * Avarage time spent online	Learner-content interaction	1.876	3.128	1.458	.229	.033
	Learner-learner interaction	.962	4.128	.618	.651	.019
	Learner-instructor interaction	1.761	4.128	1.107	.356	.033
GPA * Grade level	Learner-content interaction	3.386	4.128	1.973	.102	.058
	Learner-learner interaction	1.114	6.128	.477	.824	.022
	Learner-instructor interaction	3.079	6.128	1.291	.266	.057
GPA * Avarage time spent online	Learner-content interaction	2.524	6.128	.981	.441	.044
	Learner-learner interaction	4.704	6.128	2.015	.068	.086
	Learner-instructor interaction	4.743	6.128	1.988	.072	.085
Grade level * Avarage time spent online	Learner-content interaction	7.422	6.128	2.884	.011	.119
	Learner-learner interaction	4.129	12.128	.884	.565	.077
	Learner-instructor interaction	6.974	12.128	1.462	.147	.121
Gender * GPA * Grade level	Learner-content interaction	8.254	12.128	1.603	.098	.131
	Learner-learner interaction	1.961	4.128	1.260	.289	.038
	Learner-instructor interaction	2.477	4.128	1.558	.190	.046
Gender * GPA * Avarage time spent online	Learner-content interaction	2.100	4.128	1.224	.304	.037
	Learner-learner interaction	.548	4.128	.352	.842	.011
	Learner-instructor interaction	1.958	4.128	1.231	.301	.037
Gender * Grade level * Avarage time spent online	Learner-content interaction	7.476	4.128	4.357	.002	.120
	Learner-learner interaction	3.858	12.128	.826	.623	.072
	Learner-instructor interaction	4.114	12.128	.862	.587	.075
	Learner-content interaction	4.495	12.128	.873	.576	.076

Further, descriptive results showed that the female students experienced learner-learner interaction ($M = 3.42$ $SD = .73$) as the highest level of learners' interaction, whilst the male counterparts demonstrated that they interact the most with the content ($M = 3.46$ $SD = .85$). Considering GPA it is revealed that learners with the high grades interact the most with all types of interaction, as it follows learner – learner ($M = 3.74$ $SD = .74$), learner – Instructor ($M = 3.60$ $SD = .75$), and learner – content ($M = 3.56$ $SD = .84$) interactions. With reference to grade level it is found that older learners that is 4th graders interact the most in all types of interaction, however, the highest mean is noticed in learner-content interaction ($M = 3.62$ $SD = .66$), and learner-instructor interaction ($M = 3.62$ $SD = .85$), but the lowest is observed with learner-learner interaction ($M = 3.58$ $SD = .75$). Unpredictably, 3rd graders interact the least, favorably disposed to

interact with learners ($M = 3.16$ $SD = .67$), followed by instructors ($M = 3.13$ $SD = .72$), and then content ($M = 3.11$ $SD = .81$). The results are changeable when it comes to average time spent online for course each week, thus, learner-content interaction was the highest level of interactions recorded among the learners who spend above 20 hrs online ($M = 3.58$ $SD = 1.05$). The second highest level of interaction was learner-learner interaction exhibited by the learners spending less than 5hrs online ($M = 3.51$ $SD = .77$), whereas, the lowest level of online interaction was learner-instructor interaction with the highest mean shown by the students spending 6-10hrs online ($M = 3.50$ $SD = .80$).

4.4. Internet self-efficacy and self-regulated learning based on gender, general GPA, grade level, and average time spent online

MANOVA was further used to investigate the effects of gender, GPA, grade level, and average time spent online on internet self-efficacy and self-regulated learning. Multivariate analysis showed that all variables and their interactions except Average time spent online *Wilks' Lambda* $\lambda = .848$, $F(8, 254) = 2.731$, $p = .007$, $\eta^2 = .079$, and interaction between GPA and Average time spent online *Wilks' Lambda* $\lambda = .849$, $F(12, 254) = 1.806$, $p = .048$, $\eta^2 = .079$ had an insignificant influence on combined dependent variables of self-regulated learning and internet self-efficacy (Table 6).

Furthermore, univariate analysis showed significant interaction only between GPA and average time spent online on self-regulated learning $F(6, 128) = 2.553$, $p = .023$, $\eta^2 = .107$. However, other interactios had been insignificant on both Internet self-efficacy and self-regulated learning. Analaysis of variance showed that average time spent online significantly influence internet self-efficacy $F(4, 128) = 4.095$, $p = .004$, $\eta^2 = .113$, and self-regulated learning $F(4, 128) = 4.060$, $p = .004$, $\eta^2 = .113$, while other independent variables showed insignificant influence on both Internet self-efficacy and self-regulated learning (Table 6).

Table 6. Internet self-efficacy and self-regulated learning based on gender, general GPA, grade level, and average time spent online

Source		SS	df	F	p	partial η^2
Gender	Internet self-efficacy	.010	1.128	.010	.919	.000
	Self-regulated learning	.858	1.128	1.002	.319	.008
GPA	Internet self-efficacy	3.954	2.128	2.003	.139	.030
	Self-regulated learning	5.059	2.128	2.954	.056	.044
Grade level	Internet self-efficacy	.881	3.128	.298	.827	.007
	Self-regulated learning	5.164	3.128	2.010	.116	.045
Avarage time spent online	Internet self-efficacy	16.167	4.128	4.095	.004	.113
	Self-regulated learning	13.903	4.128	4.060	.004	.113
Gender * GPA	Internet self-efficacy	1.563	2.128	.792	.455	.012
	Self-regulated learning	.080	2.128	.047	.954	.001
Gender * Grade level	Internet self-efficacy	5.172	3.128	1.747	.161	.039
	Self-regulated learning	5.238	3.128	2.039	.112	.046
Gender * Avarage time spent online	Internet self-efficacy	4.726	4.128	1.197	.315	.036
	Self-regulated learning	2.172	4.128	.634	.639	.019
GPA * Grade level	Internet self-efficacy	7.477	6.128	1.263	.279	.056
	Self-regulated learning	7.328	6.128	1.426	.209	.063
GPA * Avarage time spent online	Internet self-efficacy	10.720	6.128	1.810	.102	.078
	Self-regulated learning	13.115	6.128	2.553	.023	.107
Grade level * Avarage time spent online	Internet self-efficacy	16.759	12.128	1.415	.167	.117
	Self-regulated learning	9.315	12.128	.907	.542	.078
Gender * GPA * Grade level	Internet self-efficacy	.842	4.128	.213	.931	.007
	Self-regulated learning	3.163	4.128	.923	.453	.028
Gender * GPA * Avarage time spent online	Internet self-efficacy	6.399	4.128	1.621	.173	.048
	Self-regulated learning	3.823	4.128	1.116	.352	.034

Gender * Grade level * Avarage time spent online	Internet self-efficacy	6.627	12.128	.560	.871	.050
	Self-regulated learning	4.326	12.128	.421	.953	.038

Additionally, analysis revealed that female learners despite having remarkably high confidence ($M = 4.60$ $SD = .11$), and being quite self-regulated ($M = 4.28$ $SD = .11$), male counterparts outperformed them for both internet self-efficacy with mean being pretty high ($M = 4.66$ $SD = .10$), and self-regulated learning ($M = 4.40$ $SD = .10$). As could be expected, learners with high GPA scores showed the most confidence while using the Internet, with the mean being high ($M = 4.80$ $SD = .72$), and also, they scored the highest mean for self-regulated learning ($M = 4.52$ $SD = .72$). With respect to grade level analysis further revealed that internet self-efficacy ($M = 4.76$ $SD = .50$), and self-regulated learning ($M = 4.57$ $SD = .50$) were the highest among 4th graders. However, the lowest mean was recorded among 3rd graders not only for internet self-efficacy ($M = 4.38$ $SD = .45$) but also fo self-regulated learning ($M = 3.93$ $SD = .45$). Considering the average time spent online for courses each week on the scale internet self-efficacy the highest mean was observed among learners spending 6-10 hrs online ($M = 4.96$ $SD = .56$), while the least confidence towards using internet was recorded among learners who spent 11-15hrs online ($M = 4.10$ $SD = .39$). Similar results were found for self-regulated learning, though the highest mean was reported among groups of 20hrs online ($M = 4.63$ $SD = .20$), while the lowest mean was among learners who spend 11-15hrs online ($M = 3.94$ $SD = .42$). Noteworthy, internet self-efficacy was higher compared to self-regulated learning in all independent variables.

4.5. Internet' self-efficacy, self-regulated learning, and learners' satisfaction achievement predictors

Standard multiple regression was performed to explore the accuracy of internet self-efficacy, self-regulated learning, and learners' satisfaction in predicting the students' achievement in online learning. The model summary indicate that the overall model of the three predictors (internet self-efficacy, self-regulated learning, and learners' satisfaction) was insignificant $R^2 = .019$, R^2 *adj.* = .005 $F(3,206) = 1.362$, $p = .256$. The regression coefficient further confirms that the higher levels of satisfaction scale towards online learning are linked with higher levels of learners' online learning achievement, even being insignificant. The beta weights in table 7 show that none of the three predictor variables significantly predict student achievement, as follows: internet self-efficacy ($\beta = .028$, $t(.282)$, $p = .778$; self-regulated learning ($\beta = .040$, $t(.372)$, $p = .711$; and learners' satisfaction ($\beta = .087$, $t(.869)$, $p = .386$, despite their positive contribution.

Table 7. Internet' self-efficacy, self-regulated learning, and learners' satisfaction as achievement predictors

	B	β	t	p	Bivariate r	Partial r
Internet self-efficacy	.017	.028	.282	.778	.019	.020
Self-regulated learning	.025	.040	.372	.711	.026	.026
Learners' satisfaction	.073	.087	.869	.386	.060	.060

5. Discussion

Although being a popular topic (Li, Beverly, 2008; Palvia et al., 2018), instructors have not been prepared for online changes in teaching approaches (Hodges et al., 2018) until the pandemic outbreak. Concentrating on high school education, this research directs the remaining analysis gaps by pushing further into learners satisfaction, their interaction, self-regulated learning, as well as internet self-efficacy in online learning environments among high school students in Bosnia and Herzegovina. The findings suggested that high school students indeed feel confident while using the

Internet for educational purposes, which is not surprising as young learners are more connected than ever before, and by sharing and learning information immediately, the Internet has made the world appear like a 'small village' (Shali, 2018). Further, for high school students, self-regulation is vital in determining learning outcomes since the majority of them reported that they are quite self-regulated. This might be due to the fact that online instruction demands are more challenged for their learning effectiveness without educators' immediate interaction (Broadbent, Poon, 2015). Also, many studies (Barnard-Brak et al., 2010; Shea, Bidjerano, 2010) have shown that e-learning is highly learners-centered, where learners have to suppose more autonomy and responsibilities as well. Finding that learners like to interact is somehow expected as the nature of learning is social (Hamzić, Bećirović, 2021; Frey et al., 2019), and during the COVID-19, it is more likely that learners yearn for social relatedness owing to the physical lack of contact from classmates and teachers (Wong, 2020). Further, even being quite moderate, the least mean was found for students' satisfaction, which might be because educational institutions suddenly shifted from traditional classroom teaching to online teaching as a result of a pandemic outbreak. Hence, experiencing new challenges for both and finding ways to fulfill learning aims and outcomes and provide good teaching standards teachers and learners had to adopt and instantly shift to such a new learning environment. These results provide crucial clues that might enhance learners' satisfaction and build a better online learning experience by incorporating learners' self-efficacy. Learners' satisfaction might be controlled by course quality as a vital mediator that clearly affects learners' fulfillment (Alqurashi, 2019).

The correlations among all these variables were statistically significant. In particular, the results indicated that internet-self efficacy significantly correlates with students' online satisfaction, likewise many other studies (Chu, Chu, 2010; Shen et al., 2014; Womble, 2008). Thus, technical issues while using the Internet potentially will trigger learners' irritation and dissatisfaction (Choy et al., 2002). In line with earlier studies, the subject of correlation between three categories of interactions (i.e., learner-learner, learner-instructor, and learner-content interaction) and student satisfaction was also positive and significant (Rodriguez Robles, 2006; Sher, 2004). Also, numerous studies of online learning have argued that learner-learner and learner-instructor interactions were more connected to and predictive of learners' satisfaction in comparison with learner-content interaction (Bolliger, Martindale, 2004; Rodriguez Robles, 2006). However, the results are inconclusive, as some studies suggested that the intensity of content interaction is primary to learners' satisfaction in online learning than other types of interaction (Chejlyk, 2006; Keeler, 2006).

4.6. Learners' satisfaction based on gender, general GPA, grade level, and average time spent online

Even being reported that learners' satisfaction might be negatively inclined to take online courses than traditional ones (Aldhahi et al., 2021; Cole et al., 2014), recent studies found different factors benefiting learning satisfaction, such as course design (Allen et al., 2002), instructor support, and learners personal factors (Bolliger, 2004), the role of effort measured by time spent online (Johnson et al., 2002; Rich, 2006). Thus, the first research question deals with students' satisfaction based on GPA, gender, average time spent online for courses each week, and grade level of learners. The results revealed that GPA and average time spent online were significantly interacting in the influence on learners' satisfaction, while other interacting factors showed an insignificant interaction effect. Our findings put forth that extra effort can help learners to obtain higher grades, resulting in higher satisfaction. Thus, learners should know that academic success and satisfaction will be significantly more likely when effort and time are put forward from the very first day. As it is stated by Dell et al. (2010), in respect of learning, learners who devote themselves determinedly should be successful in both online learning environments and face-to-face learning. In spite of having limited studies on time and performance, it is frequently supposed that online learners will use any extra time to improve grades and knowledge (Bigelow, 2009). When particular variables were taken into account, it was found that average time spent online and gender significantly impact learners' satisfaction. Most studies on the adoption of online learning affirmed that gender was a significant determinant considering learners' satisfaction towards online learning (Goswami, Dutta, 2016). The greater satisfaction was more likely to be on the side of male learners, which is not surprising as male learners are intended to use computers more often, leading to a higher comfort level with computer use (Ashong, Commander, 2012). The same

results were obtained by Beqiri, Chase, and Bishka (2009), who found that male learners were away more fulfilled compared to female learners in the online learning context; however, some failed to see any significant difference based on gender (Cuadrado et al., 2010; Cole et al., 2014). Having said this, some investigators have suggested that females have outperformed their male counterparts in online performance (Turesky, Hebert, 2016; Wladis et al., 2015) and that their level of satisfaction is relatively higher (Maceli et al., 2011).

4.7. Learners' interaction based on gender, general GPA, grade level, and average time spent online

With regard to three levels of learners' interaction, namely learner-learner interaction, learners-instructor interaction, and learner-content interaction based on factors such as GPA, gender, average time spent online for courses each week, and grade level of learners, the study found that gender and grade level interaction significantly impact learner-instructor interaction. It appears that the influence of gender in learner-instructor interaction is different for lower graders versus higher graders learners. As a result of the emergency of the new situation, students with lower grades, particularly students who had just enrolled in first grade of high school, did not have much time to spend with their teachers leading to less interaction; either of not having enough information or shyness. However, some researchers have noted that the impact of gender is lowered for older learners (Vella et al., 2016). Further, the interactions between GPA and the average time spent online, and gender, GPA, and the average time spent online significantly influenced learner-content interaction. However, other variables showed insignificant influences. Damianov et al. (2009) also reported a positive and significant interaction between grades and time spent online, particularly for learners who get grades below B. Apparently, varying factors may regulate any disadvantages or advantages provided by identity labels, including gender, time spent online, GPA, and so on. To guarantee the success of all learners, the value of crucial significance is to continue studying how the elements are put together and establish a link between (Yukselturk, Bulut, 2007), since it is unlikely that a unique measure will result in better students performance. On the other side, it is revealed that GPA significantly influences learner-learner interaction and learner-instructor interaction. As evidenced in the current study, when learners feel close to their classmates and teachers, they gain more from online learning, confirmed by previous studies, which claimed that a happy student-teacher connection presumes students perceived knowledge attainment (Song et al., 2019). The awareness of learners' identity (Chang, Hus, 2016) and the exchange of ideas are undeniably more demanding among learners or between learners and teachers (Wut, Xu, 2021). Considering challenges to the learner-to-learner interactions in group tasks, learning from peers is rather difficult in the online learning environment. According to Wut and Xu (2021), in face-to-face classrooms, learners can immediately discuss with other peers aiming to obtain understandings, ideas, and suggestions, while not in online contexts. Keaton and Gilbert (2020) also argue that interaction among learners was the most challenging because they usually had little interaction with other learners due to time and distance limitations. Interestingly, the least interaction was done with content, though in many studies, learner-content interaction was considered to be the most critical (Bray et al., 2008; Keeler, 2006; Kuo et al., 2009) because of spending more time on requested reading or projects, and absorb the content they need to master throughout reflections, thinking or elaboration, which is confidentially intellectual interaction of an individual with the content (Laličić, Dubravac, 2021; Kuo et al., 2009). Thus, teachers should encourage learners to interact with the course matter directing at creating a new idea in the learning process, which can be done by selecting material for online courses, describing specific methods they can relate to their everyday lives (Jeffoate, 2010). Indeed, increased interaction can boost learner achievement, attitude, as well as motivation toward learning (Hillman et al., 1994).

Also, it is found that grade level significantly influences learner-instructor interaction, with the difference among 2nd and 4th grade on one side and 3rd grade on the other side. This might be because 3rd graders are usually less motivated in the Bosnian context (Ahmetović et al., 2020); thus, lower learners' motivation can lead to avoiding interaction. Also, the same learners may be lacking the ability to focus on their interactions or feeling that an online course is not as efficient as traditional ones considering that they do not sense as a part of the online community. Similar findings were found by Rouborn, BrckaLorenz, and Shoup (2018), who reported that older online

learners are generally more academically engaged and have more positive attitudes toward teaching, as well as course interactions online.

4.8. Internet self-efficacy and self-regulated learning based on gender, general GPA, grade level, and average time spent online

Corresponding to internet self-efficacy and student-regulated learning based on GPA, gender, average time spent online for courses each week, and the grade level of learners, the analysis showed that only interaction between GPA and average time spent online significantly influence internet self-efficacy, while significant influence was not found on the side of self-regulated learning. This means that learners with high GPAs are pretty confident in using the Internet and might have spent less time online than those with low GPAs. When single variables were considered, it is revealed that average time spent online significantly influences both internet self-efficacy and self-regulated learning. Although findings vary, it appeared to make sense that learners who spent 6-10hrs online had higher Internet self-efficacy compared to these 11-15hrs. Which means that learners who were more dominant in using the Internet for their assignments might have spent less time indeed online; otherwise, those who were not knowledgeable about the Internet might have no choice but to spend more time going through the course requirement. However, this does not need to be the case, as, for example, learners who spend above 20hrs on courses weekly claim that they are more confident than those with less than 5hrs online. The amount of time spent online weekly again significantly affected learners' self-regulation level. Thus, when contrasting the learners who spent 20hrs online with those who spent less than 5hrs per week, it is expected that they were more self-regulated. Apparently, learners who spent less than 5hrs online might have finished the requested assignment but without gaining a deep understanding of the subject, while a more self-regulated individual would give more time to ensure the preferable accomplishment of knowledge. Moreover, it appears vital for online students to acquire high Internet self-efficacy in order to finish required assignments for an online class produced through the Internet. Bearing in mind that online learning relies on Internet delivery and that the Internet is the main resource not only for connectedness but also for gaining more knowledge, it is not surprising that learners in current studies had remarkably high confidence in the Internet. Even having a lower mean compared to Internet self-efficacy, self-regulation learning is relatively high. Contrary to face-to-face instruction, online education is learner-centered, and much autonomous effort is needed for favorable outcomes (Artino, 2007).

4.9. Internet' self-efficacy, self-regulated learning, and learners' satisfaction as achievement predictors

Although preference is given to face-to-face instruction, supposing not only that online students are inclined to quit quite easily, but rather that online classrooms can lack response for both teachers and learners (Atchley et al., 2013). Learning more about learners' beliefs and attitudes will help to enhance e-learning courses and assist learners in being more competent in an educational program that is growing more prevalent every year. Numerous studies have reported that self-regulated learning (Bell, 2006; Yukselturk, Bulut, 2005), internet self-efficacy (Bandura, 1997; Kuo, 2010; Schunk, 1995), learners' interaction (Turley, Graham, 2019), and students satisfaction towards online learning significantly predict academic performance (Atchley et al., 2013). However, the same is not valid for the current study since insignificant but surely positive influences were found with all mentioned variables. This might be due to the fact that online learners did not have a choice but to have classes online, and indeed they were not ready for it. What is more, when the survey was collected, many high schools in Bosnia did not use any platform. Instead, they communicated via Viber groups with their peers, sending them either assignment to do or content to read without no or little control. Giving the right that online education is equal to the traditional one (Kim et al., 2015), supporting online learners' interaction, effort regulation, and confidence is crucial to helping them flourish academically and become more satisfied. Despite being disconnected, teachers must connect with their peers and be available to them since interaction and communication are essential pieces of the achievement puzzle (Rizvić, Bećirović, 2017; Iqbal, 2021).

The limitations and suggestions for further research can be drawn from the this study. Firstly, the study investigated learners in the time of imposed online learning by the coronavirus,

and the results might not have been realistic as learners had not had the chance to choose this type of learning. Furthermore, investigating learners who choose online learning over traditional one with longitudinal observation as well as qualitative and quantitative approaches might lead to more accurate results about the experience of online learning. Although teachers' attitudes towards online learning play a significant role in this learning environment, they were not investigated, and future research might include instructors as a part of the research sample.

6. Conclusion

Even though online learning was well developed in the western world by the moment of the COVID outbreak in Bosnia and Herzegovina, the system of high school education was not ready for the shift and did not have clear expectations on the overall process and its outcomes. This paper aimed to discover the characteristics of learners' satisfaction, their interaction, self-regulated learning, and internet self-efficacy in high schools in online learning environments. The participants testify that the students feel confident in such a learning environment and are mainly self-regulated. Communication, as the crucial condition, was troubled. The reasons for it might be found in the fact that educators' immediate interaction was not available and such a learning/teaching is highly student-centered. This paper provides crucial clues from the perspective of learners' satisfaction and self-efficacy, which is needed for the overall teaching enhancement. Communication between learners and educators mattered the most in terms of satisfaction, which puts aside the importance of the studied content.

It has been acknowledged that learners' satisfaction correlates with time spent online; more online time resulted in higher grades and, therefore, more satisfied learners. Males, in comparison to females, were significantly more satisfied with online learning. Female students experienced learner-learner interaction as the highest level of learners' interaction, while males interacted most with content. The impact of grade level was rather mild: learners of 4th grade were the most satisfied, followed by 2nd and 1st grades. Here should be emphasized that 1st graders faced difficulties in communication with educators due to insufficient time spent in face-to-face interaction needed for bonding. High achievers mostly interact with learners. Further, average time spent online significantly influences both internet self-efficacy and self-regulated learning. Self-efficacy, unlike satisfaction and confidence, was better in those who spent less time on the Internet than those who spent more. Additionally, even if we would expect the opposite, less time spent online resulted in higher grades. That probably has to do with quality rather than quantity of time spent online, which could be another aspect of self-regulation and self-efficacy.

In order to enhance e-learning in high schools, educators in Bosnia and Herzegovina should have been assigned to use educational platforms to ease communication and have courses better organized. On the other hand, being also unprepared for this type of learning, students responded quite well to it, coping well with unknown challenges. The difference in handling the situation between learners and educators may lay in the age gap – as generally known, younger generations respond to new technologies with more enthusiasm and curiosity.

The next step for educators, as found unready, should be working on gaining knowledge about learners' attitudes and beliefs. Those should be observed from the perspective of self-regulated learning, internet self-efficacy, learners' interaction and satisfaction with online learning. Online learning is progressive and more resistant to certain outer factors. It is a contemporary way of communication and, as a powerful tool in education, it deserves more attention from educators.

References

- [Ahmetović et al., 2020](#) – Ahmetović, E., Bećirović, S., Dubravac, V. (2020). Motivation, Anxiety, and Students' Performance. *European Journal of Contemporary Education*. 9(2): 271-289. DOI: 10.13187/ejced.2020.2.271
- [Akdemir, Koszalka, 2008](#) – Akdemir, O., Koszalka, T.A. (2008). Investigating the relationships among instructional strategies and learning styles in online environments. *Computers & Education*. 50(4): 1451-1461.
- [Aldhahi et al., 2021](#) – Aldhahi, M.I. et al. (2021). Predictors of electronic learning self-efficacy: A cross-sectional study in Saudi Arabian universities. *Frontiers in Education*. 6(614333).

Allen et al., 2002 – Allen M. et al. (2002). Comparing student satisfaction with distance education to traditional classrooms in higher education: A meta-analysis. *American Journal of Distance Education*. 16(2): 83-97.

Allen, Seaman, 2017 – Allen, I.E., Seaman, J. (2017). Digital Compass Learning: Distance Education Enrollment Report 2017. ERIC Number: ED580868. [Electronic resource]. URL: <https://eric.ed.gov/?id=ED580868>.

Allen, Seaman, 2013 – Allen, I.E., Seaman, J. (2013). Changing course: Ten years of tracking online education in the United States. Babson Survey Research Group and Quahog Research Group.

Almusharraf, Khahro, 2020 – Almusharraf, N., Khahro, S. (2020). Students' Satisfaction with Online Learning Experiences during the COVID-19 Pandemic. *Online Journals*. 15(21): 246-267.

Alqurashi, 2019 – Alqurashi, E. (2019). Predicting student satisfaction and perceived learning within online learning environments. *Distance Education*. 40(1): 133-148.

Althafeeri, Khan, 2016 – Althafeeri, F.M., Khan, B.H. (2016). Teachers' and Students' Views on E-Learning Readiness in Kuwait's Secondary Public Schools, *Journal of Educational Technology Systems*. 45(2): 202-235.

Anderson, 2003 – Anderson, T. (2003). Modes of interaction in distance education: Recent developments and research questions. In M. G. Moore & W. G. Anderson (Eds.), *Handbook of distance education*, 129-144.

Anthony, Artino, 2012 – Anthony R., Artino Jr. (2012). Academic self-efficacy: from educational theory to instructional practice. *Perspect Med Educ*. 1: 6-85.

Ashong, Commander, 2012 – Ashong, C.Y., Commander, N.E. (2012). Ethnicity, gender, and perceptions of online learning in higher education. *MERLOT Journal of Online Learning and Teaching*. 8(2): 98-110.

Atchley et al., 2013 – Atchley, W. et al. (2013). Comparison of course completion and Student performance though online and traditional courses. *The International review of research in open and distance learning*. 14(4): 104-116.

Bandura, 1997a – Bandura, A. (1997). Self-efficacy: Toward a unifying theory of behavioral change. *Psychol Rev*. 84: 191-215.

Bandura, 1997a – Bandura, A. (1997). Self-efficacy: The exercise of control. New York: W.H. Freeman and Company.

Bandura, 2012 – Bandura, A. (2012). On the functional properties of perceived self-efficacy revised. *Journal of Management*. 38(1): 9-44.

Barnard-Brak et al., 2010 – Barnard-Brak, L., Paton, V.O., Lan, W.Y. (2010). Profiles in self-regulated learning in the online learning environment. *The International Review of Research in Open and Distributed Learning*. 11(1): 61-80.

Barnard-Brak et al., 2011 – Barnard-Brak, William, Y.L., Paton, V.O. (2011). Measuring and Profiling Self-Regulated Learning in the Online Environment, Baylor University and Texas Tech University, USA; in Dettori, Giulana and Donatella Persico: *Fostering Self-Regulated Learning through ICT*. Institute for Educational Technology – National Research Council (CNR), Italy.

Bećirović, Akbarov, 2015 – Bećirović, S., Akbarov A. (2015). Impact of social changes on teacher's role and responsibilities in the educational system. *JoLIE – Journal of Linguistic and Intercultural Education*. 8: 21-35. DOI: <https://doi.org/10.29302/jolie.2015.8.2>

Bećirović et al., 2021 – Bećirović, S., Brdarević-Čeljo, A., Delić, H. (2021). The use of digital technology in foreign language learning. *SN Social Sciences*. 1(10): 1-21. DOI: <https://doi.org/10.1007/s43545-021-00254-y>

Beishuizen, Steffens, 2011 – Beishuizen, J., Steffens, K (2011). A conceptual framework for research on Self-regulated learning. *Technology Enhanced Learning book series*. 5: 3-19.

Bell, 2006 – Bell, P.D. (2006). Can factors related to self-regulated learning and epistemological beliefs predict learning achievement in undergraduate asynchronous web-based courses? *Perspectives in Health Information Management*. 3(7): 1-17.

Beqiri et al., 2010 – Beqiri, M.S., Chase, N.M., Bishka, A. (2010). Online course delivery: An empirical investigation of factors affecting student satisfaction. *Journal of Education for Business*. 85(2): 95-100.

Bigelow, 2009 – Bigelow, C.A. (2009). Comparing student performance in an online versus a face to face introductory turfgrass science course-a case study. *NACTA J*. 53: 1-7.

Bolliger, 2004 – *Bolliger, D.U.* (2004). Key Factors for Determining Student Satisfaction in Online Courses. *AACE*. 3(1): 61-67.

Bolliger, Martindale, 2004 – *Bolliger, D.U., Martindale, T.* (2004). Key factors for determining student satisfaction in online courses. *International Journal on E-Learning*. 3(1): 61-67.

Bollinger, Erichsen, 2013 – *Bollinger, D.U., Erichsen, E.A.* (2013). Student satisfaction with blended and online courses based on personality type. *Canadian Journal of Learning & Technology*. 39(1): 1-23.

Bray et al., 2008 – *Bray, E., Aoki, K., Dlugosh, L.* (2008). Predictors of learning satisfaction in Japanese online distance learners. *International Review of Research in Open & Distance Learning*. 9(3): 1-24.

Broadbent, Poon, 2015 – *Broadbent, J., Poon, W.L.* (2015). Self-Regulated Learning Strategies & Academic Achievement in Online Higher Education Learning Environments: A Systematic Review. *The Internet and Higher Education*. 27: 1-13.

Chaiprasurt, Esichaikul, 2013 – *Chaiprasurt, C., Esichaikul, V.* (2013). Enhancing Motivation in Online Courses with Mobile Communication Tool Support: A Comparative Study. *International Review of Research in Open and Distance Learning*. 14(3): 377-401.

Chang, Hsu, 2016 – *Chang, C., Hsu, M.* (2016). Understanding the determinants of users' subjective well-being in social networking sites: An integration of social capital theory and social presence theory. *Behaviour & Information Technology*. 35(9): 720-729.

Chejlyk, 2006 – *Chejlyk, S.* (2006). The effects of online course format and three components of student perceived interactions on overall course satisfaction. *Dissertation Abstracts International*, 67(4). (UMI No. 3213421).

Choy et al., 2002 – *Choy, S., McNickle, C., Clayton, C.* (2002). Learner expectations and experiences: An examination of student views of support in online learning. Leabrook, SA: Australian National Training Authority.

Chu, Chu, 2010 – *Chu, R.J., Chu, A.Z.* (2010). Multi-level analysis of peer support, Internet self-efficacy and e-learning outcomes-The contextual effects of collectivism and group potency. *Computers and Education*. 55: 145-154.

Dautbašić, Bećirović, 2022 – *Dautbašić, A., Bećirović, S.* (2022). Teacher and Student Experiences in Online Classes During COVID-19 Pandemic in Serbia, Bosnia and Herzegovina and Croatia. *MAP Social Sciences*. 2(1): 9-17. DOI: <https://doi.org/10.53880/2744-2454.2022.2.1.9>

De la Varre et al., 2009 – *De la Varre et al.* (2009). Social support for online learning. In *Handbook of research on socio-technical design and social networkingsystems*, ed. B. Whitworth and A. de Moor, 574-587. Hershey, PA: IGI Global (PDF) Enhancing online distance education in small rural US schools: a hybrid, learner-centred model.

Dell et al., 2010 – *Dell et al.* (2010). Comparing Student Achievement in Online and Face-to-Face Class Formats. *Journal of Online Learning and Teaching*. 6(1): 30-42.

Ghaffari, Abbas, 2011 – *Ghaffari, A.G., Abbas, D.Z.* (2011). Measuring the Learning Organization's Construct in Pakistan: A Case of Public Sector Educational Institutes. *European Journal of Social Sciences*. 18(4): 574-581.

Goswami, Dutta, 2016 – *Goswami, A., Dutta, S.* (2016). Gender Differences in Technology Usage—A Literature Review. *Open Journal of Business and Management*. 4: 51-59.

Graham, 2019 – *Graham, C.R.* (2019). Handbook DE Current Research in BL, In book: *Handbook of Distance Education*. Routledge.

Hamzić, Bećirović, 2021 – *Hamzić, U., Bećirović, S.* (2021). Twice-Exceptional, Half-Noticed: The Recognition Issues of Gifted Students with Learning Disabilities. *MAP Social Sciences*. 1(1): 13-22. DOI: <https://doi.org/10.53880/2744-2454.2021.1.1.13>

Hillman et al., 1994 – *Hillman, D.C., Willis, D.J., Gunawardena, C.N.* (1994). Learner-Interface Interaction in Distance Education: An Extension of Contemporary Models and Strategies for Practitioners. *The American Journal of Distance Education*. 8(2): 30-42.

Hodges, 2008 – *Hodges, C.B.* (2008). Self-efficacy in the context of online learning environments: A review of the literature and directions for research. *Performance Improvement Quarterly*. 20(3/4): 7-25.

Iqbal, 2021 – *Iqbal, T.* (2021). Importance of Intercultural Sensitivity. *MAP Education and Humanities*. 1(2): 1-6.

Istifci, Demiray, 2016 – Istifci, I., Demiray, L. (2016). An Effective Role of E-Learning Technology For English Language Teaching By Using Meta Communication Actors. *Turkish Online Journal of Distance Education*. 12(4): 201-211.

Jabeen, Thomas, 2015 – Jabeen, S.S., Thomas A.J. (2015). Effectiveness of Online Language Learning. *Proceedings of the World Congress on Engineering and Computer Science 2015, I*.

Jeffcoate, 2010 – Jeffcoate, J. (2010). How Postgraduate Students Engage With Online Course Material and Activities. *Innovation in Teaching and Learning in Information and Computer Sciences*. 9(1): 42-51.

Johnson et al., 2002 – Johnson, D., Joyce, B., Sen, S. (2002). An analysis of student effort and performance in the finance principles course. *Journal of Applied Finance*. 12(2): 67-72.

Kahrimanović, 2021 – Kahrimanović, E. (2021). To Speak or not to Speak? Theoretical Framework of Willingness to Communicate. *MAP Social Sciences*. 1(1): 37-47.

Keaton, Gilbert, 2020 – Keaton, W., Gilbert, A. (2020). Successful Online Learning: What Does Learner Interaction with Peers, Instructors and Parents Look Like? *Journal of Online Learning Research*. 6(2): 129-154.

Keeler, 2006 – Keeler, L.C. (2006). Student satisfaction and types of interaction in distance education courses. *Dissertation Abstracts International*, 67(9). (UMI No. 3233345).

Kuo, 2010 – Kuo, Y.C. (2010). Interaction, Internet Self-Efficacy, and Self-Regulated Learning as Predictors of Student Satisfaction in Distance Education Courses. *All Graduate Theses and Dissertations*. 741.

Kuo et al., 2009 – Kuo, Y.C. et al. (2009). Student perceptions of interactions and course satisfaction in a blended learning, A Predictive Study of Student Satisfaction in Online Education Programs Kuo, Walker, Belland, and Schroder. *The International Review of Research in Open and distance learning*. 14(1): 16-39.

Kuo et al., 2013 – Kuo, Y.C. et al. (2013). Interaction, Internet self-efficacy, and self-regulated learning as predictors of student satisfaction in online education courses. *The Internet and higher Education*. 20: 35-50.

Laličić, Dubravac, 2021 – Laličić, A., Dubravac, V. (2021). The role of reading in English language classrooms. *MAP Social Sciences*. 1(1): 23-36.

Kim, Hannafin, 2005 – Kim, M., Hannafin, M.G. (2005). Scaffolding problem solving in technology-enhanced learning environments (TELEs): Bridging research and theory with practice. *Computers & Education*. 56(2): 403-417. DOI: <https://doi.org/10.1016/j.compedu.2010.08.024>

Li, Beverly, 2008 – Li, C.S., Beverly, I. (2008). An overview of online education: Attractiveness, benefits, challenges, concerns and recommendations. *College Student Journal*. 42(2, A): 449-458.

Long, 2011 – Long, P.D. (2011). Penetrating the Fog: Analytics in Learning and Education. *TD Technologie Didattiche*. 22(3): 132-137.

Luankaew, 2016 – Luankaew, K. (2016). When Thailand 4.0 Was Driven by Education 2.0. *SaanPunya*. 26: 1-4.

Maceli et al., 2011 – Maceli et al. (2011). Differences of student satisfaction with college professors: The impact of student gender on satisfaction. *Academy of Educational Leadership Journal*. 15(4): 35-45.

Mahase, 2020 – Mahase, E. (2020). Covid-19: mental health consequences of pandemic need urgent research, paper advises. *BMJ* 369:m1515. DOI: 10.1136/bmj.m1515

Mašić, Tarabar, 2021 – Mašić, A., Tarabar, A. (2021). The Influence of Online Games on Learning English Vocabulary in High Schools in Bosnia and Herzegovina. *MAP Education and Humanities*. 1(1): 28-37.

Mašić et al., 2020 – Mašić, A., Polz, E., Bećirović, S. (2020). The Relationship between Learning Styles, GPA, School Level and Gender. *European Researcher. Series A*. 11(1): 51-60. DOI: 10.13187/er.2020.1.51

Mathews, 1999 – Mathews, D. (1999). The Origins of Distance Education and Its Use in the United States. *T.H.E. Journal*. 27(2): 54-67.

McBrien et al., 2009 – McBrien, J.L. et al. (2009). Virtual Spaces: Employing a Synchronous Online Classroom to Facilitate Student Engagement in Online Learning. *Erudit journals, International review of research in Open and Distributed learning*. 10(3): 1-17.

- McMillan, 2012 – McMillan, J.H. (2012). Educational Research: Fundamentals for the Consumer (6th ed.). Pearson.
- Moore, 2011 – Moore, J.L. (2011). E-learning, online learning, and distance learning. *The Internet and Higher education*. 14(2): 129-135.
- Nguyen, 2015 – Nguyen, T. (2015). The Effectiveness of Online Learning: Beyond No Significant Difference and Future Horizons. *MERLOT Journal of Online Learning and Teaching*. 11(2): 309-319.
- Palvia, et al., 2018 – Palvia, S. et al. (2018). Online education: Worldwide status, challenges, trends, and implications. *Journal of Global Information Technology Management*. 21(4): 233-241.
- Pape, 2010 – Pape, L. (2010). Blended Teaching & Learning. School Administrator. *The Education Digest*. 67(4): 16-21.
- Pintrich, De Groot, 1990 – Pintrich, P.R., De Groot, E.V. (1990). Motivational and self-regulated learning components of classroom academic performance. *Journal of Educational Psychology*. 82(1): 33-40.
- Pintrich et al., 1993 – Pintrich, P.R. et al. (1993). Reliability and predictive validity of the motivated strategies for learning questionnaire (MSLQ). *Educational and Psychological Measurement*. 53(3): 801-813.
- Rabourn et al., 2018 – Rabourn, K., BrckaLorenz, A., Shoup, R. (2018). Reimagining Students Engagement: How Nontraditional Adult Learners Engage in Traditional Postsecondary Environments. *The Journal of Continuing Higher Education*. 66(1): 22-33.
- Rich, 2006 – Rich, S.P. (2006). Student performance: does effort matter? *Journal of Applied Finance*. 16(2): 120-133.
- Richards et al., 2014 – Richards, J., Rodgers, T. (2014). Approaches and methods in Language teaching, Cambridge Language Teaching Library, A description and analysis. Cambridge University Press.
- Rizvić, Bećirović, 2017 – Rizvić, E., Bećirović, S., (2017). Willingness to Communicate in English as a Foreign Language in Bosnian-Herzegovinian EFL Context. *European Researcher*. 8(3): 224-235. DOI: 10.13187/er.2017.3.224
- Rodriguez, 2006 – Rodriguez Robles, F.M. (2006). Learner characteristic, interaction and support service variables as predictors of satisfaction in Web-based distance education. *Dissertation Abstracts International*. 67(07). (UMI No. 3224964).
- Schunk, 1995 – Schunk, D.H. (1995). Self-efficacy and education and instruction. In J.E. Maddux (Ed.). *Self-efficacy, adaptation, and adjustment: Theory, research, and application*. New York: Plenum Press, 281-303.
- Shali, 2018 – Shali, K.S. (2018). The Impact of Social Networking on Society with special emphasis on Adolescents in India. *International Journal of Social Science and Humanities Research*. 6(2): 662-669.
- Shea, Bidjerano, 2010 – Shea, P., Bidjerano, T. (2010). Learning presence: Towards a theory of self-efficacy, self-regulation, and the development of a communities of inquiry in online and blended learning environments. *Computers & Education*. 55(4): 1721-1731.
- Shen et al., 2013 – Shen et al. (2013). Review of Research on Online Learning Environments in Higher Education, Science Direct. *Procedia - Social and Behavioral Sciences*. 191(2015): 2012-2017.
- Sher, 2009 – Sher, A. (2009). Assessing the relationship of student-instructor and student-student interaction to student learning and satisfaction in web-based online learning environment. *Journal of Interactive Online Learning*. 8(2): 102-120.
- Sinanović, Bećirović, 2016 – Sinanović, J., Bećirović S. (2016). The Determinants of Lifelong Learning. *European researcher*. 103(2): 107-118. DOI: 10.13187/er.2016.103.107
- Song et al., 2019 – Song, D. et al. (2019). Participation in Online Courses and Interaction With a Virtual Agent. *International Review of Research in Open and Distributed Learning*. 20(1).
- Song et al., 2004 – Song, L. et al. (2004). Improving online learning: Student perceptions of useful and challenging characteristics. *The Internet and Higher Education*. 7(1): 59-70.
- Swan, 2001 – Swan, K. (2001). Virtual interaction: Design factors affecting student satisfaction and perceived learning in asynchronous online courses. *Distance education*. 22(2): 306-331.

Turesky, Hebert, 2016 – Turesky Vella, E.J., E.F., Hebert, J. (2016). Predictors of Academic Success in Web-Based Courses: Age, GPA, and Instruction Mode. *Quality Assurance in Education*. 24(4): 586-600.

Turley, Graham, 2019 – Turley, C., Graham, C. (2019). Interaction, Student Satisfaction, and Teacher Time Investment in Online High School Courses. *Journal of Online Learning Research*. 5(2): 169-198.

Wamstreet, 2006 – Wamstreet, C.E. (2006). Interaction in Online Learning Environments: A Review of the Literature. *Quarterly Review of Distance Education*. 7(4): 399-411.

Watson et al., 2017 – Watson, F.F. et al. (2017): Instructional Strategies to Help Online Students Learn: Feedback from Online Students. *TechTrends*. 61: 420-427.

Wladis et al., 2015 – Wladis, C., Hachey, A. C., Conway, K. (2015). Which STEM majors enroll in online courses, and why should we care? The impact of ethnicity, gender, and nontraditional student characteristics. *Computers & Education*. 87: 285-308.

Womble, 2008 – Womble, J.C. (2008). E-learning: The relationship among learner satisfaction, self-efficacy, and usefulness. *The Business Review*. 10(1): 182-188.

Wong, 2020 – Wong, R. (2020). When no one can go to school: Does online learning meet students' basic learning needs? *Interactive Learning Environments*. DOI: <https://doi.org/10.1080/10494820.2020.1789672>

Wut, Tim, Xu, 2021 – Wut, Tm., Xu, J. (2021). Person-to-person interactions in online classroom settings under the impact of COVID-19: a social presence theory perspective. *Asia Pacific Education*. 22: 371-383.

Yaman, Bećirović, 2016 – Yaman, A., Bećirović, S. (2016). Learning English and Media Literacy. *Imperial Journal of Interdisciplinary Research (IJIR)*. 2(6): 660-663.

Young, Dziuban, 2000 – Young, B.R., Dziuban C. (2000). Student Satisfaction with Online Learning: Is it a Psychological Contract? Research Initiative for Teaching Effectiveness. University of Central Florida.

Yukselturk, Bulut, 2007 – Yukselturk, E., Bulut, S. (2007). Predictors for student success in an online course. *Educational technology & Society*. 10(2): 71-83.

Yukselturk, Yildirim, 2008 – Yukselturk, E., Yildirim, Z. (2008). Investigation of interaction, online support, course structure and flexibility as the contributing factors to students' satisfaction in an online certificate program. *Educational Technology & Society*. 11(4): 51-65.