mapub.org/mapeh

MAP Education and Humanities

Volume 3 / Issue 1

MAP Education and Humanities (MAPEH) is a scholarly peer-reviewed international scientific journal published by **MAP** - *Multidisciplinary Academic Publishing*, focusing on empirical and theoretical research in all fields of education and humanities.

E-ISSN: **2744-2373**

ORIGINAL RESEARCH PAPER

EXAMINING STUDENTS' INTERACTION AND SATISFACTION WITH ONLINE LEARNING

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MAP EDUCATION AND HUMANITIES

Volume 3 / Issue 1

ISSN: 2744-2373/ © 2022 The Authors. Published by **MAP** - *Multidisciplinary Academic Publishing.*

Article Submitted: **10 October 2022**
Article Accepted: **26 October 2022**
Article Published: **31 October 2022**

ABSTRACT

Technology has made it possible for the higher education ecosystem to adapt to the different needs of students and to interact with them remotely when face-to-face interaction is impossible. This study aimed to investigate the relationship between interaction and online learning satisfaction and whether this relationship is mediated by academic self-efficacy and student engagement among 175 Bosnian high school students during the COVID-19 pandemic. The questionnaire was used to collect the data from the participants. The findings suggested that the participants feel confident while using the Internet, are pretty self-directed, and do not lack interactions or satisfaction with online learning. In addition, the findings indicated that while grade level and GPA do not significantly influence students' satisfaction levels, the amount of time spent online and gender significantly influence it, with males reporting higher levels of satisfaction. There is no correlation between gender or the amount of time spent online and online interaction. However, grade level and grade point average have a significant impact.

Further, studies show that students who put less effort into their studies are much more likely to be satisfied with the online learning environment. Time spent online substantially affects internet self-efficacy and self-regulated learning, while grade, GPA, and gender have little to no effect. The results of this investigation may help educators design virtual classrooms that stimulate student engagement, discussion, confidence in using the web for learning, and self-directed study. Online learning will become more efficient as a result of this.

Keywords: online learning, student satisfaction, interaction, academic self-efficacy, student engagement

https://doi.org/10.53880/2744-2373.2022.2.3.1

HOW TO CITE THIS ARTICLE

Alić Topić A. (2022). **Examining Students' Interaction and Satisfaction with Online Learning**. MAP Education and Humanities, 3(1), 1-16. doi: https://doi.org/10.53880/2744-2373.2022.2.3.1

Introduction

The COVID-19 virus, which was declared to be a pandemic by the World Health Organization in the year 2020, has caused an enormous amount of havoc in the educational system. As a result, most high schools have been forced to shut down completely, impacting hundreds of millions of students and teachers worldwide ((Abdullah et al., 2022)). Due to its adaptability, accessibility, and convenience, online learning (both synchronous and asynchronous) can be a viable alternative to traditional learning and teaching methods if these methods are no longer feasible. This helps to ensure that education can continue even during a pandemic. Most higher education institutions transitioned from face-to-face learning to emergency remote teaching in January 2020. This implementation aimed to reduce the risk of the coronavirus spreading and to ensure that education would continue uninterrupted during the difficult times of lockdown among students and educators. This COVID-19 epidemic has repercussions for everyone's way of life, including the educational system in every country. Because of COVID-19, schools have been forced to close worldwide, and more than 1.2 billion children were kept away from their stable learning environments. Many private higher education institutions (PHEIs) were forced to adopt online and remote teaching.

A sizeable amount of money and time was invested in guaranteeing that students will not be deprived of the opportunity to acquire the information connected to an essential for their future and career (Abdullah et al., 2022). PHEIs were required to invest a significant amount of money in developing improved online education platforms that would increase the number of hours students spent studying online and lower the number of students who dropped out of school during the pandemic. Some of these educational establishments have implemented blended learning and fully online classes. In contrast, others had established the teaching and learning (TNL) unit to educate their instructors on online learning management platforms such as Blackboard to ensure that online classes could be carried out without hiccups. To ensure the success of online teaching and learning, the lecturers needed to receive the appropriate direction and training. Podcasts and tutorials were made available to all the teaching staff and the students, and adequate support and guidance for online learning were provided. The students and the teachers benefited in some ways and suffered in others due to this change. There is still a lack of clear understanding about how students' experiences could influence their satisfaction level and intention to continue their studies, even though many universities have adopted online learning.

Online learning platforms have become the primary solution that provides higher education institutions with a broader reach, more convenience, collaboration, and customisation compared to traditional classrooms due to the growing popularity of applications that utilise wireless technology (Shiue et al., 2019). Despite this, implementing innovative instruction methods is complex, making it challenging to ensure the success of both students and educational institutions. This is due to people's generally pessimistic attitudes and perceptions about the benefits of online education.

A recent study found that students' attitudes and levels of satisfaction regarding remote online learning had no impact on the extent to which they intended to continue utilising this strategy in their educational pursuits.

The factors associated with student satisfaction in traditional classroom settings are often more tangible. These factors include the amenities and facilities provided, the lecturers' quality and qualifications, and the support services and available activities. On the other hand, remote online learning presents various challenges to teachers and students, mainly when implemented under a Movement Control Order (MCO), which could put either group under enormous pressure (Shiue et al., 2019). In light of this, higher education institutions have realised that it is urgently necessary to conquer the technological challenges and to be well-equipped for online teaching and learning, particularly during the pandemic. Because students are the most important stakeholders at the receiving end, it is essential to have a solid understanding of the factors that influence their level of contentment (Peterson et al., 2019). Even though many studies, such as those mentioned above, may have investigated the level of satisfaction that students have concerning online learning, it is essential to comprehend how the current situation may have impacted those students.

Literature review

Remote learning pros and cons vary. According to the research, remote learning improves retention and saves time (De Freitas et al., 2015).

Remote online learning allows students and lecturers to work from home. When students have problems, they may be too shy to ask questions during online live classes, and some may not give their full attention if their webcams are off. These are some online learning challenges.

Course proficiency often replaces learning engagement in student satisfaction (Bolliger, 2004). According to Moore (2011), online learning success and competence indicate learner satisfaction. Satisfaction is a crucial indicator of learning effectiveness, especially in online courses.

Satisfied learners are more engaged, responsive, and motivated, which promotes a productive learning environment. Their achievement level is higher, but teachers have more trouble helping dissatisfied students learn. It is not easy to measure learner satisfaction (Graham, 2019). However, it is crucial because students spend a lot of time, money, and energy to get a good education and make online learning useful (Bollinger, Erichsen, 2013).

Learners' satisfaction, one of the critical predictors of a course's success and distance learning's effectiveness (Allen, Seaman, 2003), is related to self-efficacy, technology, students' autonomy, interaction, and self-regulation (Rodriguez Robles, 2006). Interaction, self-regulated learning, and Internet-self efficacy are all assumed to indicate learner satisfaction. Interaction is essential to online and face-to-face learning programmes (Kuo et al., 2013).

According to past research, instructors are the primary facilitators, and their online teaching effectiveness (OTE) predicts student satisfaction (Glazier & Harris, 2021). Instructors can effectively deliver course content, have subject matter expertise, use online tools, and manage their online classroom environment to engage students (Roddy et al., 2017). Even though the academic staff was the least important factor in measuring the quality of HEIs, instructors are necessary for the majority of online courses in order to successfully deliver the content. According to Paechter et al. (2010), other essential factors included course design, instructor expertise, flexibility, self-motivation, and personal communication skills.

Online interaction between students is another important aspect of remote learning satisfaction.

Peer interaction and collaboration enhance the online learning environment. Despite implementation difficulties, open communication usually leads to joyful learning. Practical online collaborative tools increase student satisfaction with online learning as they become more independent and adaptable (Hong et al., 2021)). According to research, a lack of faculty connection negatively affects a student's sense of course completion potential (Moralista & Oducado, 2020). Long-term, online social interaction creates meaningful dialogues and positive relationships (Keaton & Gilbert, 2020). According to a previous review, online support (OSP) is a significant factor in student satisfaction. Tech-savvy students are less dissatisfied (Roff, 2018). Students without the Internet or software would be disadvantaged. Students preferred teachers with 24-hour online technical support (Hashemi, 2021). Institutions that provide comprehensive online student support can ensure a positive learning experience (Roddy et al., 2017). This includes student-instructor interaction and e-books, videos, and other academic resources. Online students rely on technology to learn synchronously without delays or disruptions. They expect 24/7 online tech support.

Remote online learning is consistent with lifelong learning principles because students can learn independently (Hong, 2021). Real-world course design improves students' soft skills and job market employability (De Freitas et al., 2015). Online future relevance (OFR) is how students perceive their online course content and activities to help them achieve future career goals (Knoster & Myers, 2020). Online future relevance has received little scholarly attention (Knoster & Myers, 2020). Kuo (2010) included computer self-efficacy in research on online learning. Using a computer effectively predicts online course satisfaction, he says. Self-regulation affects online learning success (Shih & Gamon, 2001). High scores and grades reflect students' achievement (Sinanović & Bećirović, 2016), and it is a goal for both learners and instructors. Course satisfaction and goal achievement are linked through learner-instructor feedback.

This study investigates to what extent GPA, gender, average time spent online for courses each week, and grade level mediate the relationship between interaction and online learning satisfaction among Bosnian high schoolers. Based on the presented theoretical ground, the study was guided by the following research questions:

1. Is a statistically significant difference in students' satisfaction with online learning based on GPA, gender, average time spent online for courses each week, and grade level?

2. Is 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?

Methodology

Participants

The examination sample comprised 175 selected participants from high schools in Bosnia and Herzegovina. Participants were selected from different grade levels. Thus, there were 27 (15.4 %) first-grade students, 30 (17.1 %) second grade students, 56 (32 %) third grade students, and 62 (35.4 %) fourth grade students. 125 (71.4%) male and 50 (28.6%) female students with ages ranging from 15-19, and the assumption of a minimum of 10 participants per group (McMilan, 2012) was fulfilled.

Table 1.
Descriptive analysis of the participant

		N	%
Gender	Male	125	71.40
	Female	50	28.60
Grade level	First	27	15.40
	Second	30	17.10
	Third	56	32.00
	Fourth	62	35.40
GPA	<3.0 (low)	4	2.29
	3.0 – 4.0 (medium)	65	37.14
	>4.0 (high)	106	60.57
Hours spent online for the course per week	Less than 5 hours	40	22.90
	6-10 hours	64	36.60
	11-15 hours	34	19.40
	16-20 hours	37	21.10

Instruments and procedures

Five distinct components make up the instrument. The first section included questions about demographic factors such as gender, age, overall grade point average, grade level, and the typical weekly time spent online for the course. The second section comprises the learners' interaction scale developed and validated by Kuo and his colleagues (2009). The purpose of this instrument was to collect additional information that was more detailed about the students. Using the five-point Likert scale, respondents' satisfaction levels with online learning ranged from 1 (strongly dissatisfied) to 5 (very satisfied). 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 internet self-efficacy scale developed and validated by Eastin and colleagues was included in the third part of the study. LaRose (2000) conducted a study to determine student confidence levels when using internet-based technology. This instrument consisted of a total of eight different 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 to direct my activities in each study period) developed by Pintrich et al. (1993).

After obtaining administrative approval and the students' informed consent from the schools, the data online collection tools were made available and modified following the high schools by the investigators in the high schools in question. None of the participants was without an appropriate clarification on how to fill out a scale similar to the Likert scale, as well as enlightenment that the data obtained from These tools would be completely anonymous, voluntary, and confidential.

Data analysis

The Statistical Package for Social Science (SPSS) version 26.0 was utilised to examine the data, 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 utilised. Further, a One-way ANOVA was performed to see the influence of GPA on learners' interactions, and a factorial ANOVA was run to analyse 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.

Results

Initial Analysis

The results in Table 2 showed that the high school students generally felt confident in the online learning environment, with a moderate mean (M=3.18, SD=.44). Regarding learner-to-learner interaction (M=3.47, SD=.7), again being pretty moderate. At the same time, the most used one seemed to be learner-instructor interaction (M=3.69, SD=.63); however, only slight differences were observed in learner-course (M=3.46, SD=.52).

The lowest mean among these scales was observed on the side of learners' digital competence (M=2.70, SD=.35). However, the highest mean was in informal digital learning (M=3.91, SD=.59). The analysis showed that all variables above are customarily 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	175	3.18	.44	1	.212**	.310**	.501**	.350**	.189*	.78	-.174	-.401
2	175	3.47	.70	.212**	1	.585**	.491**	.202**	.338**	.76	-.420	1.005
3	175	3.69	.63	.310**	.585**	1	.627**	.173*	.466**	.72	-.983	2.821
4	175	3.46	.52	.501**	.491**	.627**	1	.335**	.564**	.70	-.578	2.260
5	175	2.70	.35	.350**	.202**	.173*	.335**	1	.391**	.79	-1.438	1.859
6	175	3.91	.59	.189*	.338**	.466**	.564**	.391**	1	.75	-.824	2.811

1. Satisfaction, 2. Learner-to-learner interaction, 3. Learner-to-instructor interaction, 4. Learner-to-course interaction, 5. Competence, 6. Digital informal learning

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

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

Furthermore, correlation analyses demonstrated that all scales were positively and significantly correlated with each other ($p < .01$) for all, except for scales one and six where significance is ($p < .05$). In particular, it is found that learners' satisfaction is positively and significantly correlated with learner-learner interaction ($r = .212$ $p < .01$), learner-instructor interaction ($r = .310$ $p < .01$), learner-course interaction ($r = .501$ $p < .01$), competence ($r = .350$ $p < .01$), and digital informal learning ($r = .189$ $p < .05$). Thus, the more learners interact with each other, instructors and courses, as well as use digital informal learning materials, the more likely they will be satisfied and confident during online lessons.

Learners' satisfaction Based on Gender, GPA, Grade Level and Average Time Spent Online for a Course Per Week

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 does not indicate a significant interaction effect between all analysed variables. Specifically, for gender and average time spent online $F(3,121) = .325$, $p = .807$, partial $\eta_p^2 = .008$. $F(9,121) = .481$, $p = .885$, partial $\eta_p^2 = .035$ for grade and average time spent online, and, lastly, for GPA and average time spent

online F (4,121) = .571, p = .684, partial η_p^2= .019. Also, no significant main effects were found for gender, GPA, grade level, and hours spent online. For example, gender F (1, 121) = 3.573, p = .061, with moderate effect size partial η_p^2 = .029 and average time spent online F (3, 121) = .138, p = .937, having low effect size partial η_p^2= .003, while main effects of grade level F (3, 121) = .818, p = .487, η_p^2 = .020, and GPA F (2, 121) = .537, p = .566, with effect size being really low partial η_p^2 = .009, were statistically insignificant (Table 3).

The results showed that males were significantly more satisfied with online learning (*M*=3.23, *SD*=.43) compared to their female counterparts (M=3.06, *SD*=.44).

Table 3.
Learners' satisfaction based on gender, GPA, grade level and average time spent online for the course per week

Source	SS	df	F	p	ηp2
Gender	.711	1	3.573	.061	.029
Grade	.488	3	.818	.487	.020
GPA	.228	2	.573	.566	.009
Hours spent online per week	.082	3	.138	.937	.003
Gender * Grade	.897	3	1.503	.217	.036
Gender * GPA	.045	1	.224	.637	.002
Gender * Hours spent online per week	.194	3	.325	.807	.008
Grade * GPA	.514	3	.861	.463	.021
Grade * Hours spent online per week	.861	9	.481	.885	.035
GPA * Hours spent online per week	.454	4	.571	.684	.019
Gender * Grade * GPA	.039	2	.098	.907	.002
Gender * Grade * Hours spent online per week	.653	7	.469	.855	.026
Gender * GPA * Hours spent online per week	.113	2	.283	.754	.005
Grade * GPA * Hours spent online per week	.394	5	.396	.851	.016
Gender * Grade * GPA* Hours spent online per week	.059	1	.296	.587	.002

Further, the results suggested that learners with low GPA scores were more satisfied (*M*=3.42, *SD*=.39) than learners with medium (*M*=3.18, *SD*=.47) and high GPA scores (*M*=3.18, *SD*=.42), whose level of satisfaction was the same. When considering grade levels, it is found that the participants in the 2nd grade obtained the highest score of satisfaction (*M*=3.36, *SD*=.36), next was the 4th grade (*M*=3.21, *SD*=.44), followed by the 3rd graders (*M*=3.12, *SD*=.43), while the lowest was among the 1st graders (*M*=3.07, *SD*=.49). Moreover, learners who spent less than 5hrs (*M*=3.25, *SD*=.48) were the most satisfied, next were those who spent 6-10 hrs (*M*=3.21, *SD*=.39), followed by the learners who spent 11-15 hours online (*M*=3.16, *SD*=.35), while the least satisfied were those with 16-20 hrs online (*M*=3.09, *SD*=.53).

Learners' interaction based on gender, GPA, grade level and average time spent online for the course per week

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 no significant interaction effect between all analysed variables. The main effects of variables also showed no significant interaction. All interactions and main effects on learners' interactions are presented in Table 4.

Further, descriptive results showed that the male students experienced learner-instructor interaction (*M*=3.74, *SD*=.60) at the highest level of learner interaction as their female counterparts (*M*=3.54, *SD*=.68). Considering GPA, it is revealed that learners with low grades interact the most with all types of interaction, as follows: learner-learner (*M*=3.68, *SD*=.38), learner-instructor (*M*=4.00, *SD*=.35), and learner-course (*M*=3.64, *SD*=.13) interactions. Regarding grade level, it is found that 2nd graders interact the most in all types of interaction. The highest mean is noticed in learner-instructor interaction (*M*=3.86, *SD*=.77) and learner-learner interaction (*M*=3.61, *SD*=.78). However, the lowest is observed with learner-course interaction (*M*=3.57, *SD*=.66). Surprisingly, 1st graders interact the least, favourably disposed to interact with instructors (*M*=3.49, *SD*=.75), followed by courses (*M*=3.38, *SD*=.48), and then learners (*M*=3.31, *SD*=.78). Finally, when it comes to hours spent online, it is found that those who spend 11-15 hours interact the most in all types of interaction. The highest mean is noticed in learner-instructor interaction (*M*=3.79, *SD*=.53) and learner-course interaction (*M*=3.57, *SD*=.55). However, the lowest is observed with learner-learner interaction (*M*=3.56, *SD*=.56). The lowest level of learner-course interaction as those who spend less than 5 hours (*M*=3.32, *SD*=.54). In comparison,

for those spending 16-20 hours it is noticed that they interact the least with other learners (*M*=3.42, *SD*=.95) and instructors (*M*=3.54, *SD*=.78). Additionally, those spending 16-20 hours are the ones who have learner-learner. Learner-instructor interaction developed the least among all other analysed groups.

Table 4.
Learners' interaction based on gender, GPA, grade level and average time spent online for the course per week

Source	Dependent Variable	SS	df	F	p	ηp²
Gender	Learner-to-learner interaction	.097	1	.183	.670	.002
	Learner-to-instructor interaction	.855	1	2.073	.153	.017
	Learner-to-course interaction	.823	1	2.919	.090	.024
Grade	Learner-to-learner interaction	1.634	3	1.024	.385	.025
	Learner-to-instructor interaction	1.291	3	1.043	.376	.025
	Learner-to-course interaction	.928	3	1.097	.353	.026
GPA	Learner-to-learner interaction	.845	2	.794	.454	.013
	Learner-to-instructor interaction	.786	2	.952	.389	.015
	Learner-to-course interaction	.161	2	.285	.753	.005
Hours spent online per week	Learner-to-learner interaction	.681	3	.426	.734	.010
	Learner-to-instructor interaction	.500	3	.404	.751	.010
	Learner-to-course interaction	.618	3	.730	.536	.018
Gender * Grade	Learner-to-learner interaction	2.122	3	1.329	.268	.032
	Learner-to-instructor interaction	.637	3	.515	.673	.013
	Learner-to-course interaction	.511	3	.605	.613	.015
Gender * GPA	Learner-to-learner interaction	.024	1	.046	.831	.000
	Learner-to-instructor interaction	.708	1	1.715	.193	.014
	Learner-to-course interaction	.266	1	.945	.333	.008
Gender * Hours spent online per week	Learner-to-learner interaction	.702	3	.439	.725	.011
	Learner-to-instructor interaction	.618	3	.499	.683	.012
	Learner-to-course interaction	.266	3	.314	.815	.008
Grade * GPA	Learner-to-learner interaction	1.260	3	.789	.502	.019
	Learner-to-instructor interaction	1.609	3	1.300	.278	.031
	Learner-to-course interaction	.627	3	.741	.529	.018
Grade * Hours spent online per week	Learner-to-learner interaction	1.824	9	.381	.942	.028
	Learner-to-instructor interaction	1.969	9	.530	.850	.038
	Learner-to-course interaction	2.199	9	.866	.557	.061
GPA * Hours spent online per week	Learner-to-learner interaction	.911	4	.428	.788	.014
	Learner-to-instructor interaction	1.091	4	.661	.620	.021
	Learner-to-course interaction	.343	4	.304	.875	.010
Gender * Grade * GPA	Learner-to-learner interaction	.153	2	.144	.866	.002
	Learner-to-instructor interaction	.131	2	.159	.854	.003
	Learner-to-course interaction	.294	2	.521	.595	.009
Gender * Grade * Hours spent online per week	Learner-to-learner interaction	.932	7	.250	.971	.014
	Learner-to-instructor interaction	2.458	7	.851	.547	.047
	Learner-to-course interaction	1.111	7	.563	.785	.032
Gender * GPA * Hours spent online per week	Learner-to-learner interaction	.248	2	.233	.793	.004
	Learner-to-instructor interaction	2.584	2	3.133	.047	.049
	Learner-to-course interaction	.195	2	.346	.709	.006
Grade * GPA * Hours spent online per week	Learner-to-learner interaction	3.160	5	1.188	.319	.047
	Learner-to-instructor interaction	1.883	5	.913	.475	.036
	Learner-to-course interaction	.658	5	.467	.800	.019
Gender * Grade * GPA * Hours spent online per week	Learner-to-learner interaction	.173	1	.325	.570	.003
	Learner-to-instructor interaction	.041	1	.099	.753	.001
	Learner-to-course interaction	.093	1	.331	.566	.003

Discussion

The global pandemic caused by the COVID-19 virus has caused significant disruptions in educational endeavours. In most under-resourced contexts, where accessibility, availability, and use of technology in education are not widespread, it has been difficult for teachers to bring learning into students' homes (Khan et al., 2012). Aside from this, teachers' inadequate digital skills prevent them from delivering effective learning (Laudari & Maher, 2019), and little thought has been given to providing them with training on managing the social, physiological, and psychological issues that arise among students. The COVID-19 pandemic has encouraged online teaching on a much larger scale than it had been promoted previously, even though it has been encouraged for several years. Students at all educational levels (college, secondary school, and elementary school) could not attend classes during the pandemic caused by the COVID-19 virus.

Most educational institutions have moved toward implementing online instruction to maintain student learning. This study focuses on high school education and fills in the gaps left by previous research by delving deeper into learner satisfaction, interaction among learners, self-regulated learning, and internet self-efficacy in online learning environments among high school students in Bosnia and Herzegovina. The findings suggested that high school students feel confident using the Internet for educational purposes. This is not surprising given that young learners are more connected than ever, and the Internet has created the illusion that the world is a "small village" due to people being able to share and learn information instantly (Shali, 2018).

Furthermore, for high school students, self-regulation is essential in determining their learning outcomes, even though most reported being quite self-regulated. This could be because the demands of online instruction are more challenging for their learning effectiveness. After all, there is no immediate interaction between educators and students (Broadbent, Poon, 2015). In addition, some studies (Barnard et al., 2010; Shea, Bidjerano, 2010) have demonstrated that e-learning is highly learner-centred, meaning that students are expected to assume greater autonomy and responsibilities. Because the nature of learning is social (Hamzić, Bećirović, 2021; Frey et al., 2019), the finding that learners like to interact is in some way expected. However, because learners cannot physically interact with their teachers or classmates during COVID-19, they are more likely to experience an eagerness for social relatedness during this time. (Bećirović et al., 2022).

Moreover, this study's findings show a positive correlation between social presence and overall satisfaction with courses when it is taken online. This indicates that students with a high social presence had a significantly increased chance of reporting high overall satisfaction with their classes. The findings align with many other studies ((Khalid & Nasir, 2020)). This leads to the conclusion that affective expression, open communication, and group cohesion, which are all components that are embedded in the theory of social presence as was investigated by Garrison et al. (1999), are essential in enhancing the quality of relationships with peers in an online learning environment. This is in addition to the fact that these three components were discovered in a different settings.

Social presence is essential for engagement and contentment to be maintained over time. For example, Bosnian and Herzegovinian high school students exhibited a strong correlation between social presence in the CoI (The Community of Inquiry) framework and overall course satisfaction. Therefore, a significant social presence is a crucial factor in determining the success or failure of e-learning. Although the use of digital technology has been an everyday practice for some time now, including the utilisation of digital artefacts, web resources, and platforms, the extent to which this technology is utilised in higher education and its impact on learning has primarily remained unexplored. According to Lai (2011), there is a paucity of information regarding how instructors at universities use digital technology in the classroom, how this technology is incorporated into pedagogy, and the potential effects this may have on students. According to Alzahrni and Seth (2021), the learners' expectations of the personal benefits resulting from their use of technologies (personal outcome expectations) significantly impact their continuous intention to use technologies. According to the findings of Mohammadi and colleagues (2021), who conducted research in Afghanistan, one of the most significant difficulties associated with introducing digital technologies like the learning management system (LMS) into higher education is the absence of relevant policies, guidelines, and detailed policy documents. However, Mohammadi et al. (2021) found out that "Providing an interactive learning environment and automating the administration, organisation, delivery,

and reporting of educational content and learner outcomes" is what the technologies that help to provide long-distance courses, such as the learning management systems, say they do (Turnbull et al., 2021, p. 1). In a study conducted at a teacher training institution (faculty) located in a developing context, Laudari and Maher (2019) concluded that two different types of barriers mitigate the effective use of digital technology in teacher education. First, it faces first-order barriers (external barriers), such as a lack of resources and training, unconducive policy and administration, rigid curriculum and assessment, and second-order barriers (internal barriers), which relate to teachers' beliefs, motivation, and attitude towards technology. Lastly, third-order barriers (internal barriers), which relate to third-order barriers (external barriers), such as lack of resources and training (Ertmer, 1999). The first-order barriers to technology are becoming less noticeable as more affordable technology becomes more widely used.

On the other hand, the second-order barriers are becoming more influential as more sophisticated technology becomes available. These findings provide essential hints that, if incorporated into an improved online learning experience, could lead to increased learner satisfaction and a marked improvement in the quality of the education received. It is possible that the satisfaction of learners can be controlled by the quality of the courses they take, which is an important mediator that affects learners' satisfaction (Alqurashi, 2019).

In addition, there was a statistically significant relationship between each of these variables and each other. In particular, the findings indicated that internet self-efficacy significantly correlates with students' overall satisfaction with their online experiences, which is consistent with the findings of many other studies (Chu, Chu, 2010; Shen et al., 2014; Womble, 2008). Therefore, learners' irritation and dissatisfaction could be triggered by technical difficulties that arise while using the Internet (Choy et al., 2002). The correlation between three categories of interactions (learner-learner interaction, learner-instructor interaction, and learner-content interaction) and student satisfaction was also found to be positive and significant. This finding is in line with previous research on the topic (Rodriguez, 2006). Learner-learner and learner-instructor interactions were found to be more connected to and predictive of learners' satisfaction than learner-content interactions, according to several studies that investigated online learning (Rodriguez Robles, 2006). The findings, however, are inconclusive since some studies suggested that the level of interaction with the content is more important to learners' satisfaction with online learning than other types of interaction (Bećirović et al., 2022). Specifically, regarding learners' satisfaction based on gender, general GPA, grade level, and average time spent online, recent studies found that course design (Allen et al., 2002), instructor support, and personal learner factors increase learning satisfaction (Rich, 2006). According to the findings, GPA and the average amount of time spent online had a significant interactive effect on the level of satisfaction experienced by the students, whereas the interaction effects of the other factors were found to be insignificant. Male students were more engaged in all interactions than their female counterparts.

In line with this finding, the vast majority of studies conducted on the implementation of online learning have found that learners' levels of satisfaction with online learning are significantly influenced by gender. A higher level of satisfaction was more likely found on the side of male learners, which is not surprising given that male learners intended to use computers more frequently, leading to a higher level of comfort with computer use (Bećirović et al., 2022). The same findings were obtained by Beqiri, Chase, and Bishka (2009), who discovered that male learners in online learning reported significantly higher levels of fulfilment than female learners. Despite this, some researchers could not detect significant differences between the sexes (Cuadrado-García et al., 2010). Having said this, some researchers have suggested that females have outperformed their male counterparts in online performance (Turesky, Hebert, 2016) and that their level of satisfaction is relatively higher.

According to the findings of this study, gender and grade level interaction significantly impact learner-instructor interaction. Learner-learner interaction, learner-instructor interaction, and learner-content interaction are the three levels of learner interaction based on factors such as GPA, gender, and the average amount of time spent online for courses each week. It would appear that the influence of gender on learner-instructor interaction is different for students in lower grades compared to students in higher grades. This means sophomores are the most engaged in all interactions, while first-grade students scored the worst in learner-to-learner interaction and learner-to-course interaction. This may be because students in their first grade of high school are highly perceptive and

gain much knowledge from their experiences and the people they interact with. They gain a specific understanding of what an instructor/teacher is by not listening to what teachers say but watching what teachers do. Teachers in a new class of freshmen may comment that their students do not say very much during the first few days (and weeks) of the semester.

On the other hand, it would be more accurate to say that first-grade students spend much time observing their surroundings and drawing conclusions based on those observations. Therefore, instructors must turn their observations into teaching opportunities whenever possible. During the first few class sessions, students observe whether or not their teachers smile, greet them, appear bored, or pay attention. They also notice whether or not the teachers greet the students. Students can draw conclusions about teachers and the meaning of mentoring based on their observations. In addition, learner-content interaction was significantly influenced by the interactions between GPA and the average time spent online, as well as the interactions between gender, GPA, and the average time spent online. However, the influence of other variables was found to be insignificant.

The findings, as a whole, seem to point to the fact that improving learning outcomes can be accomplished by providing online web tools in addition to traditional in-person instruction. In addition, it appears that students perform significantly better on assessment tasks when they use online self-testing assessments that are immediately marked and include feedback. Further, increases in the total amount of time spent online (accessing course content, additional examples, additional notes, references, etc.) positively affect student performance, even though this effect is only marginal for the component dealing with formal examinations. The marginal effect of time spent online varies depending on how many sessions this time is spread over. This time can be spent doing anything from reading to playing games. For instance, the effect will be insignificant if it is spread out throughout three separate online sessions. It is possible that breaking up the total amount of time spent online into multiple sessions will indicate a more consistent and ongoing engagement with the course. It is possible that student performance, learning, and interaction improvements are attributable to the increased time spent online and students' consistent engagement with online activities. Since it is unlikely that a single measure will lead to improved student performance, one of the essential things that can be done to ensure that all students are successful is to continue researching how the components are combined and find a connection between them (Korkofingas & Macri, 2013).

On the other hand, it was discovered that GPA significantly influences the interaction between learners and between learners and instructors. The current study demonstrates that online education benefits learners more when connecting strongly with their teachers and classmates. This finding is consistent with earlier studies, which stated that a positive student-teacher connection presumes students' perceptions of their ability to acquire knowledge (Song et al., 2019). There is no denying that the awareness of learners' identities (Chang & Hus, 2016) and the exchange of ideas are undeniably more challenging between learners and teachers (Bećirović & Dervić, 2022; Bećirović et al., 2021). Learning from one's peers in an online environment can be challenging due to the difficulties arising from learner-to-learner interactions during group activities. In face-to-face classrooms, learners can immediately discuss with classmates to obtain understanding, ideas, and suggestions, whereas, in online contexts, this is impossible. Wut and Xu (2021) state that this is not the case.

In addition, Keaton and Gilbert (2020) argue that interaction among learners was the most difficult. This is because learners typically had little interaction with other learners due to time and distance constraints. Many studies considered learner-content interaction the most critical (Kuo et al., 2009). This is because learners spend more time on requested reading or projects and absorb the content they need to master through reflections, thinking, or elaboration, which is the confidentially intellectual interaction of an individual with the content (Laličić, Dubravac, 2021; Kuo et al., 2009). It is interesting; therefore, instructors should encourage students to interact with the course's subject matter to develop a new concept during the learning process. This can be accomplished by selecting content for online courses describing specific methods students can use in their regular lives. Indeed, increased interaction can improve students' academic performance, attitudes toward learning, and motivation to learn (Hillman et al., 1994). Also, it is found that grade level significantly influences learner-instructor and learner-learner interaction, with the difference between 1st and 4th grade on one side and 2nd and 3rd grade on the other side. The former insists on less interaction, while the latter shows more interaction than the first group.

Besides, the analysis showed that only the interaction between GPA and average time spent online significantly influences internet self-efficacy. In contrast, a significant influence was not found on the side of student-regulated learning 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. GPA, gender, and average time spent online for courses each week were considered. Learners with higher GPAs are more likely to be self-sufficient when navigating the Internet and have spent less time doing so than students with lower GPAs. It was found that the average amount of time spent online significantly influences both internet self-efficacy and self-regulated learning; this was the case when single variables were considered. It appears that learners who spent 11-15 hours online had the highest interaction in all types, especially learner-instructor, but those spending less than 5 hours online interacted the least, while those spending 16-20 hours interacted the most with other learners and instructors. There is a positive correlation between self-efficacy and student performance (Kuo et al., 2014). Students with a higher level of self-efficacy tend to have better academic performance overall than their counterparts with a lower level of self-efficacy. The influence of self-efficacy on learning outcomes may or may not be significant depending on the circumstances, even though self-efficacy is an essential component of the online learning experience. Students in online learning environments are required to engage in activities related to the Internet to complete their online assignments, which is not required in traditional classroom instruction.

According to Kuo et al. (2014), self-regulation is essential in academic or learning performance. Research has shown that students who can better self-regulate their learning are more likely to succeed academically than their peers. Students may find that, due to the characteristics of online learning environments, they must utilise a more significant number of self-regulated skills to organise their learning and progress in online contexts.

Lastly, the research findings indicate that digital technology has become an established component of education and is influencing how students of today learn. The term "computing" can refer to various tasks when discussing digital technology. Hardware and software, such as mobile devices, web tools, application software, communications and storage services, and other similar things; however, high school students appear to be digitally illiterate. However, high schoolers seem to be digitally illiterate. Students in today's classrooms have an excellent working knowledge of digital technology and can generally access, create, and distribute digital information (Ting, 2015). According to Greene et al., 2014 in order to be considered digitally literate, a person not only needs to be able to search and manage digital information, but they also need to be able to scrutinise and integrate it. Even though today's students are thought to have a good understanding of technology, many struggles to use it to its full potential; they conclude that students need to acquire skills in critical thinking, planning, monitoring, and controlling information management and that this is a requirement for graduation. It should not be surprising that many high schoolers find online resources (such as e-books, digital databases, audio or video web cassettes, etc.). This is because today's young high schoolers generally have good knowledge of using digital technology in their everyday activities (for example, finding information online, watching videos, listening to music, using social media, etc.). Online resources, online course announcements, and online assignment submissions are the top three features of the learning management system that are most liked. In light of the findings of this research, instructors of blended learning classes need first to understand the students in terms of the student's level of digital literacy for learning before they can plan or deliver such classes. For blended learning to be successful, the student's level of digital literacy must be a good match for the requirements of the course. If it is determined that certain students have low levels of digital literacy, additional exercises and tutorials can be used to assist them in improving their digital literacy capabilities.

Miglbauer (2017) supports the idea that students can learn to use educational technologies for learning that are unfamiliar to them if they are introduced to these technologies and allowed to use them. He arrives at this conclusion by reasoning that the students would not usually use educational technologies unless there was a need for them to do so. In addition, according to Deschacht & Goeman (2015), blended learning is associated with an increased number of students dropping out of school. One possible explanation for this is that, in contrast to learning in a traditional classroom setting, blended learning calls for a certain amount of independent study on the student's part. Tang & Chaw (2016) suggest that readiness for self-directed learning is connected to self-control, self-man-

agement, and a desire to learn. According to Prior et al. (2016), students with a high level of self-efficacy tend to have higher levels of confidence, greater independence, and greater motivation. They concluded that a positive student attitude and a high level of digital literacy could help improve self-efficacy, contributing positively to online behaviours such as peer engagement, learning management system interaction, and convener interaction. Therefore, lecturers can play an essential role in encouraging students to engage in self-directed learning by assisting students in developing their digital literacy.

Conclusion

The rapid dissemination of computer technologies and improvements in Internet infrastructure have contributed to the rise of distance learning. The COVID-19 pandemic has encouraged online teaching more than before.

This study examines learner satisfaction, interaction, and self-regulated learning among high school students in Bosnia and Herzegovina. A study found a positive correlation between social presence and online course satisfaction. Affective expression, open communication and group cohesion are essential in enhancing peer relationships. In most under-resourced contexts, where accessibility, availability, and use of technology in education are not widespread, it has been difficult for teachers to bring learning into students' homes. This study focuses on high school education and fills in the gaps left by previous research by delving deeper into learner satisfaction, interaction among learners, self-regulated learning, and internet self-efficacy in online learning environments among high school students in Bosnia and Herzegovina.

Because the nature of learning is social, the finding that learners like to interact is in some way expected. Providing an interactive learning environment and automating the administration, organisation, delivery, and reporting of educational content and learner outcomes" is what the technologies that help to provide long-distance courses, such as the learning management systems, say they do. These findings provide essential hints that, if incorporated into an improved online learning experience, could lead to increased learner satisfaction and a marked improvement in the quality of the education received.

In particular, the findings indicated that internet self-efficacy significantly correlates with students' overall satisfaction with their online experiences, which is consistent with the findings of many other studies. The correlation between three categories of interactions (learner-learner interaction, learner-instructor interaction, and learner-content interaction) and student satisfaction was also found to be positive and significant. Learner-learner and learner-instructor interactions were found to be more connected to and predictive of learners' satisfaction than learner-content interactions, according to several studies that investigated online learning.

The findings, however, are inconclusive since some studies suggested that the level of interaction with the content is more important to learners' satisfaction with online learning than other types of interaction. Specifically, regarding learners' satisfaction based on gender, general GPA, grade level, and average time spent online, recent studies found that course design, instructor support, and personal learner factors increase learning satisfaction.

According to the findings, GPA and the average amount of time spent online had a significant interactive effect on the level of satisfaction experienced by the students, whereas the interaction effects of the other factors were found to be insignificant. In line with this finding, the vast majority of studies conducted on the implementation of online learning have found that learners' levels of satisfaction with online learning are significantly influenced by gender. Learner-learner interaction, learner-instructor interaction, and learner-content interaction are the three levels of learner interaction based on factors such as GPA, gender, and the average amount of time spent online for courses each week. This means sophomores are the most engaged in all interactions, while first-grade students scored the worst in learner-to-learner interaction and learner-to-course interaction. In addition, learner-content interaction was significantly influenced by the interactions between GPA and the average time spent online, as well as the interactions between gender, GPA, and the average time spent online. It is possible that student performance, learning, and interaction improvements are attributable to the increased time spent online and students' consistent engagement with online activities.

ndeed, increased interaction can improve students' academic performance, attitudes toward learning, and motivation to learn. In contrast, a significant influence was not found on the side of student-regulated learning 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. It appears that learners who spent 11-15 hours online had the highest interaction in all types, especially learner-instructor, but those spending less than 5 hours online interacted the least, while those spending 16-20 hours interacted the most with other learners and instructors.

Students in online learning environments are required to engage in activities related to the Internet to complete their online assignments, which is not required in traditional classroom instruction. Students may find that, due to the characteristics of online learning environments, they must utilise a more significant number of self-regulated skills to organise their learning and progress in online contexts. Online resources, online course announcements, and online assignment submissions are the top three features of the learning management system that are most liked.

In light of the findings of this research, instructors of blended learning classes need first to understand the students in terms of the student's level of digital literacy for learning before they can plan or deliver such classes. Miglbauer (2017) supports the idea that students can learn to use educational technologies for learning that are unfamiliar to them if they are introduced to these technologies and allowed to use them. They concluded that a positive student attitude and a high level of digital literacy could help improve self-efficacy, contributing positively to online behaviours such as peer engagement, learning management system interaction, and convener interaction.

In order to improve the quality of e-learning offered in secondary schools in Bosnia and Herzegovina, teachers should have been tasked with utilising educational platforms to improve the flow of communication and the organisation of the curriculum. When it comes to encouraging teachers to make changes, school principals can positively impact when they believe in changing themselves. They encourage change, address teachers' concerns, and make it easier for teachers to feel less anxious and irritated by change-related concerns. Change-related concerns include other factors that can help facilitate change, including reminding educators of the positive outcomes of change and increasing their professional development and relevant skills and knowledge.

On the other hand, students responded quite well to this type of learning despite being unprepared for it and forced to deal effectively with unknown challenges. It is a well-known fact that younger generations respond to new technologies with more enthusiasm and curiosity than older generations do. However, a generational gap may affect how learners and educators approach the situation.

Since educators are currently not ready for the next step, that step should be to work on gaining knowledge about the attitudes and beliefs held by learners. These should be observed from the perspective of learners' ability to self-regulate their learning, their level of self-efficacy in using the Internet, the level of interaction between learners, and their level of satisfaction with online learning.

Learning through the Internet is more forward-thinking and resilient against certain external factors. It is a mode of communication prevalent in today's world, and as a powerful instrument in education, it merits more attention from teachers and professors.

References

Abdullah, S., Arokiyasamy, K., Goh, S., Culas, A., & Manaf, N. (2022). University students' satisfaction and future outlook towards forced remote learning during a global pandemic. *Smart Learning Environments*, *9*(1). https://doi.org/10.1186/s40561-022-00197-8

Allen, M., Bourhis, J., Burrell, N., & Mabry, E. (2022). *Comparing Student Satisfaction With Distance Education to Traditional Classrooms in Higher Education: A Meta-Analysis*. http://dx.doi.org/10.1207/S15389286AJDE1602_3.

Alzahrani, L., & Seth, K. (2021). Factors influencing students' satisfaction with continuous use of learning management systems during the COVID-19 pandemic: An empirical study. *Education And Information Technologies*, *26*(6), 6787-6805. https://doi.org/10.1007/s10639-021-10492-5

Barnard-Brak, L., Paton, V., & Lan, W. (2010). *Profiles in self-regulated learning in the online learning environment*. http://dx.doi.org/10.19173/irrodl.v11i1.769.

Bećirović, S., & Dervić, M. (2022). *Students' perspectives of digital transformation of higher education in Bosnia and Herzegovina*. http://dx.doi.org/10.1002/isd2.12243.

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

Bećirović, S., Skopljak, A., & Ahmetović, E. (2022). An Examination of Students Online Learning Satisfaction, Interaction, Self-efficacy and Self-regulated Learning. *European Journal Of Contemporary Education*, *11*(1). https://doi.org/10.13187/ejced.2022.1.16

Beqiri, M., Chase, N., & Bishka, A. (2009). Online Course Delivery: An Empirical Investigation of Factors Affecting Student Satisfaction. *Journal Of Education For Business*, *85*(2), 95-100. https://doi.org/10.1080/08832320903258527

Bollinger, D. (2004). Key Factors for Determining Student Satisfaction in Online Courses. *International Journal On E-Learning*, *3*(1). https://www.learntechlib.org/primary/p/2226/.

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.

Broadbent, J., & Poon, W. (2015). Self-regulated learning strategies & academic achievement in online higher education learning environments: A systematic review. *The Internet And Higher Education*, *27*, 1-13. https://doi.org/10.1016/j.iheduc.2015.04.007

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.

Cuadrado-García, M., Ruiz-Molina, M., & Montoro-Pons, J. (2010). Are there gender differences in e-learning use and assessment? Evidence from an inter-university online project in Europe. *Procedia - Social and Behavioral Sciences*, *2*(2), 367-371. https://doi.org/10.1016/j.sbspro.2010.03.027

De Freitas, S., Morgan, J., & Gibson, D. (2015). *Will MOOCs transform learning and teaching in higher education? Engagement and course retention in online learning provision* http://dx.doi.org/10.1111/bjet.12268.

Deschacht, N. and Goeman, K. (2015). "The Effect of Blended Learning on Course Persistence and Performance of Adult Learners: A Difference-In-Differences Analysis", Computers & Education, Vol. 87, pp. 83-89. http://dx.doi.org/10.1016/j.compedu.2015.03.020.

Ertmer, P. (1999). Addressing first- and second-order barriers to change: Strategies for technology integration. *Educational Technology Research And Development*, *47*(4), 47-61. https://doi.org/10.1007/bf02299597

Garrison, D., Anderson, T., & Archer, W. (1999). Critical Inquiry in a Text-Based Environment: Computer Conferencing in Higher Education. *The Internet and Higher Education*, *2*(2-3), 87-105. https://doi.org/10.1016/s1096-7516(00)00016-6

Glazier, R., & Harris, H. (2021). Instructor Presence and Student Satisfaction Across Modalities: Survey Data on Student Preferences in Online and On-Campus Courses. *The International Review Of Research In Open And Distributed Learning*, *22*(3), 77-98. https://doi.org/10.19173/irrodl.v22i3.5546

Greene, J., Yu, S., & Copeland, D. (2014). Measuring critical components of digital literacy and their relationships with learning. *Computers &Amp; Education*, *76*, 55-69. https://doi.org/10.1016/j.compedu.2014.03.008

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

Hashemi, A. (2021). Effects of COVID-19 on the academic performance of Afghan students and their level of satisfaction with online teaching. *Cogent Arts &Amp; Humanities*, *8*(1). https://doi.org/10.1080/23311983.2021.1933684

Hillman, D.C., Willis, D.J., Gunawardena, CN (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.

Hong, J. C., Liu, Y., Liu, Y., & Zhao, L. (2021). High School Students Online Learning Ineffectiveness in Experimental Courses During the COVID-19 Pandemic. *Frontiers in Psychology*, *12*, 738695. https://doi.org/10.3389/fpsyg.2021.738695

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. https://www.learntechlib.org/primary/p/215616/.

Khan, S., Hasan, M., & Clemen, C. (2012). Barriers to the Introduction of ICT into Education in Developing Countries: The Example of Bangladesh. *International Journal Of Instruction*, *5*(2), 61-80. https://www.e-iji.net/dosyalar/iji_2012_2_4.pdf.

Knoster, K., & Myers, S. (2020). College Student Perceptions of Frequency and Effectiveness of Use of Relevance Strategies: A Replication and Extension. *Communication Studies*, *71*(2), 280-294. https://doi.org/10.1080/10510974.2020.1720260

Korkofingas, C., & Macri, J. (2013). Does Time Spent Online have an Influence on Student Performance? Evidence for a Large Business Studies Class [Ebook] (pp. 1-15). *Journal of University Teaching & Learning Practice,* 10(2). https://files.eric.ed.gov/fulltext/EJ1017110.pdf.

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

Kuo, Y., Walker, A., Schroder, K., & Belland, B. (2014). 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. https://doi.org/10.1016/j.iheduc.2013.10.001.

Kuo, Y., Walker, A., Belland, B., & Schroder, K. (2009). *A predictive study of student satisfaction in online education programs*. http://dx.doi.org/10.19173/irrodl.v14i1.1338.

Lai, K. (2011). Digital technology and the culture of teaching and learning in higher education. *Australasian Journal Of Educational Technology*, *27*(8). https://doi.org/10.14742/ajet.892

Laličić, A., & Dubravac, V. (2021). The Role of Reading in English Language Classrooms. *MAP Social Sciences*, *1*(1), 23–36. https://doi.org/10.53880/2744-2454.2021.1.1.23

Laudari, S., & Maher, D. (2019). Barriers to ICT use in EFL teacher education courses in Nepal: An activity theory perspective. *Journal Of NELTA*, *24*(1-2), 77-94. https://doi.org/10.3126/nelta.v24i1-2.27681

McMillan, J.H. (2012). Educational Research: Fundamentals for the Consumer (6th ed.). Pearson.

Miglbauer, M. (2017). Students' Extramural English as a Resource for Fostering Language Skills and Digital Competencies in Tertiary Language Education.

Mohammadi, M., Mohibbi, A., & Hedayati, M. (2021). Investigating the challenges and factors influencing the use of the learning management system during the Covid-19 pandemic in Afghanistan. *Education And Information Technologies*, *26*(5), 5165-5198. https://doi.org/10.1007/s10639-021-10517-z

Moore, J.L. (2011). E-learning, online learning, and distance learning. *The Internet and Higher education*. 14(2), 129-135.

Moralista, R., & Oducado, R. (2020). https://www.researchgate.net/publication/344428802_Faculty_Perception_toward_Online_Education_in_a_State_College_in_the_Philippines_during_the_Coronavirus_Disease_19_COVID-19_Pandemic.

Ng, W. (2012). *Can we teach digital natives digital literacy?* http://dx.doi.org/10.1016/j.compedu.2012.04.016.

Paechter, M., Maier, B., & Macher, D. (2010). *Students' expectations of, and experiences in e-learning: Their relation to learning achievements and course satisfaction*.http://dx.doi.org/10.1016/j.compedu.2009.08.005.

Peterson, E., & Hidi, S. (2019). *Curiosity and interest: current perspectives*. https://doi.org/10.1007/s10648-019-09513-0.

Phillips, B. N., Turnbull, B. J. and He, F. X. (2015) "Assessing Readiness for Self-Directed Learning within A Non-Traditional Nursing Cohort", *Nurse Education Today*, 35, 1-7.

Prior D. D., Mazanov, J., Meacheam, D., Heaslip, G. and Hanson J. (2016) "Attitude, Digital Literacy and Self Efficacy: Flow- On Effects for Online Learning Behavior", Internet and Higher Education, Vol. 29, pp. 91-97.

Rich, S.P. (2006). Student performance: does effort matter? *Journal of Applied Finance.* 16(2), 120-133.

Roddy, C., Amiet, D., Chung, J., Holt, C., Shaw, L., & McKenzie, S. et al. (2017). Applying Best Practice Online Learning, Teaching, and Support to Intensive Online Environments: An Integrative Review. *Frontiers In education*, *2*. https://doi.org/10.3389/feduc.2017.00059

Rodriguez Robles, F.M. *Learner characteristic, interaction and support service variables as predictors of satisfaction in Web-based distance education*. PhD thesis, The University of New Mexico. https://www.learntechlib.org/p/121606/.

Roff, K. (2018). Student Satisfaction and/or Dissatisfaction in Blended Learning Environments. *Frontiers In Education Technology*, *1*(2), 149. https://doi.org/10.22158/fet.v1n2p149

Shah, U., Khan, S., & Reynolds, M. (2020). Insights into variation in teachers' pedagogical relationship with ICT: a phenomenographic exploration in the Pakistani higher education context. *Technology, Pedagogy And Education*, *29*(5), 541-555. https://doi.org/10.1080/1475939x.2020.1810751

Shea, P., Bidjerano, T. (2010). Learning presence: Towards a theory of self-efficacy, self-regulation, and the development of communities of inquiry in online and Blended learning environments. *Computers & Education*. 55(4), 1721-1731.

Shih, C., & Gamon, J. (2001). *Web-Based Learning: Relationships Among Student Motivation, Attitude, Learning Styles, And Achievement*. http://dx.doi.org/10.5032/jae.2001.04012.

Shiue, Y., Hsu, Y., Sheng, M., & Lan, c. (2019). *Impact of an Augmented Reality System on Students' Learning Performance for a Health Education Course*. http://DOI:10.32327/IJMESS.8.3.2019.12

Sinanović, J., & Bećirović, S. (2016). The Determinants of Lifelong Learning. *European Researcher, Vol. 103*(2), 107-118. https://doi.org/10.13187/er.2016.103.107

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).

Ting, Y. (2015). Tapping into students' digital literacy and designing negotiated learning to promote learner autonomy. *The Internet And Higher Education*, *26*, 25-32. https://doi.org/10.1016/j.iheduc.2015.04.004

Vella, E., Turesky, E., & Hebert, J. (2016). *Predictors of academic success in web-based courses: age, GPA, and instruction mode*. http://dx.doi.org/10.1108/QAE-08-2015-0035.

Turnbull, D., Chugh, R., & JoLuck, J. (2021). *Online Teaching and Learning in Higher Education during COVID-19* (1st ed.). Routledge.

Wut, T., & Xu, J. (2021). *Person-to-person interactions in online classroom settings under the impact of COVID-19: a social presence theory perspective*. http://dx.doi.org/10.1007/s12564-021-09673-1.