Student resilience in online education during the outbreak of COVID-19; A study at Payame Noor University in quarantine conditions

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Abstract

As the COVID 19 virus spread worldwide, changes took place in the lifestyles of people and in the programs and policies of various governments and institutions. The most important change in educational systems was the postpone of the face-to-face education system and the implementation of online education. Naturally, the users of these classes, both students and professors, encountered problems. The purpose of this article is to determine the resilience of Payame Noor University students in the face of the problems of online classes and their satisfaction with these classes. The research questionnaire, which included 25 questions related to the Connor-Davidson scale and questions related to demographic characteristics and students' opinions about online classes, was sent through WhatsApp messengers to a sample of 272 students who were randomly selected. The collected data were analyzed using SPSS program. The results showed that the level of students' satisfaction with e-classes was higher than average and the correlation between student's general resilience and their level of satisfaction and comfort with online classes was also significant. In this regard, the correlation between the three components of resilience, namely purposefulness, tenacity and belief, was more pronounced.

Keywords: General Resilience, Online Education, COVID 19

Introduction

In December 2019, a new type of coronavirus called Covid 19 was identified in Wuhan, China (Fox, 2020) and following the outbreak of the virus, the World Health Organization declared a public health emergency threatening the world (Times, 2020). In Iran, too, according to senior officials in early March 2020, COVID 19 covered almost the entire country. With the departure of Iran from the white situation, the living conditions of human beings changed and some social and economic activities that were associated with the gathering, including higher education centers and universities, were stopped (Shahr Ara News, 2020). Naturally, the resilience of these educational institutions in the face of the global crisis can act as an important factor in the subsequent negative effects. Higher education centers have been implementing online education since April 2020, by postponing the traditional education system and closing classrooms. Online education imposes its own issues on professors and students and their families. In a way that students and professors may be confused and tired of teaching and learning, and cause dissatisfaction with this teaching method. The result is damage to students and professors and the educational complex.

Human vulnerability in critical situations is not a new event and is not only related to COVID 19 and human beings in their personal and social life and in relation to their natural and social environment are always faced with crises and unfavorable conditions that are potentially threatening so they need to adapt to these adversities. The basic premise is that these adversities can have subsequent negative effects. However, researchers have found in their studies that vulnerability to these crises is not the same in all individuals, groups and communities, and the negative consequences of these disasters cannot be a global phenomenon. Therefore, some authors such as Werner and Smith (1982) use the term "invincible" or Anthony (1987) uses the term "invulnerability" to describe those who are exempt from this basic premise. Accordingly, Garmezy (1971) divides society into two parts: vulnerable and invulnerable (Van Breda, 2018).

Thus, over time, human beings react differently to adversity in order to adapt to a range of negative to positive reactions. For example, in the face of adverse conditions, some react negatively to adaptation and turn to sedatives and even drugs (Mahdiani & Ungar, 2021). Others, on the other hand, adapt by showing positive reactions to adverse conditions. Of course, it must be said that negative and positive or bad and good concepts are of value type, and therefore reactions based on existing values may be interpreted with one of these terms. Accordingly, some researchers use the term "better than expected" (Van Breda, 2018). The concept of resilience, which has found its way from physics to human and social studies, expresses the ability in human beings, groups, and societies that enable them to face challenges in a healthy way, and protect themselves from serious harm to achieve better results than expected.

This article seeks to study the resilience of students in online education. Students are often at an age where they need to communicate with each other in making decisions and feeling safe and trusted. Online education and its problems such as poor access to high-speed and stable Internet, problems related to the provision of hardware tools, students's ability to use training programs and problems caused by professors, including how to transfer content and make optimal use of class time lead to negative reactions such as confusion, feelings of emptiness, temporary dropout or even permanent dropout of students. Because lack of trust in this educational method and lack of motivation to study in this method may also strengthen the problems of access resources and lead to these negative reactions.

The main purpose of this article is to answer the hypothesis that the level of students 'acceptance and satisfaction with online classes (students' resilience in online education) depends on their general resilience. Obviously, students do not act in the same way in dealing with problems in online classrooms. It seems that demographic and social factors such as students' gender, place of residence, marital status and employment status will affect how students adapt to online classes. Therefore, in the sub-goal, the relationship between the problems in online classes and students' feelings towards online classes is also examined.

Theoretical literature on the concept of resilience

The concept of resilience has been increasingly considered by researchers in the field of environmental sciences and ecology, sociology, anthropology, history, polymer science, urban studies, materials science, etc. over the past half century. In a way, the number of related articles increased from 60 in 1993 to 800 in 2013 (Thorne, 2014). In an analysis of world literature, Moldovan shows that in the period 1975 to 2018, over 19,000 scientific works from articles to books and extensive abstracts and the like, used the concept of resilience, of which only 10% were produced by 2010 (Moldovan, 2019).

The concept of resilience, although originally used in physics to describe spring flexibility (Sam Aram and Mansouri, 2017), was first described in the literature on environmental change on a global scale by Holling in 1973 in his study of ecological studies (Meerow & Newell, 2015: 237). The term resilience has been used in various other fields since the 1970s, and in each scientific field, definitions and conceptual models appropriate to the function of that field have been presented (Sam Aram and Mansouri, 2017). Researchers often point to the diversity of definitions of the concept of resilience and the lack of a single definition. Meanwhile, Adrian Breda (2018), while quoting the opinions of other authors, interestingly points out that consensus on the definition of the concept of resilience is difficult, and therefore interprets it as a hollow word that can be filled with any meaning. Holling, who first used the term in environmental change, defines resilience as the ability of an ecosystem to retain basic functional characteristics in the face of disruption (Holling, 1973: 17).

It should be noted that since the beginning of the COVID 19 epidemic worldwide, much research has been done on the impressed of education in this epidemic. In some of these studies, the concept of resilience has also been considered. For example, Nambiar (2020), Sujarwo et al (2020) and Fatoni et al (2020) by emphasizing the role of teaching quality and faculty interaction students showed that the level of satisfaction of students and professors with online classes is at a high level. Zhou & Zhang (2021) conclude that in e-classrooms, due to lack of interaction with the teacher, the learning process is disrupted and

students' stress in academic performance increases. Apolloni et al. (2020) find that a good relationship between teacher and student can play an important role in creating resilience in quarantine conditions. Olmos-Gómez (2020) shows that students who follow the news of Corona frequently become more frustrated and therefore their resilience decreases. Another factor they showed in reducing resilience was physical inactivity. Ferreira et al (2020) point to the role of the family as an important factor in increasing resilience. Labrague (Labrague & Ballad, 2020) points to gender differences in resilience versus Covid 19 that women are more tired than men. The same result was achieved by Karaşar & Canli (2020).

Methodology

This study seeks to study the resilience of undergraduate students of Payame Noor University in different centers and units of Hamadan province to online education during the COVID19 quarantine period. In this study, 272 students participated as a statistical sample and answered the research questionnaire that was sent through WhatsApp messenger.

The Connor-Davidson 25-item resilience questionnaire was used to assess the general resilience of students. The difference is that here we refer to the work of Noormah Haj Mohammad Reza (2016) who has compared the intercultural components of the resilience scale using the construct validity, which in fact localizes the five components of Connor-Davidson. Therefore, the five components of resilience in this article are the first factor of purposefulness, the second factor of self-control and problem-solving ability, the third factor of persistence, the fourth factor of belief and the fifth factor of optimism. Therefore, questions 5-11-12-17-21-22-24-25 to measure the first component; Questions 1-4-6-7-13-14-18-19 to measure the second component, namely self-control and problem-solving ability; Questions 10-16-23 to measure the third component, namely persistence; Questions 2-3-9 were used to measure the fourth component, i.e. belief, and questions 8-15-20 were used to measure the fifth component, i.e. optimism The reliability of the scale measured with Cronbach's alpha is equal to / 807. And showed that the scale is well adjusted to the structure.

The research questionnaire consisted of the following sections:
Connor-Davison questions to measure general resilience
Questions related to demographic and social characteristics of students
Questions about online classroom problems
Questions related to students' opinions about online classes

Demographic and social characteristics of the participants

In the analysis of the questions related to the Connor-Davidson questionnaire, the items of each question were coded from zero to 4. Therefore, depending on the number of questions (25 questions), the set of scores can fluctuate between zero and 100. In this study, the minimum score of 25 categories of resilience was equal to 31 and the maximum was equal to 87. If, based on the given scores, a score of zero indicates resilience at a very weak level and a score of 100 indicates a very high resilience, the scores of 25, 50 and 75 indicate resilience at a weak, medium and high level, respectively. Therefore, as a result, students' resilience fluctuates from weak to high. More than 60% of students had moderate resilience. Among the five components, the highest rate was related to the first component, i.e. purposefulness (73.1% at the high level) and the lowest rate was related to the second component, i.e. self-control and problem solving ability (18.7% at the high level) (Table 1).

Table 1: General resilience and its five components among students

	Low	Medium	High	Total
Resilience	3 (1.1)	163 (60.8)	102 (38.1)	268 (100.0)
Com. First	8 (3.0)	64 (23.9)	196 (73.1)	268 (100.0)
Com. Second	33 (12.3)	185 (69.0)	50 (18.7)	268 (100.0)
Com. Third	17 (6.3)	154 (57.5)	97 (36.2)	268 (100.0)
Com. Forth	11 (4.0)	119 (43.8)	142 (52.2)	268 (100.0)
Com. Fifth	31 (11.6)	198 (73.9)	39 (14.6)	268 (100.0)

Of the 272 participating students, 248 (91.2%) were female and only 8.8% were male. Also 71.7% lived in cities and 28.3% lived in rural areas. 52.2% of them were single and 47.8% were married. 22.8% of the participating students were employed in the public, private or free

sectors, and 37.5% introduced themselves as housewives, and the rest referred only to their student status and jobless. The age of students ranged from 19 to 40 years and most of them (68%) were in the second year of their Bachelor's degree (Table 2).

Table 2: Demographic-social characteristics of participating students

Age			Employment status		
	Frequency	percent		Frequency	percent
Age 19-21	130	47.8	Employed	62	22.8
Age 22-24	56	20.6	Housewife	102	37.5
Age 25+	86	31.6	Other (student or Jobless)	108	39.7
Total	272	100.0	Total	272	100.0
Sex			**Marital status**		
	Frequency	percent		Frequency	percent
Male	24	8.8	Single	142	52.2
Female	248	91.2	Married	130	47.8
Total	272	100.0	Total	272	100.0
Residence			**Course**		
	Frequency	percent		Frequency	percent
Low	3	1.1	First year	25	9.2
Medium	163	60.8	Second year	185	68/0
High	102	38.1	Third year	46	16.9
Total	268	100.0	Forth year	16	5.9
			Total	272	100.0

Students and online classroom problems

Regarding demographic and social factors, it should be said that the difference between male and female students in accessing the Internet and hardware tools and the degree of boredom of these classes and the problems caused by professors were not significant. In contrast, the difference between girls and boys in the ability to use educational programs (at the level of / 009) as well as the quality of content transfer in the classes (at the level of / 014) was significant. According to descriptive statistics, while none of the boys experienced any difficulty

in using the curriculum, 23% of female students had some or most of the problems.

The correlation between students' age and problems related to stable internet access, quality of electronic content transfer and optimal use of time by professors was not observed. In contrast, between the age of students and the ability of students to use educational programs (P value = 0.172, Sig = 0.004), access to hardware tools (P value = 0.338, Sig = 0.000), Feeling tired in online classes (P value = -0 / 138, Sig = 0/023) and the quality of content transfer by professors (P value = -0 / 184, Sig = 0/002) there is a significant correlation. According to descriptive statistics, the ability of students in the first age group (21-19 years) is higher than the higher age groups. (89.2% of students in the first age group compared to 74.4% of students in the age group of 22-24 and 62.5% of students 25 years and older). The highest correlation was between students' age and access to hardware tools. While 95.4% of students in the first age group had fewer problems in this regard, this percentage decreases to 89.3% in the second age group and to 66.3% in the third age group. The correlation between the level of feeling tired in e-classrooms and the age of students is reversed. As students get older, their sense of tiredness decreases. 22.3% of students in the first age group often feel tired, while this figure decreases to 12.8% in the third age group. Similarly, students' views on the ability of professors to convey material become more favorable with age. 24.6% in the first age group compared to 8.1% in the third age group believe that this problem is seen more often.

The difference between rural and urban students was not significant in terms of access to hardware tools and the ability of teachers to transfer content. In contrast, the difference between these students in Internet access (at the level of .015), the ability to use educational programs (at the level of .023.), The feeling of boredom of electronic classes (at the level of .017.), the quality of content transfer in these classes (at the level of 0.000) and the time management of online classes by professors (at the level of 0.001) were significant. According to descriptive statistics, 9.1% of urban students compared to 17.4% of rural students often point to the problem of access to stable and high-speed notes, and 63.6% of rural students compared to 50.3% of urban students' report that Rarely do they encounter the problem of stable internet. According

to descriptive statistics, rural students feel less tired in e-classes. 74% of rural students rarely feel tired in these classes, compared to 60.5% of urban students. Also, 21.5% of urban students, compared to 13% of rural students, often feel tired. The biggest difference between rural students and urban students is in their statements about the quality of content transfer in online classes. While 30.3% of urban students stated that the quality of content transfer was often poor, only 3.9% of rural students agreed. The opinions of rural and urban students regarding the time management of online classes by professors are also significant and interesting. While 15.4% of urban students believed that professors often did not make good use of the allotted time, none of the 77 participating rural students chose this item. 85.7% of rural students, compared to 70.8% of urban students, rarely admit poor classroom management by professors.

The difference between married and single students in terms of stable internet access as well as hardware tools and the quality of content transfer in online classrooms was not significant. While the difference between these two groups of students in the ability to use educational programs (at the level of 0.01), feeling tired in online classes (at the level of 0.01), the ability of professors to transfer content (at the level of 0.000) and Online class time management by professors (at the level of 0.02) was significant. According to descriptive statistics, single students had more difficulty using educational programs than married students. 85.8% of married students vs. 73.1% of single students rarely had difficulty using online classroom curricula. Also, 16.6% of single students versus 7.9% of married students often have problems. Also, single students are more likely to be bored than married students in online classes (26.2% vs. 11% most of the time). Married students 'views on professors' ability to convey content as well as the optimal use of classroom time by professors were more favorable than those of single students. 17.2% of single students compared to 2.4% of married students believe that teachers' ability to transfer educational materials in online classes is weak. Also, 17.9% of single students compared to 3.1% of married students evaluated the poor time management of online classes by professors.

The relationship between students' job status and their ability to use online training programs, Internet access, access to hardware tools and the quality of content transfer in these classes was not significant. In contrast, the relationship between students' job position and the degree of fatigue in educational classes (at the level of 0.000), the ability of teachers to transfer content (at the level of 0.01) and the optimal management of class time by professors (at the level of 0.000) There is meaning. Descriptive analyzes show that housewives are less tired than other groups in these classes (3.9%) and teachers' ability to convey content (2.9%) and class time management by teachers (3.9%). Percent) are considered weak. In contrast, students working in these classes feel more tired than other groups (30.6%) and consider the ability of professors to transfer content (19.4%) and time management of online classes (19.4%) to be weak.

Regarding the correlation between the number of years of study at the university and the problems of online classes, a significant correlation was not observed between the student's ability to use online educational programs, feeling tired in online classes, the quality of content transfer and students' academic background. In contrast, the correlation between students' educational background and access to stable Internet (P value = 0.165, Sig = 0.007), access to hardware tools (P value = 0.245, Sig = 0.000), quality of content transfer by professors (P value = -0 / 130, Sig = 0/033) and optimal use of class time by professors (P value = -0 / 205, Sig = 0.001) were significant. In descriptive statistics, it can be seen that fourth year students (46.2%) and third year students (30.4%) had more difficulty in accessing the Internet than second year students (11.4%) and first year students (0%). This situation is exacerbated in access to hardware tools. 53.8% of fourth year students compared to zero% of first year students reported access to a smartphone or computer system as a problem. The relationship between the educational background and the problems caused by the professors in online classrooms has been reversed and with the increase of students' educational levels, in their opinion, the quality of content transfer by professors and especially the optimal use of class time by professors has been more appropriate. 100% of fourth year students compared to 56% of first year students do not see any weakness in the optimal use of class time by professors.

Resilience of participants with different characteristics

As Figure 1 shows, most male students have moderate resilience (87.5%). While 40.57% of female students have high resilience. Mann-Whitney U test was used to assess the relationship between gender and the degree of total resilience and its five components. The result of this test showed that the difference in resilience between male and female students at the level of 0.005 is significant. Among the five components of resilience, while the difference between male and female students in the second, third and fourth components was not significant, this difference in the first and fifth components was at the level of 0.001 and 0.000, respectively. Significant was observed. While almost all 24 participating male students expressed their high level of purposefulness, this rate was 70.5% among female students. In contrast, the rate of optimism among female students (16% at the high level and 9.4% at the low level) was higher than male students (0% at the high level and more than 33% at the low level). In general, the data indicate a higher degree of resilience among female students than male students, with the difference that the rate of purposefulness is higher among male students than female students and the rate of optimism is higher among female students than male students.
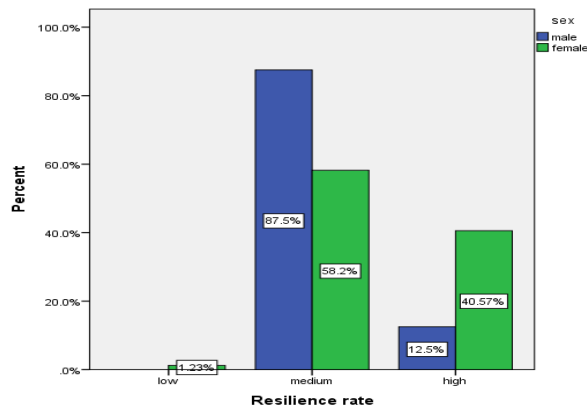

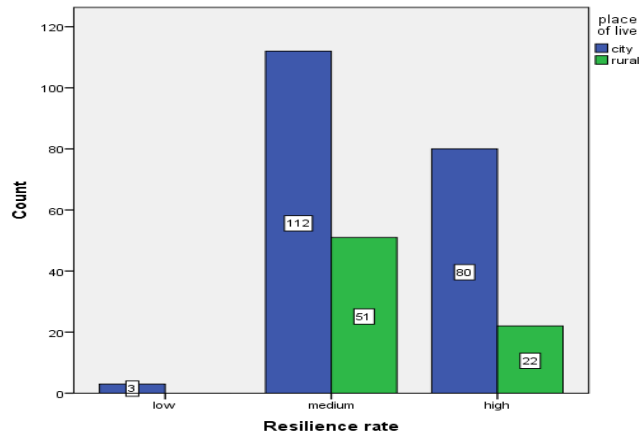**Figure 1: Student gender and general resilience**

The correlation between students 'age and their resilience (P value = 0.121, Sig = 0.048) was at a significant level, the correlation between the first component and students' age (P value = 0.176, Sig = 0/004), and the correlation between the fourth component and students' age (P

value = 0.194, Sig = 0.001) was significant. In fact, according to descriptive statistics, the general resilience rate is high among 55.4% of students in the first age group (21-19). While 40.2% of students in the third age group (25 and more) had high resilience (Table 3). Regarding the first component, 79.3% of students in the age group of 19-21 years had a high level of purposefulness. While in the two age groups of 22-24 and 25 years and more, this number was approximately equal to 71.5 and 67.9%. This indicates that students in younger age groups are more purposeful. Regarding the fourth component, belief, what can be described was that 64% of students in the age group of 25 and older had high beliefs. While this number was 48.5 in the age group of 19-21 and 42.9% in the age group of 22-24.

Table 3: Students' age and general resilience

		Resilience rate			Spearman's rho
		Low	medium	high	
Students' age	۱۹-۲۱	0 (0/0)	58 (44.6)	72 (55.4)	C.C=0/121
	۲۲-۲۴	3 (6.1)	22 (44.9)	24 (49.0)	Sig= 0/048
	۲۵+	0 (0/0)	49 (59.8)	33 (40.2)	

There was no significant difference between resilience between urban and rural students. But this difference in the fifth component was significant based on the Mann-Whitney U test at the level of 0/008. According to descriptive statistics, 8.2% of urban students compared to 20.5% of rural students had a lower level of optimism and 15.9% compared to 11% had a high level. In other words, according to this observation, the level of optimism among urban students is higher than rural students.
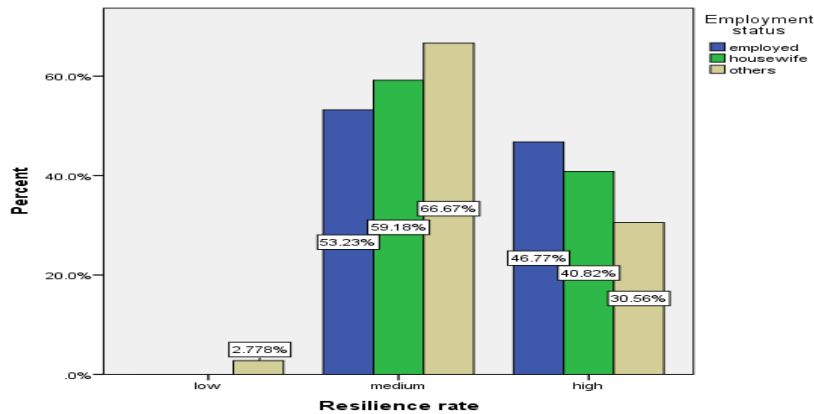
Figure 2: Student housing and general resilience

There was no significant difference in resilience between students based on marital status according to Mann-Whitney U test. While this difference in the second and fourth components was observed at the level of 0.001 and 0.017, respectively. Regarding the second component, it seems that the feeling of self-control and ability to solve the problem is more among single students than married students. Nearly 25 percent of single students, compared to 11.4 percent of married students, had a high level of self-control and problem-solving ability. In the fourth component, namely belief, the percentage of married students was higher at the high level compared to single students (59.1% vs. 46.2%). In other words, the feeling of self-control and ability to solve problems is more among single students than married students. In contrast, the level of belief was higher among married students than single students.

In the category of job position, students were grouped into three groups: employed, housewife, and individuals who referred to their student status in this regard or introduced themselves as unemployed. The difference in the resilience of individuals in these three groups is significant and is significant at the level of 0.01. 46.8% in the group of employees, 40.8% in the group of housewives and 30.6% in the group of others had high resilience (Figure 3). This relationship was not significant for the first, second and fourth components, in contrast to the relationship between employment status and the third and fifth components is significant at the level of 0.004 and 0.001, respectively.

Descriptively, 48.4% of employed students, 38.8% of housewives and 26.9% of other students had a high level of persistence. In contrast, while none of the employees reported a low level of optimism, 20.4% of the other students had a low sense of optimism.

Figure 3: Student employment status and general resilience

The number of years of student study at the university was another variable whose correlation with student resilience was measured. The correlation between these two variables (P value = 0.288, Sig = 0.000) was significant. As can be seen in Figure 4, with the increase of students' academic year, their resilience has also increased. 69% of fourth year students and 60.8% of third year students had high resilience. In contrast, the resilience rate of 88% of first year students and 64% of second year students is average.
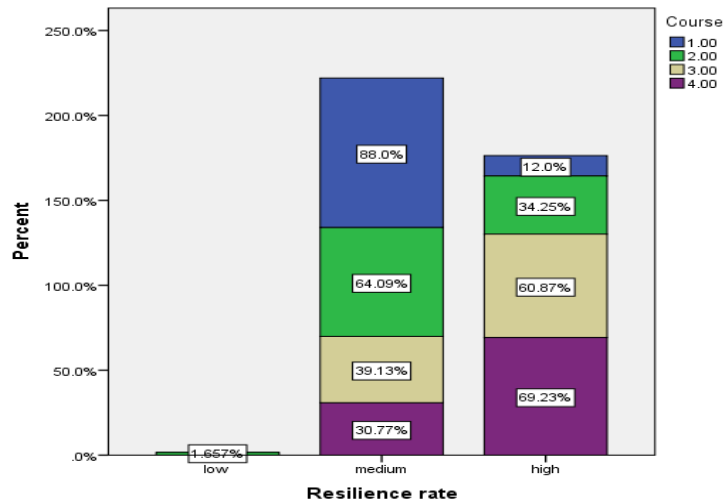
Figure 4: Students' educational background and general resilience

Among the five components, the correlation between the second and fifth components with the educational background was significant. The degree of correlation between the second component, i.e. self-control and problem-solving ability with students' educational background (P value = 0.186, Sig = 0.002) and the degree of correlation between the fifth component, i.e. optimism and educational background (P value = 0. 264, Sig = 0.000) was observed to be significant. Descriptively, the highest level of self-control and problem solving ability is related to fourth year students (more than 69%) and the lowest rate is related to first year students (12%). Regarding the optimism component, it should be said that while only 12% of first year students and 10.5% of second year students felt high optimism, this rate is equal to 30.4 and 23% among third and fourth year students, respectively.

Resilience and problems of electronic classes

The problems of electronic classes were designed in four parts, which are access problems including stable and high-speed Internet and hardware problems such as having a computer or smartphone system, student ability to use educational programs, teaching and learning process in the electronic context and the problems caused by the professors, including their ability to transfer content in the electronic context and the professors' optimal use of class time. Participants had to express their views on these issues in the form of the three words "rarely so", "sometimes so" and "often so". The descriptive result of the answers given is reported in Table 4. According to this descriptive report, the biggest problem is related to the space of electronic classrooms. 19.2% of the students described these classes as boring and 22.8% as poor in the quality of electronic content transfer. In contrast, the least problems related to students 'ability to use educational programs in online classrooms (79.1%), lack of access to hardware tools (75.8%) and proper use of classes time by professors (75%).

Table 4: Problems of online classrooms from the perspective of students

This is…	rarely	Sometimes	mostly
In online education, I have difficulty accessing stable and high-speed Internet	147 (54.1)	84 (30.9)	41 (15.0)
I have a problem not having a phone or system in online education	206 (75.8)	29 (10.6)	37 (13.6)
I am not able to use educational programs in online education	215 (79.0)	23 (8.5)	34 (12.5)
I am tired of online education	175 (64.3)	45 (16.5)	52 (19.1)
The quality of content transfer is poor in online education	133 (48.9)	77 (28.3)	62 (22.8)
Professors are not able to convey quality content in online education	177 (65.1)	67 (24.6)	28 (10.3)
Professors are not good at using time in online education	204 (75.0)	38 (14)	30 (11)

The main hypothesis of this study was that the level of students' satisfaction and acceptance of e-classes depends on the level of resilience components in them. As mentioned earlier, there are problems in these classes that may bother and challenge students. Overall, the satisfaction rate of these classes was announced by 67.6% of the participants. As Table 5 shows, there is a significant and inverse correlation (P value = -0 / 365, Sig = 0.000) between general resilience and the feeling of tiredness from online classes and students' dissatisfaction with these classes. In other words, students with low resilience often feel tired and less satisfied in these classes. In contrast, students who are more resilient rarely get tired and are more satisfied.

Table 5: Students' resilience and satisfaction with online classes

		The feeling of tiredness and dissatisfaction with electronic classes			
		rarely	Sometimes	mostly	Spearman'rho
General resilience	**Low**	0 (0/0)	0 (0/0)	3 (100/0)	C. C. = -0/365 Sig= (0/000)
	Medium	96 (58.9)	34 (20.9)	33 (20.2)	
	High	75 (63.8)	11 (10.8)	16 (15.7)	

Table 6 shows the correlation coefficients between the five components of resilience and the degree of fatigue and dissatisfaction. According to this information, there is a significant inverse correlation between the components of purposefulness, persistence, belief and the degree of feeling of tiredness and dissatisfaction with online classes. Students who have specific goals in life, have a good level of belief and are not afraid of challenges and work hard, also feel less tired in online classes and despite the problems in these classes They are satisfied with this educational method.

Table 6: Components of resilience and satisfaction with E-classes

Components of resilience	The feeling of tiredness and dissatisfaction with online classes	
	Spearman'rho C. Coefficient	Sig
Purposeful	-/124	0/043
Self-control and problem-solving ability	-/039	/528
Persistence	-/133	/029
Belief	-/147	/016
Optimism	/005	/940

Discussion and conclusion

What was found in the descriptive and inferential analysis was that male students were more empowered than female students to use online curricula. Also, students in lower age groups have more capabilities and have better access to hardware facilities. At the same time, students in these age groups in e-classes feel more tired and are relatively dissatisfied with the ability of professors to convey content. While rural students had more problems accessing the Internet than urban students, urban students were more tired in e-classrooms and more dissatisfied with professors for their ability to convey content and make better use of class time. Single students were less able to use educational programs than married students, and they felt more tired in e-classrooms, and they were more dissatisfied with the teachers in terms of their ability to convey content as well as the optimal use of class time. Housewives are less tired of e-classrooms than employees and are more satisfied with professors. Finally, students in high educational background are more satisfied with the faculty, despite having relatively more difficulty accessing the Internet and hardware facilities.

Further analysis of these results showed that the general resilience of female students was higher than male students. The difference was that the rate of purposeful was higher among men and the rate of optimism was higher among women. Students at younger ages had more general resilience and were more purposeful than older age groups. In contrast, students in the older age groups were more confident. Although there was no significant difference in the general resilience of rural and urban

students, urban students were more optimistic. Also, although there was no significant difference in the general resilience of single and married students, while the level of belief of married students was relatively higher, a sense of self-control and problem-solving ability was also observed among single students. Working students were more resilient, stubborn and optimistic than housewives and so on. Finally, students in high educational background had more resilience than new students and were more optimistic and had a stronger sense of self-control and problem-solving ability.

In the third part of the analysis, we found that in general, the level of students' satisfaction with e-classes is significant and above average. The correlation between student's general resilience and their satisfaction and comfort from online classes was also significant. This means that resilient students feel comfortable and satisfied in these classes. In this regard, the correlation between the three components of purposefulness, tenacity and belief was significant. Having these characteristics makes students in e-classrooms more resilient despite their problems.

The limitation of this research was that, firstly, the study sample was conducted only in one of the universities of the country (Payame Noor University) in a province. Expanding this research to other universities, including part-time and full-time universities, and student participation in different provinces can increase the power of generalization. Another limitation of this research is that this research has been done in quarantine conditions. Doing research in normal and white time by comparing face-to-face and electronic classes can overcome this limitation.

Students at a younger age and at lower levels of education, immediately after being accepted to the university, were faced with an online education system, so from the beginning of their entry, they provided hardware facilities and Internet access. Therefore, this group has less problems in the field of access and has more ability to use the programs of these classes. In contrast, the same group, which has rarely experienced face-to-face classes at the university, is relatively dissatisfied with e-classes and the way professors transmit content. In

general, experiencing life-threatening and stressful situations can reduce the overall resilience of individuals.

What was observed was a high rate of resilience among female, young, employed and higher grade students. This group of students are not as exposed to the pressures of life as their counterparts and are less likely to experience life-threatening conditions. Students in higher grades are mentally optimistic about the future of teaching as they approach graduation.

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