Original Research Article

PSYCHOLOGICAL BARRIERS OF VIETNAM HIGH SCHOOL STUDENTS IN ONLINE LEARNING DUE TO THE COVID-19 PANDEMIC: A QUANTITATIVE STUDY

ABSTRACT

The outbreak of the COVID-19 pandemic has strongly influenced on education system in Vietnam. Schools' closure was one solution to prevent the spread of the virus that has forced these institutions to transition from traditional learning methods to online learning methods. This circumstance has brought many difficulties for high school students who have not been familiar with online learning methods before. Therefore, this study was conducted to figure out some psychological barriers in online learning of Vietnam high school students. On the other hand, the study also found the relationship between these barriers. The differences in gender, areas, feelings and learning outcomes were determined in all three psychological barriers. Data were collected online from high school students between September 15 to October 07 2021. The intent was to get about 310 responses, and 309 returned usable responses. Several analytical methods used to analyze the data include the descriptive statistical analysis method, the Spearman correlation analysis, and the one-way ANOVA. The results provided information on some psychological barriers with their correlation. The significant relationship among three psychological barriers: social interaction, technical skills, and learner motivation attributed the difficulties to Vietnam high school students in online learning, especially in the Covid-19 pandemic context. The differences in gender, areas, feelings and learning

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outcomes were considered the related factors in the online learning environment. These findings could support further studies for researchers, education administrators, teachers, and related stakeholders such as parents, enterprises, and the community to propose solutions to issues affecting the high school students' learning effectiveness and outcomes.

Keywords:Online learning, Psychological barriers, High school students, The COVID-19, Vietnam

1. INTRODUCTION

The outbreak of the COVID-19 pandemic affected more than 1.7 billion learners, including 99% of students in low and lower-middle-income countries [1]. The continuing situation of the COVID-19 epidemic has made online learning become the essential solution. According to this, educational institutions' teaching and learning processes could remain for the entire education system of Vietnam [2]. It transformed from a temporary answer to the emergency to the core solution in blended learning [3] to flexibly organize teaching and learning to respond to the COVID-19 pandemic [4].

According to First author name [5], online learning can be defined "as the use of electronic technology and media to deliver, support and enhance both learning and teaching and involves communication between learners and teachers utilizing online content" (p. 372). It allows learners to be flexible in accessing learning anytime, anywhere [6]. However, the change of the learning environment from traditional to online learning brings many challenges to all learners due to their satisfaction with online learning methods being significantly reduced [7, 8]. Consequently, many studies in online learning have focused on the study of barriers for learners in the online learning environment [9, 10]. In particular, a few studies have shown barriers in online learning such as poor Internet access, network upgrades, updating software courses, lack of ability and confidence due to lack of training courses [11, 12, 13]. Meanwhile, others point out barriers in accessing and conducting learning in the online learning environment [14] and feeling a waste of time, technical issues, and organizational or cultural beliefs [15]. Some other studies have focused on understanding some aspects of barriers to online learning, such as the lack of training in skills such as study skills, technology skills [16], failure to meet the cost of online learning [17], language barriers and time constraints [18].

Due to the impact of the COVID-19 pandemic, the rapid transition from teaching and learning from traditional learning methods (face-to-face) to distance learning methods such as online learning has generated challenges for learners that affect their activities and learning outcomes [19]. Recent studies showed that these influences come from technical factors andrological barriers [20, 21, 22]. In Vietnam, regarding the technical issues, several studies focus on students' perspectives towards the acceptance of video conferencing tools in higher education institutions [23]. Some other studies focus on the problem related to students' online learning habits [24] or their mental health at the transition between traditional and online learning methods [25]. However, high school students' problems concerning the psychological barriers to online learning in the context of the pandemic have not been thoroughly investigated.

Therefore, our research investigated through a questionnaire survey on psychological barriers in online learning of Vietnam high school students. The ~~purpose aims~~purpose aims

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to verify the relationship between these barriers and assess the differences in gender, areas, feelings and learning outcomes.

To fulfil that purpose, we seek the answers to the following questions:

1. How are the psychological barriers of Vietnamese high school students in online learning related to the COVID-19 pandemic?
2. Is there a difference in the psychological barriers of Vietnamese high school students in online learning due to the COVID-19 pandemic by gender, areas, feelings and learning outcomes? And how specifically?

Our findings are expected to provide knowledge about barriers and their impacts on high school students' learning activities and outcomes for researchers in the online learning field. From these insights, education administrators, teachers, and related stakeholders such as parents, enterprises, and the community will propose solutions to Vietnam high school students' learning effectiveness and outcomes.

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2. LITERATURE REVIEW

The enormous waves of Covid-19 impact on people's lives since 2019 have forced many schools and colleges to be closed in the world [26]. Therefore, online learning is no more an option, and it has become a necessity with many advantages such as connectivity, flexibility, and the ability to promote varied interactions [27]. A high level of preparedness to quickly adapt to the changes in the environment and remote face-to-face learning to online learning in many countries has been the most critical issue. Many studies have shown the advantages of this kind of learning: safety at home, easily access, and still guaranteeing learning processes[28]. However, online education has hugely influenced students' motivation, beliefs, self-efficacy, and engagement. These studies figured out that high school students met some barriers in perception, motivation, and completing all the learning missions in an online class [29, 30, 31]. Some others found out that "students' fear, anxiety along with increased worry and apprehension prevail amongst parents concerning online learning patterns of their children" [32].

Regarding the genders, the previous study found gender-related to greater confidence and the perception of using the computer [33, 34]. Some existing studies claimed that female students were better at communication in online learning [35]. They could even be more enthusiastic about using technological tools and contact others than males [36]. Tang et al. [37] found that the outbreak of the Covid-19 may be the reason to push male students to participate more actively and raise their motivation in online learning.

The differences in learning ~~behaviours~~behavior and motivation between areas are examined [38]. The study of J. Li [39] has figured out that the Asian culture views learning as a process of self-perfection, persistence and concentration. The researchers intentionally the appropriate support in online learning environments could positive/negative impact on student's ~~behaviours~~behaviors in the whole learning processes [40, 41]. This article continued to seek out the differences between the urban area and rural area in psychological barriers in online learning [42].

Learning outcomes are considered the measure of the effectiveness of a learning platform. All the online learning processes factored affect learning outcomes, including the general personal and contextual factors [43, 44]. On the other hand, the students who had enjoyment in learning could have tremendous success in the whole online learning process [45]. Feelings are described how students are satisfied with online learning processes. Parker et al. has figured out that the students could persist and participate in the online lessons and be more satisfied [46].

These facts inspired us to continue research on the psychological aspects of online learning. Students' learning, performance, and retention had to change to suit the new learning method. Becker et al. [47] considered three factors that led to the student's psychological barriers: interaction, using technology, and time in online learning. Besides, Ronnie has

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figured out the barriers in online learning come from the lack of technology, the limited environment, and even subjective factors such as the health or learning method [22]. These barriers caused negative emotion, limited self-awareness and directly affected the learning outcomes [48]. According to Muilenburg and Berger [16], the student's psychological barriers are determined:

(1) Social interactions: These are obstacles to online learning that students perceive as being caused by a lack of interaction with peers or the instructor, such as the lack of student collaboration online, the lack of social context cues, or being afraid of feeling isolated online courses.

(2) Technical skills: This factor concerns respondents' perceived barriers to online learning due to their lack of technical skills, such as fearing new tools for online learning, lack of software skills, or their unfamiliarity with online learning technology tools.

(3) Learner motivation: Respondents answered whether they had specific characteristics that would affect their motivation online.

Students have to use technological applications proficiently in studying and communicating in an online learning environment. The student's motivation affected their performance in an online class and even their practice [49]. Besides, without the supervisor of teachers, students could easily postpone all the studying missions or even ignore the lessons [50]. Based on literature review and professional psychologists, we focused on the psychological factors of social interaction, learning motivation and technical skills during the online learning process. Our research attempted to find out the internal relationship of psychological barriers in online learning.

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3. MATERIALS AND METHODS

MEASUREMENT

A questionnaire was designed to collect data—this questionnaire comprised two main parts. The first part was designed to gather the participants' characteristics, including gender, study area in the COVID-19 pandemic, feelings of high school students in online learning processes, and learning outcomes. In the second part, this current study was conducted using the quantitative method based on the scale of students' online learning barriers [16]. It has developed from the initial organizing framework of Garland [51]. The study figured out the student perceptions of the situational, institutional, dispositional, and epistemological barriers to persistence [16]. By updating studies based on Garland's model [51], Muilenburg and Berger [16] had conducted several studies on assessing the student's perceptions of barriers to online learning. The previous study has indicated eight factors with 47 obstacles in online learning [16]. According to the study's scope, we used three factors, including social interaction, technical skills and learner's motivation, to determine the high school student's psychological barriers in online learning. We use 26 items following the 5 points Likert-type scale (arranged from 1 –strongly disagree to 5 – strongly agree).

DATA COLLECTION

An online questionnaire was carried out the gather data for the study. We sent high school students through their teachers to random high schools in Vietnam. The authors asked their volunteers to answer all the questions and ensured that their information was confidential. The volunteer participants who had completed the survey were encouraged to invite their peers who also learned online to fill out the questionnaire. The data were gathered in 23 days, from September 15 to October 07 2021. All the information collected in Google Forms were exported as Master Excels (CSV file), used to clean the data. The intent was to get about 310 responses. There 309 responses were returned usable. High school students' demographic variables presented in this research include characteristics about gender, area (see Table 1).

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Table 1: Characterics of respondent

Characteric	N	Percentage	Cumulative Percent
Gender	309	100	100
Male	127	41.1	41.1
Female	178	57.6	100
Area	309	100	100
Rural	231	74.8	74.8
Urban	78	25.2	100

DATA ANALYSIS

This study used several data analysis methods. The first was the descriptive statistical analysis, which was used to describe the characteristics of survey respondents, such as the number and proportion of high school students by gender (see Table 1). Next was the Spearman correlation analysis to determine the relationship between high school student characteristics and their barriers, for example, the relationship between high school students' learning conditions and barriers of technical skills. In addition, the one-way ANOVA analysis was applied to explore the differences in barriers in online learning among the groups of subjects according to their characteristics. The Microsoft Excel software was used to visualize these groups data (see Figure 1-4). Finally, the linear regression analysis was used to determine the relationship of high school students' characteristics and barriers to their online learning outcomes.

4. RESULTS

THE INTERACTION AMONG PSYCHOLOGICAL BARRIERS

Social interaction, technical skills and learner motivation variables were measured to assess high school students' psychological barriers in online learning.

Regarding social interaction, the most significant barrier based on students' feedback was "Lack of interaction/communication among students" with a mean value of 2.87, followed by “Online learning seems impersonal” with a mean value of 2.76. The item “Class size is not suitable for online learning” causes less barrier than the two factors mentioned above, with a mean value of 2.40 (see Table 2). The social interaction group scale has a reliability of 0.815, which means the scale is excellent (see Table 2).

Table 2: Descriptive Statistics of social interaction variable

Variable	N	Range	Minimum	Maximum	Mean	Std. Deviation
Social interaction (Cronbach’s Alpha = .814)						

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Class size is not suitable for online learning	309	4	1	5	2.40	1.15
Lack of interaction/communication among students	309	4	1	5	2.87	1.18
Online learning seems impersonal	309	4	1	5	2.76	1.13

Students' feedback also showed barriers with technical skills in online learning, with the mean value from 2.11 to 2.81. In which, the most severe difficulties of respondents were "Lack communication skills for online learning" (M=2.81), "Lack language skills for online learning" (M=2, 76) and "Shy or lack of confidence for online learning" (M=2.64). The items related to technology skills cause barriers less than the above factors in high school student's online learning process with the mean of 2.11 for the factor "Fear computers and technology", "Unfamiliar with online learning technical tools" (M=2.27) and "Lack online learning software skills" (M=2.30) (see Table 1~~3~~). The skill group scale has a reliability of 0.925, which means the scale is magnificent (see Table 2~~4~~).

Table 3. Descriptive Statistics of technical skills variable

Technical skills	N	Range	Minimum	Maximum	Mean	Std. Deviation
Technical skills (Cronbach's Alpha = .925)						
Lack language skills for online learning	309	4	1	5	2.76	1.14
Lack writing skills for online learning	309	4	1	5	2.55	1.13
Lack reading skills for online learning	309	4	1	5	2.51	1.13
Lack communication skills for online learning	309	4	1	5	2.81	1.19
Lack typing skills for online learning	309	4	1	5	2.44	1.16
Shy or lack confidence for online learning	309	4	1	5	2.64	1.13
Fear new tools for online learning	309	4	1	5	2.47	1.19
Fear computers and technology	309	4	1	5	2.11	1.19
Lack online learning software skills	309	4	1	5	2.30	1.15
Unfamiliar with online learning technical tools	309	4	1	5	2.27	1.11
Fear different learning methods used for online learning	309	4	1	5	2.49	1.11

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Regarding learner motivation, the respondents' feedback also showed that they encountered barriers when learning online, with the mean answer value from 2.35 to 2.74. In which, students have faced the most obstacles about items related to the online learning environment, such as "Online learning environment is not inherently motivating" (M=2.74) and "Significant interruptions during study at home/work" (M=2.73). Factors related to family and friends were lower barriers to online learning; specifically, "Lack support from family, friends, employers" and "Fear family life will be disrupted" with mean values were respectively 2.35 and 2.38 (see Table 4). The learning motivation group scale has a reliability of 0.927, which means the scale is at an outstanding level (see Table 4).

Table 4. Descriptive Statistics of Learner motivation variable

Learner motivation	N	Range	Minimum	Maximum	Mean	Std. Deviation
Learner motivation (Cronbach's Alpha = .927)						
Procrastinate, cannot get started	309	4	1	5	2.60	1.19
Lack personal motivation for online learning	309	4	1	5	2.66	1.22
Must take on more responsibility for learning	309	4	1	5	2.53	1.20
Choose easier, less demanding aspects of assignments	309	4	1	5	2.52	1.10
Online learning environment is not inherently motivating	309	4	1	5	2.74	1.28
Fear family life will be disrupted	309	4	1	5	2.38	1.19
Lack support from family, friends, employers	309	4	1	5	2.35	1.21
Significant interruptions during study at home/work	309	4	1	5	2.73	1.26
Insufficient time to learn during online courses	309	4	1	5	2.53	1.24

Table 5 shows positive correlations between each pair of variables; specifically, the positive correlation between social interaction and technical skills with r = 0.689, n = 309, p = .000; between technical skills and learning motivation with r = 0.729, n = 309, p = .000; and between learner motivation and social interaction with r = 0.828, n = 309, p = .000.

Table 5. The correlations of three psychological barriers

Variable		Social interaction	Technical skills	Learning motivation
Social interaction	Pearson Correlation	1	.729**	.689**
	Sig. (2-tailed)		.000	.000

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	N	309	309	309
Technical skills	Pearson Correlation	.729**	1	.828**
	Sig. (2-tailed)	.000		.000
	N	309	309	309
Learner motivation	Pearson Correlation	.689**	.828**	1
	Sig. (2-tailed)	.000	.000	
	N	309	309	309

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

DIFFERENCES IN THE PSYCHOLOGICAL BARRIERS OF VIETNAMESE HIGH SCHOOL STUDENTS IN ONLINE LEARNING BY BACKGROUND CHARACTERISTICS AND DEMOGRAPHICS

The ANOVA method determined differences in perceived psychological barriers to online learning between/among specific respondents (groups by gender, groups by area of residence, groups with different perceptions of online and groups with different levels of learning outcomes). These results were demonstrated in the below.

Gender

The mean value of the male group's answer and the female group's feedback differed in three groups of social interaction, technical skills, and learner motivation. The mean of the female group response on social interaction, technical skills, and learner motivation was higher than that of the male group, with the difference of 0.07, 0.14 and 0.15, respectively (see Table 6).

Table 6. Descriptives of the differences in gender

Variable		N	Mean	Std. Deviation	Std. Error	95% Confidence Interval for Mean	
						Lower Bound	Upper Bound
Social interaction	Male	127	2.61	.979	.087	2.44	2.79
	Female	178	2.69	.964	.072	2.54	2.83
	Not give information	4	4.33	.720	.360	3.19	5.48
	Total	309	2.68	.984	.056	2.57	2.79
Technical skills	Male	127	2.39	.856	.076	2.24	2.54
	Female	178	2.54	.870	.065	2.41	2.66
	Not give information	4	3.23	.714	.357	2.09	4.36
	Total	309	2.49	.867	.049	2.39	2.58
Learner motivation	Male	127	2.45	.932	.083	2.29	2.62
	Female	178	2.61	.969	.073	2.46	2.75
	Not give	4	3.86	.246	.123	3.47	4.25

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	information						
	Total	309	2.56	.96114	.05468	2.4512	2.67

Table 7 presented the test results between male and female groups for three groups: social interaction, skills and learning motivation. The ANOVA test results showed that the differences between the two male and female groups are statistically significant for social interaction and learner motivation. For social interaction, the test results were df = 2, F = 6.127, p = .002, which means a significant difference in social interaction between males and females; the difference between the two groups was 0.07. For learner motivation, the ANOVA test result was df = 2, F = 4.795, p = .009, which means there was a significant difference in learning motivation between males and females; the difference between the two groups was 0.15. For technical skills there was no significant difference in skills between males and females (df = 2, F = 2,543, p = .080).

Table 7. The relationship between social interaction, technical skills and leaner motivation variables in gender

Variable		df	Mean Square	F	Sig.
Social interaction	Between Groups	2	5.747	6.127	.002
	Within Groups	306	.938		
	Total	308			
Technical Skills	Between Groups	2	1.894	2.543	.080
	Within Groups	306	.745		
	Total	308			
Learner motivation	Between Groups	2	4.323	4.795	.009
	Within Groups	306	.902		
	Total	308			

Areas

The mean values of two different groups (rural and urban areas) were figured out in Table 8. The mean value of the rural student's response was higher than that of the urban group with the difference of 0.07 (compared to the social interaction group), 0.14 (compared to the skill group) and 0.15 (compared to the learning motivation group) (see Table 8).

Table 8. Descriptives of the differences in areas

Variable		N	Mean	Std. Deviation	Std. Error	95% Confidence Interval for Mean	
						Lower Bound	Upper Bound
Social interaction	Urban	78	2.52	.987	.112	2.30	2.74
	Rural	231	2.73	.980	.064	2.60	2.86
	Total	309	2.68	.984	.0560	2.57	2.79
Technical Skills	Urban	78	2.20	.898	.102	1.99	2.40
	Rural	231	2.58	.837	.055	2.47	2.69
	Total	309	2.49	.867	.049	2.39	2.58
Learner	Urban	78	2.31	.980	.111	2.09	2.53

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motivation	Rural	231	2.64	.942	.062	2.52	2.77
	Total	309	2.56	.961	.055	2.45	2.67

Table 9 presents the test results between the students in urban and rural areas for three groups: social interaction, technical skills, and learner motivation. For social interaction, the ANOVA test results were df = 1, F = 2.674, p = .103, showing that there was no significant difference in social interaction between students in urban and rural areas. For technical skills, the ANOVA test results are df = 1, F = 11,725, p = .001, showing a significant difference in skills between these student groups (the difference between the two groups was 0.39). For learner motivation, the ANOVA test results were df = 1, F = 7.351, p = .007, showing a significant difference in learning motivation between the two student groups (the difference between the two groups was 0.34).

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Table 9. The relationship between social interaction, technical skills and leaner motivation variables in areas

Variable		df	Mean Square	F	Sig.
Social interaction	Between Groups	1	2.577	2.674	.103
	Within Groups	307	.964		
	Total	308			
Technical Skills	Between Groups	1	8.525	11.725	.001
	Within Groups	307	.727		
	Total	308			
Learner motivation	Between Groups	1	6.653	7.351	.007
	Within Groups	307	.905		
	Total	308			

Feelings

When considering the difference among the response groups on the perception of different online learning, the results showed that in the social interaction group, the highest mean value of the group of students "not interested in online learning" was 3.09.. In the technical skills group, the mean answer value of students who do not like online learning was 2.79, 0.34 higher than “very interested in online learning” and 0.56 higher than “interested in online learning”. In the group of learning motivation, the results showed that the mean value of the answer of the group “not interested in online learning” was 2.94, higher than the mean value of the group “very interested in online learning” and the group “interested in online learning” was 0.66 and 0.67 respectively (see Table 10).

Table ~~4~~10. Descriptives of the differences in feelings

Variable		N	Mean	Std. Deviation	Std. Error	95% Confidence Interval for Mean	
						Lower Bound	Upper Bound
Social interaction	Not interested in online learning	130	3.09	.937	.082	2.94	3.26
	Interested in online learning	159	2.35	.893	.071	2.22	2.49

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	Very interested in online learning	20	2.53	1.011	.226	2.06	3.01
	Total	309	2.69	.984	.056	2.57	2.79
Technical Skills	Not interested in online learning	130	2.80	.801	.070	2.66	2.93
	Interested in online learning	159	2.23	.825	.065	2.10	2.36
	Very interested in online learning	20	2.46	.989	.221	1.99	2.92
	Total	309	2.49	.867	.049	2.39	2.58
Learner motivation	Not interested in online learning	130	2.95	.870	.076	2.79	3.10
	Interested in online learning	159	2.28	.928	.074	2.13	2.42
	Very interested in online learning	20	2.29	.957	.214	1.84	2.74
	Total	309	2.56	.961	.055	2.45	2.67

Table 5~~11~~ presents the test results among three groups of students according to their perception of online learning: social interaction, technical skills and learner motivation. For social interaction, the ANOVA test results were df = 2, F = 23.639, p = .000 showing that the significant difference between the three groups of students according to the perceived level of online learning. There was a significant difference in social interaction among the three groups of students. The difference between the group of students who are "not interested in online learning" compared to the group of "very interested in online learning" was 0.74 and between the group "not interested in online learning" and the group "interested in online learning" was 0.56. For technical skills, . There was a significant difference in skills among the three student groups (df = 2, F = 16,580, p = .000). The difference between the group of students who are "not interested in online learning" compared with the group of "very interested in online learning" was 0.56, between the "not interested in online learning" group and the group "interested in online learning" was 0.34. For learner motivation, the ANOVA test results were df = 2, F = 20.437, p = .000, showing that the difference between the three groups of students according to the perceived level of online learning was statistically significant. The difference between the group of students who are "not interested in online learning" compared with the group of "very interested in online learning" was 0.66, between the "not interested in online learning" group and the "interested in online learning" group was 0.67.

Table 6~~11~~. The relationship between social interaction, technical skills and leaner motivation variables in feelings

Variable		df	Mean Square	F	Sig.
Social interaction	Between Groups	2	19.975	23.639	.000
	Within Groups	306	.845		
	Total	308			
Technical Skills	Between Groups	2	11.329	16.580	.000

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	Within Groups	306	.683		
	Total	308			
Learner motivation	Between Groups	2	16.764	20.437	.000
	Within Groups	306	.820		
	Total	308			

Learning outcomes

When considering the difference among five groups of students with different levels of learning outcomes, , the mean value of the weak learning outcomes group was 3.33. This group's mean value was 0.51 higher than the second group (average learning outcomes); higher than the fifth group (with excellent learning outcomes) was 1.19. In the group of technical skills, the mean value of the group of "weak" (M = 3.06) 0.32 higher than the second group (with average learning outcomes) and higher than the fifth group (with excellent learning outcomes) was 1.14. The mean value of the "weak" group was 3.33, higher than the mean value of the second group (with average learning outcomes) of 0.41 and higher than the fifth group (excellent learning outcomes) was 1.51 (see Table 7~~1~~2).

Table 8~~1~~2. Descriptives of the differences in learning outcomes

Variable		N	Mean	Std. Deviation	Std. Error	95% Confidence Interval for Mean	
						Lower Bound	Upper Bound
Social interaction	Weak	9	3.33	1.167	.389	2.44	4.23
	Average	65	2.83	.917	.114	2.60	3.05
	Good	174	2.69	.984	.075	2.54	2.84
	Very good	54	2.42	.967	.132	2.16	2.68
	Excellent	7	2.14	.997	.377	1.22	3.07
	Total	309	2.68	.984	.056	2.57	2.79
Technical Skills	Weak	9	3.06	1.098	.366	2.22	3.90
	Average	65	2.75	.824	.102	2.54	2.95
	Good	174	2.49	.827	.063	2.36	2.61
	Very good	54	2.14	.867	.118	1.90	2.38
	Excellent	7	1.92	.868	.328	1.12	2.72
	Total	309	2.49	.867	.049	2.39	2.58
Learner motivation	Weak	9	3.33	.073	.358	2.51	4.16
	Average	65	2.92	.902	.112	2.70	3.15
	Good	174	2.55	.918	.070	2.41	2.68
	Very good	54	2.12	.914	.124	1.87	2.37
	Excellent	7	1.83	.911	.344	.98	2.67
	Total	309	2.56	.961	.055	2.45	2.67

Table 9~~1~~3 presented the results among five groups of students according to their levels of learning outcomes (weak, average, good, very good, excellent) with three groups: social interaction, skills and learning motivation. For social interaction, the ANOVA test results

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were df = 4, F = 2.886, p = .023, showing that the significant difference among five groups of students according to levels of learning outcomes. The difference between the weak students and the average group was 0.51; compared to the excellent group, it was 0.64; for the outstanding group, it was 0.92; and for the rest, it was 1.19. For technical skills, the ANOVA test results , showed the difference among five groups (df = 4, F = 5.690, p = .000). The difference between the vulnerable student group and the average group was 0.32, compared to the excellent group was 0.58; for the outstanding group, 0.65; and for the rest, 1.14. For learner motivationthe difference between the group of students with weak learning outcomes and the average group was 0.41, compared to the good group it was 0.79, the very good group was 1.21, and the excellent group was 1.51.

Table 10~~13~~. The relationship between social interaction, technical skills and leaner motivation variables in learning outcomes

Variable		df	Mean Square	F	Sig.
Social interaction	Between Groups	4	2.730	2.886	.023
	Within Groups	304	.946		
	Total	308			
Technical Skills	Between Groups	4	4.036	5.690	.000
	Within Groups	304	.709		
	Total	308			
Learner motivation	Between Groups	4	7.012	8.311	.000
	Within Groups	304	.844		
	Total	308			

5. DISCUSSION

Our study was implemented to find the psychological barriers of Vietnam high school students in online learning due to the Covid-19 pandemic context. The sudden shift from traditional classrooms and face-to-face learning to online learning has made some obstacles for learners [52]. The three psychological barriers were determined: (1) social interaction, (2) technical skills, (3) learner motivation. The results have shown a significant relationship among them. That meant whether one of these factors changed could lead to the others could change either. The results showed that the high school student was limited in communication and could not concentrate on the whole lesson. Social interaction was the most psychological barrier in online learning. The high school student felt a lack of interaction among high school students in their class. They also felt that online learning seemed to personalize themselves. Even in technical skills, the high school students were lack of communication skills for online learning. The online learning environment seemed not to support high school students through the learning processes. Most of them were significant interrupted during study at home. Our study also found the differences of these factors in the groups of gender, areas, feelings and learning outcomes. The three factors were all different in feelings and learning outcomes. Meanwhile, social interaction and learner motivation had differences in gender between male and female high school students. Finally, in terms of areas, the results showed that rural and urban areas are different in technical skills and learner motivation.

THE INTERACTION AMONG PSYCHOLOGICAL BARRIERS

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The results figured out the strongest association between technical skills and learner motivation. This finding also found in previous studies which indicated that the high school students met technical skill difficulties and even reduced to engage with in the online learning [53]. Students' unwillingness to implement online learning skills could fail whole propositions [54] A broad range of motivational theories explained that contextual and psychological factors could optimize learners' learning, engagement, and eventual skills [55], [56].

The technical skills were also related to social interaction. The previous studies showed that the students' technical skills ability could contribute to the self-efficacy in online learning [57]. Several studies claimed that the lack of technical skills just placed high school students in their classes to the listeners or the viewers instead of being the active learners [58]. It played an essential part in enhancing learner interaction while solving the study missions, actively giving a speech in class, and other various missions in online learning processes [59].

DIFFERENCES IN GENDER

Additionally, the interaction of these psychological barriers was different in groups of gender. According to our analysis, the results showed that social interaction and learner motivation had the most difference). It could be considered that males and females might be different while attending online classes. First, ~~Our~~ this study found that the female met more difficulties in social interaction than male (M = 2.68, Sig = .002). Zhang et al. [60] figured out females tended to express themselves much more than males in online communication. In while, female had less opportunities to communicate in online classes. Therefore, they felt lack of interaction with others in online learning progress. Second, the results also showed that female met more difficulties in learner motivation than male (M = 2.45, Sig = .009). It could be interpreted that female students are easily affected by external factors and other encouragement [61]. In a while, male students naturally find the motivation from internal orientation such as interest, needs or their personal goals [62]. Nonetheless, the study in online environment particurlarly demanded learners have to promote themselves in the whole learning progress. Therefore, female high school students thought that they lacked motivation in online learning than male high school students. Based on the self-regulated learning theories, these findings supported for several previous studies had demonstrated the gender difference in learning strategies, motivation and expression in class [63, 64].

DIFFERENCES IN AREAS

As the issue of areas, this study found that the high school students in the rural areas got more limited capability than urban areas in the technical skills. The critical problems of this fact came from the lack of internet accessibilities, learning management systems, or even teachers' teaching method [65]. The high school students had to face the enormous lifestyle change, learning methods according to the application of technology in education. On the other hand, the facilitator for online learning at home is also a problem, especially in families with more than one child [66]. The learner motivation of high school students in rural areas was more difficult than urban high school students (M = 2.64, Sig = .007). Previous studies indicated that rural schools might provide less competitiveness than urban schools [67]. It could intensify the learner motivation while they had to adopt the new ways of learning.

DIFFERENCES IN FEELINGS

According to the above results, Vietnam high school students have less positive attitudes in online learning. Especially the significant difference in learning motivation among three levels of ~~feelingson~~feelingS. The negative feelings could be attributed to various

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psychological barriers in online learning progress According to the survey of [68] to measure the effects of the forced transition to 100% online learning, the ~~resultsindicated~~results indicated that students felt social isolation, limited interaction and lack of motivation during online learning lessons.

DIFFERENCES IN LEARNING OUTCOMES

The results indicated the significant differences among five group levels of high school students' learning outcomes with three psychological barriers factors. The final score had a strong relationship between feelings, motivation and online learning skills [69], [44]. Regarding the barriers, the literacy competencies should be concerned for its' influence on the whole online learning progress [70, 71]. It has been claimed that students' outcomes correlated with actual learning performance [72]. Moreover, the students' initiative and proactive behaviours which were closely related to learning achievement [73], itcould be determined by the interaction, motivation and attitudes [74]. Our findings supported the previous studies that indicated that students who were comfortable with online technology and high motivation would succeed in online learning [43].

6. CONCLUSION

This article assesses high school students' psychological barriers in three aspects: social interaction, technical skills and learner motivation. The outcomes indicated the significant relationship between three factors, and the correlation among them expressed the strong relationship between groups. Significantly, the relationship between the learners' motivation and technical skills. The results have also shown the differences in these factors due to gender, areas, feelings and learning outcomes. The social interaction and learners' motivation are different between male and female high school students. The technical skills and learners' motivation are difference between the urban and rural area. The outcomes indicated that these three factors also differ in feelings and learning outcomes. The positive relationship between these factors attributed the difficulties to Vietnam high school students in online learning, especially in the Covid-19 pandemic context. Our findings could be a practical references for researchers, education administrators, teachers, and related stakeholders such as parents, enterprises, and the community to propose solutions to issues affecting the high school students' learning effectiveness and outcomes.

This study has some attribution in the field of online learning, however, it still had some limitations.The results did not concern other personal characteristics such as needsand learning competencies. In addition, this article did not find the subjective and objective factors that affected high school students' barriers to online learning. The research design did not contain the causation which would suggest for the educators and researchers to find a way to reduce the high school student's psychological barriers and improve learning skills and motivation.Additionally, the respondents were still small and could not be represented for all in the various areas in Vietnam.

These results support further studies in the field of online learning. Future online learning design could find the influence factors that affect online learning progress. Primarily, the objective could focus on the variety of respondents to compare the differences in perception, attitude and behaviour in online classes. The sufficient information from these could help recommend educators or managers to improve the quality of Vietnam online learning education in general. Notably, the online class could be more adaptative for all learners.

REFERENCES

[1] United Nations. Policy brief: Education during COVID-19 and beyond. Accessed 15

*

October 2021. Available: https://www.un.org/sites/un2.un.org/files/sg_policy_brief_covid-19_and_educat ion_august_2020.pdf.
[2] X. Nguyen, D. Pho, D. Luong, and X. Cao. Vietnamese students'acceptance of using video conferencing tools in distance learning in COVID-19 pandemic. Turkish Online J. Distance Educ. 2021; 22(3):139–162. doi.org/10.17718/tojde.961828
[3] H. Thi Thu Dao and T. Thi Kim Le. Transitioning from Traditional Learning to Blended Learning at Some Public Universities in Vietnam after the Covid-19 Pandemic. The 4th International Conference on Advances in Artificial Intelligence. 2020; 85–91.
[4] Vietnam Ministry of Education and Training. Flexible teaching organization, stable education quality. Accessed 09 November 2021. Available: https://moet.gov.vn/giaoducquocdan/giao-duc-tieu-hoc/Pages/Default.aspx?ItemID=7607.
[5] D. Howlett et al. Integration of a case-based online module into an undergraduate curriculum: What is involved and is it effective?. E-Learning. 2009; 6(4):372–384. doi: 10.2304/elea.2009.6.4.372.
[6] T. Anderson and F. Elloumi. Theory and practice of online learning. Athabasca University Press; 2004.
[7] E. Barbera, M. Clara, and J. A. Linder-Vanberschot. Factors influencing student satisfaction and perceived learning in online courses. E-learning Digit. Media. 2013; 10(3), pp. 226–235.
[8] K. Swan, S. L. Day, L. R. Bogle, and D. B. Matthews. A collaborative, design-based approach to improving an online program. Internet High. Educ. 2012; 21:74–81.
[9] S. A. Lloyd, M. M. Byrne, and T. S. McCoy. Faculty-perceived barriers of online education. J. online Learn. Teach. 2012; 8(1):1-12.
[10] D. O'Doherty, M. Dromey, J. Lougheed, A. Hannigan, J. Last, and D. McGrath. Barriers and solutions to online learning in medical education-an integrative review. BMC Med. Educ. 2018; 18(1):1–11. doi.org/10.1186/s12909-018-1240-0
[11] M. L. Cheok, S. L. Wong, A. F. Ayub, and R. Mahmud. Teachers' Perceptions of E-Learning in Malaysian Secondary Schools. Malaysian Online J. Educ. Technol. 2017; 5(2):20–33.
[12] R. Kaliisa and M. Picard. A systematic review on mobile learning in higher education: The African perspective. TOJET Turkish Online J. Educ. Technol. 2017; 16(1).
[13] A. Sun and X. Chen. Online education and its effective practice: A research review. J. Inf. Technol. Educ. 2016; 15:157-190. doi.org/10.28945/3502
[14] S. B. Hartmann, L. Q. V. Nygaard, S. Pedersen, and M. S. Khalid. The potentials of using cloud computing in schools: A systematic literature review. Turkish Online J. Educ. Technol. 2017; 16(1):190–202.
[15] W. W. Fish and P. B. Gill. Perceptions of Online Instruction. Online Submiss. 2009; 8(1).
[16] L. Y. Muilenburg and Z. L. Berge. Student barriers to online learning: A factor analytic study. Distance Educ. 2005; 26(1):29–48. doi.org/10.1080/01587910500081269
[17] D. J. Deming, C. Goldin, L. F. Katz, and N. Yuchtman. Can online learning bend the higher education cost curve?. Am. Econ. Rev. 2015; 105(5):496–501. doi.org/ 10.1257/aer.p20151024
[18] A. A. Jónsdóttir, Z. Kang, T. Sun, S. Mandal, and J.-E. Kim. The Effects of Language Barriers and Time Constraints on Online Learning Performance: An Eye-Tracking Study. Hum. Factors. 2021. doi.org/10.1177/00187208211010949
[19] M. Fawaz and A. Samaha. E-learning Depression, anxiety, and stress symptomatology among Lebanese university students during COVID-19 quarantine. Nurs. Forum. 2021; 56(1):52–57. doi.org/10.1111/nuf.12521
[20] M. Anwar, A. Khan, and K. Sultan. The Barriers and Challenges Faced by Students in Online Education during Covid-19 Pandemic in Pakistan. Gomal Univ. J. Res. 2020; 36(1):52–62.
[21] S. Abuhammad. Barriers to distance learning during the COVID-19 outbreak: A

*

qualitative review from parents' perspective. Heliyon. 2020; 6(11): e05482. doi.org/10.1016/j.heliyon.2020.e05482
[22] R. E. Baticulon et al. Barriers to online learning in the time of COVID-19: A national survey of medical students in the Philippines. Med. Sci. Educ. 2021; 31:615-626. doi.org/10.1007/s40670-021-01231-z
[23] T. H. Bui, D. H. Luong, X. A. Nguyen, H. L. Nguyen, and T. T. Ngo. Impact of female students' perceptions on behavioral intention to use video conferencing tools in COVID-19: Data of Vietnam. Data Br. 2020; 32:106142. doi.org/10.1016/j.dib.2020.106142.
[24] T. Trung, A. D. Hoang, T. T. Nguyen, V. H. Dinh, Y. C. Nguyen, and H. H. Pham. Dataset of Vietnamese student's learning habits during COVID-19. Data Br. 2020; 30, 2020. doi.org/10.1016/j.dib.2020.105682.
[25] H. T. Q. Lan, N. T. Long, and N. Van Hanh. Validation of depression, anxiety and stress scales (Dass-21): Immediate psychological responses of students in the e-learning environment. Int. J. High. Educ. 2020; 9(5):125–133. doi.org/10.5430/ijhe.v9n5p125.
[26] A. Rahman and M. A. Kuddus. Modelling the Transmission Dynamics of COVID-19 in Six High-Burden Countries. Biomed Res. Int. 2020; 2021. doi.org/10.1155/2021/5089184
[27] S. Dhawan. Online learning: A panacea in the time of COVID-19 crisis. J. Educ. Technol. Syst. 2020; 49(1):5–22. doi.org/10.1177/0047239520934018
[28] J. Watson. Teacher education and K-12 online learning. Ina. Int. Assoc. K–12 Online Learn. 2020; July:1–20.
[29] P. Harjule, A. Rahman, and B. Agarwal. A cross-sectional study of anxiety, stress, perception and mental health towards online learning of school children in India during COVID-19. J. Interdiscip. Math. 2021; 24(2):411–424. doi.org/10.1080/09720502.2021.1889780
[30] W. Fu et al. Mental health of college students during the COVID-19 epidemic in China. J. Affect. Disord. 2021; 280:7–10. doi.org/10.1016/j.jad.2020.11.032
[31] D. Roy, S. Tripathy, S. K. Kar, N. Sharma, S. K. Verma, and V. Kaushal. Study of knowledge, attitude, anxiety & perceived mental healthcare need in Indian population during COVID-19 pandemic. Asian J. Psychiatr. 2020; 51:102083. doi.org/10.1016/j.ajp.2020.102083
[32] T. Elmer, K. Mepham, and C. Stadtfeld. Students under lockdown: Comparisons of students' social networks and mental health before and during the COVID-19 crisis in Switzerland. PLoS One. 2020; 15(7):e0236337. doi.org/10.1371/journal.pone.0236337
[33] B. J. Young. Gender differences in student attitudes toward computers. J. Res. Comput. Educ. 2000; 33(2):204–216. doi.org/10.1080/08886504.2000.10782310
[34] T. S. H. Teo and V. K. G. Lim. Gender differences in internet usage and task preferences. Behav. Inf. Technol. 2000; 19(4): 283–295. doi.org/10.1080/01449290050086390
[35] J. K. Atkinson and R. Blankenship. Online learning readiness of undergraduate college students: A comparison between male and female learners. Learn. High. Educ. 2009; 4(2):49-56.
[36] Y. Ünal, G. Alır, and İ. Soydal. Students readiness for e-learning: An assessment on Hacettepe University Department of Information Management. in International Symposium on Information Management in a Changing World. 2013; 137–147.
[37] Y. M. Tang et al. Comparative analysis of Student's live online learning readiness during the coronavirus (COVID-19) pandemic in the higher education sector. Comput. Educ. 2021; 168, p. 104211. doi.org/10.1016/j.compedu.2021.104211
[38] A.-B. Yu and K.-S. Yang. Social-oriented and individual-oriented achievement motivation: A conceptual and empirical analysis. Bull. Inst. Ethnol. Acad. Sin. 1987; 65:51–98.
[39] J. Li. What do US and Chinese College students think learning is? Exploring learning models of American and Chinese. Int. Soc. Study Behav. Dev. Beijing. 2000.
[40] S. R. Palmer and D. M. Holt. Examining student satisfaction with wholly online

*

learning. J. Comput. Assist. Learn. 2009; 25(2):101–113. doi.org/10.1111/j.1365-2729.2008.00294.x
[41] K. L. Smart and J. J. Cappel. Students' perceptions of online learning: A comparative study. J. Inf. Technol. Educ. Res. 2006; 5(1):201–219.
[42] D. H. Lim. Cross cultural differences in online learning motivation. EMI. Educ. Media Int. 2004; 41(2):163–175. doi.org/10.1080/09523980410001685784.
[43] H. Kauffman. A review of predictive factors of student success in and satisfaction with online learning. Res. Learn. Technol. 2015; 23. doi.org/10.3402/rlt.v23.26507
[44] D. T. H. Van and H. H. Q. Thi. Student Barriers to Prospects of Online Learning in Vietnam in The Context of Covid-19 Pandemic. Turkish Online J. Distance Educ. 2021; 22(3):110–123. doi.org/10.17718/tojde.961824
[45] P. C. Parker et al. A motivation perspective on achievement appraisals, emotions, and performance in an online learning environment. Int. J. Educ. Res. 2021; 108:101772. doi.org/10.1016/j.ijer.2021.101772
[46] R. F. Kizilcec and S. Halawa. Attrition and achievement gaps in online learning. in Proceedings of the second (2015) ACM conference on learning@ scale. 2015; 57–66.
[47] K. Becker, C. Newton, and S. Sawang. A learner perspective on barriers to e-learning. Aust. J. Adult Learn. 2013; 53(2):211–233.
[48] M. Cleveland-Innes and P. Campbell. Emotional presence, learning, and the online learning environment. Int. Rev. Res. Open Distrib. Learn. 2012; 13(4):269–292. doi.org/10.19173/irrodl.v13i4.1234
[49] D. B. Zandvliet and B. J. Fraser. Learning environments in information and communications technology classrooms. Technol. Pedagog. Educ. 2004; 13(1):97–123. doi.org/10.1080/14759390400200175
[50] A. Y. Ni. Comparing the effectiveness of classroom and online learning: Teaching research methods. J. public Aff. Educ. 2013; 19(2):199–215. doi.org/10.1080/15236803.2013.12001730
[51] M. R. Garland. Student perceptions of the situational, institutional, dispositional and epistemological barriers to persistence. Distance Educ. 1993; 14(2):181–198. doi.org/10.1080/0158791930140203
[52] M. Adnan and K. Anwar. Online Learning amid the COVID-19 Pandemic: Students' Perspectives. Journal of Pedagogical Sociology and Psychology. 2020; 2(1):45–51.
[53] T. K. F. Chiu and T. K. F. Hew. Asynchronous online discussion forum in MOOCs: Does openness matter for peer learning and performance. Australas. J. Educ. Technol. 2018; 34(4):16–28.
[54] E. Aboagye, J. A. Yawson, and K. N. Appiah. COVID-19 and E-learning: The challenges of students in tertiary institutions. Soc. Educ. Res. 2021; 2(1): 1–8. doi.org/10.37256/ser.212021422
[55] R. M. Ryan and E. L. Deci. Intrinsic and extrinsic motivation from a self-determination theory perspective: Definitions, theory, practices, and future directions. Contemp. Educ. Psychol. 2020; 61:101860. doi.org/10.1016/j.cedpsych.2020.101860
[56] R. Pekrun, S. Lichtenfeld, H. W. Marsh, K. Murayama, and T. Goetz. Achievement emotions and academic performance: Longitudinal models of reciprocal effects. Child Dev. 2017; 88(5):1653–1670. doi.org/10.1111/cdev.12704
[57] D. D. Prior, J. Mazanov, D. Meacheam, G. Heaslip, and J. Hanson. Attitude, digital literacy and self efficacy: Flow-on effects for online learning behavior. Internet High. Educ. 2016; 29:91–97. doi.org/10.1016/j.iheduc.2016.01.001
[58] M. Mustakim. Efektivitas pembelajaran daring menggunakan media online selama pandemi covid-19 pada mata pelajaran matematika. Al asma J. Islam. Educ. 2020; 2(1):1–12.
[59] G. Stockwell. Technology and motivation in English-language teaching and learning. in International perspectives on motivation. Palgrave Macmillan, London. 2013; 156–175. doi.org/10.1057/9781137000873_9

*

[60] Y. Zhang, Y. Dang, and H. Chen. Research note: Examining gender emotional differences in Web forum communication. Decis. Support Syst. 2013; 55(3):851–860. doi.org/10.1016/j.dss.2013.04.003
[61] A. Kenedi and N. W. Astuti. College Student Learning Motivation in Online Learning in Jakarta During the COVID-19 Pandemic: A Descriptive Study. in International Conference on Economics, Business, Social, and Humanities (ICEBSH 2021). 2021; 1316–1321.
[62] D. H. Lim and H. Kim. Motivation and learner characteristics affecting online learning and learning application. J. Educ. Technol. Syst. 2003; 31(4):423–439.
[63] E. Yukselturk and S. Bulut. Gender differences in self-regulated online learning environment. J. Educ. Technol. Soc. 2009; 12(3):12–22.
[64] S. Korlat et al. Gender Differences in Digital Learning During COVID-19: Competence Beliefs, Intrinsic Value, Learning Engagement, and Perceived Teacher Support. Front. Psychol. 2021; 12:849. doi.org/10.3389/fpsyg.2021.637776
[65] B. Dube. Rural online learning in the context of COVID 19 in South Africa: Evoking an inclusive education approach. Multidiscip. J. Educ. Research. 2020; 10(2):135–157. doi.org/10.17583/remie.2020.5607
[66] M. J. Irvin, W. H. Hannum, T. W. Farmer, C. la Varre, and J. Keane. Supporting online learning for Advanced Placement students in small rural schools: Conceptual foundations and intervention components of the Facilitator Preparation Program. Rural Educ. 2009; 31(1):29–37, 2009.
[67] P. Hardre and M. Hennessey. Two rural worlds: Differences of rural high school students' motivational profiles in Indiana and Colorado. Journal of Research in Rural Education, 2010, 25(8):1-32.
[68] T. Hammond et al. A Survey to Measure the Effects of Forced Transition to 100% Online Learning on Community Sharing, Feelings of Social Isolation, Equity, Resilience, and Learning Content During the COVID-19 Pandemic. 2020.
[69] J.-W. Lee. Online support service quality, online learning acceptance, and student satisfaction. Internet High. Educ. 2010; 13(4):277–283. doi.org/10.1016/j.iheduc.2010.08.002
[70] A. Fauzi, H. Husamah, D. Fatmawati, F. J. Miharja, T. I. Permana, and A. M. Hudha. Exploring COVID-19 literacy level among biology teacher candidates. Eurasia J. Math. Sci. Technol. Educ. 2020; 16(7):1–12.
[71] Y. Yustina, L. Halim, and I. Mahadi. The Effect of'Fish Diversity'Book in Kampar District on the Learning Motivation and Obstacles of Kampar High School Students through Online Learning during the COVID-19 Period. J. Innov. Educ. Cult. Res. 2020; 1(1):7–14. doi.org/10.46843/jiecr.v1i1.2
[72] R. Owston, D. York, and S. Murtha. Student perceptions and achievement in a university blended learning strategic initiative. Internet High. Educ. 2013; 18:38–46. doi.org/10.1016/j.iheduc.2012.12.003
[73] B. E. Ashforth, D. M. Sluss, and A. M. Saks. Socialization tactics, proactive behavior, and newcomer learning: Integrating socialization models. J. Vocat. Behav. 2007; 70(3):447–462. doi.org/10.1016/j.jvb.2007.02.001
[74] H. Baber. Determinants of students' perceived learning outcome and satisfaction in online learning during the pandemic of COVID-19. J. Educ. e-Learning Res. 2020; 7(3):285–292, 2020.

*