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ATTITUDES TOWARDS ONLINE MODE OF EDUCATION: CHALLENGES AND STUDENT SATISFACTION IN SECONDARY SCHOOLS OF AZERBAIJAN

ACTITUDES DE LOS ESTUDIANTES HACIA EL MODO DE EDUCACIÓN EN LÍNEA: DESAFÍOS Y SATISFACCIÓN DE LOS ESTUDIANTES EN LAS ESCUELAS SECUNDARIAS DE AZERBAIYÁN

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RESUMEN

Due to Covid-19, an educational organizations shifted to online learning. Since the student attitude is an important predictor of the effectiveness and efficiency of an online mode of education, this study aims to analyze the overall attitude of students towards online education and to investigate students' overall satisfaction level and the challenges encountered during this period. A survey was conducted to collect data from 54 schools and 5791 responses were received across different districts of Baku. Overall satisfaction level of students was used to assess their positive or negative attitude towards online mode of education. The results revealed that overall quality of online sessions, instructor's enthusiasm, integration of various types of sources and interaction and collaboration level with the instructor have a significant positive relationship with overall satisfaction level of students. Students face several problems during online sessions: technical issues, lack of face-to-face interaction with the instructor and classmates, poor learning conditions at home, and lack of concentration are the most significant problems observed in online sessions. Furthermore, the research concluded that majority of students are not satisfied with online education and if given a choice they would like to continue with traditional method.

Keywords: Azerbaijan, student attitude, Covid-19, multiple linear regression, online education.

RESUMEN

Debido a Covid-19, las organizaciones educativas cambiaron al aprendizaje en línea. Dado que la actitud del estudiante es un predictor importante de la efectividad y eficiencia de un modo de educación en línea, este estudio tiene como objetivo analizar la actitud general de los estudiantes hacia la educación en línea e investigar el nivel de satisfacción general de los estudiantes y los desafíos encontrados durante este período. Se realizó una encuesta para recopilar datos de 54 escuelas y se recibieron 5791 respuestas en diferentes distritos de Bakú. Se utilizó el nivel de satisfacción general de los estudiantes para evaluar su actitud positiva o negativa hacia el modo de educación en línea. Los resultados revelaron que la calidad general de las sesiones en línea, el entusiasmo del instructor, la integración de varios tipos de fuentes y el nivel de interacción y colaboración con el instructor tienen una relación positiva significativa con el nivel de satisfacción general de los estudiantes. Los estudiantes enfrentan varios problemas durante las sesiones en línea: problemas técnicos, falta de interacción cara a cara con el instructor y los compañeros de clase, malas condiciones de aprendizaje en el hogar y falta de concentración son los problemas más importantes observados en las sesiones en línea. Además, la investigación concluyó que la mayoría de los estudiantes no están satisfechos con la educación en línea y, si se les da la opción, les gustaría continuar con el método tradicional.

Palabras clave: Azerbaiyán, actitud del estudiante, Covid-19, regresión lineal múltiple, educación en línea.

INTRODUCTION

The Covid-19 emerged in Asia in December 2019 and turned into a pandemic affecting the whole world in a short period of time as of March 2020. With this outbreak, the flow and rhythm of life have changed all over the world. In this context, the coronavirus (Covid-19) has evolved to become a storm in the world which is likely to affect socio-cultural, political, economic, and many dimensions that cannot be foreseen at the moment. Many countries started to impose restrictions and curfews after the rapid increase of Covid-19 cases all over the world. Education has also been caught in the middle of this storm and the Covid-19 pandemic has changed the perspective on education (El Maarouf, et al., 2021).

Since the spread of the pandemic got out of control, education was suspended. With the closure of educational institutions and the interruption of face-to-face education, the education of 1.6 billion students, corresponding to approximately half of the student population of all educational levels, has been disrupted. In line with the principle that education is a fundamental human right (United Nations, 1948) emergency for online mode of education has been put into practice all over the world to compensate for the education interrupted by the pandemic. Considering that coronavirus infection has been declared a global pandemic, many countries decided to switch to online education. Parents were also affected by this decision and suddenly took on new educational roles (Fontanesi, et al., 2020). According to this authors while parents of higher education level students fulfill social educational roles more to support students, the parents of K12 level students have had to undertake the roles directly related to learning and teaching processes.

Besides the roles of teachers, learners, and parents, schools and universities have to reposition themselves and recognize their new roles in the new normal. Since the K12 schools are managed by the Ministry of Education, the authorities should control the change process by adapting learners and teachers to the new learning environment. Azerbaijan also immediately responded to this global challenge and as in many countries, teaching in Azerbaijan has also shifted from traditional to online teaching. Specific strategies have been developed to overcome this situation and various distance education methods depending on current technological opportunities, teachers' ability to use technology, students' possession of digital tools, and internet access levels were used. Teaching continued with synchronous and asynchronous methods, using different digital platforms. In addition to digital platforms, lecture broadcasting has been done on television. Television or recorded course contents were presented to the students. Also, multiple methods, such as conducting the lessons with teachers synchronously, and tracking homework on social media were used.

Online education is an innovative education system that is independent of time and place and takes place entirely in virtual environments where learner and teacher do not have to come together. It is not just a single structure or a single pedagogical approach, it consists of different learning materials and communication styles that serve a specific purpose (Rapanta, et al., 2020). Carrying physical lessons online requires a systematic and planned approach. Ensuring the right balance in online education, using technology and pedagogy in a meaningful way for a specific purpose are important for an effective and efficient learning process (Arndt & Guercio, 2014). The comprehensive teaching-learning design with blended and transformed learning concept is important in terms of achieving desirable learning outcomes. The design of the online learning system is required to be at a level to meet the needs of the students and to be user-friendly, the delivery interface to be flexible in which the teacher can show his/her abilities, an environment where the interaction between the student and the teacher is provided.

One of the most important prerequisites to be considered in this process is the student attitude. Student attitude is a critical factor in the formation of behavior. Throughout the history, the concept of attitude has played an important role in all social and psychological structures in both traditional and online learning. It can be said that determining attitudes towards online learning is important to increase success, efficiency, and effectiveness in education. The online education experience should be evaluated from the perspective of users since the attitudes of students affect the online education experience. Learners who are accustomed to face-to-face education may have difficulty in not being competent in using technology and tools in digital learning platforms. Currently, there is limited research about the attitudes of secondary school students regarding the online mode of education. Therefore, this study is aimed to determine secondary school students' attitudes towards online learning in Azerbaijan.

MATERIALS AND METHODS

Determining the characteristics of the students is important in online learning environment. In order to design a more effective, functional and qualitative online learning environment, it is necessary to analyze the characteristics and needs of students comprehensively (Khan & Joshi, 2006). In this sense, motivation, interest, expectation, readiness, and attitude of the learners should be considered in designing online learning process.

Attitude is a crucial factor in success and effectiveness of online education. It is a psychological tendency that forms the basis of showing and explaining our reactions, thoughts and ideas about other people, situations and ideas (Bordens & Horowitz, 2001). Altmann (2008), defined attitude as a psychological tendency that includes interests, beliefs, behaviors, feelings and values to act in certain ways.

Many concepts that affect success in learning are directly or indirectly depend on student attitude. Determining students' attitudes towards distant learning will provide the opportunity to meet their expectations and needs in a timely and appropriate manner, which will directly affect the success in the teaching process (Mailizar, et al., 2020). Students' general attitudes towards distant learning will help them increase the impact on their interaction and quality of education (Liaw, et al., 2007).

Taking the above into account a documentary analysis was realized in order to know previous works on the subject. Also, a survey was conducted among secondary school students of 54 private and public schools of Baku with both advantaged and disadvantaged backgrounds. The data was obtained from 5791 respondents. The distribution and the collection of surveys were made between October and November 2020. The survey was anonymous and consisted of 14 questions which were grouped in the following categories: demographic data, access to technology, use of technology, challenges faced in online mode of education, technological characteristics, attitude towards online mode of education and additional comments or suggestions. The data was analyzed by frequency of common students' responses and were reported in percentages. Hypothesis testing and regression analysis were used to find out the relationship between satisfaction of students with online sessions and different controlling factors.

RESULTS AND DISCUSSION

Paris (2004), conducted a research on secondary school students' attitudes towards online learning. 52 students from the low socio-economic background of Adelaide, South Australia participated in the study. The data revealed that students showed a strong and positive tendency towards online web-based learning. The reason was that they could obtain information from the internet more easily than books and found the website contents attractive.

Link & Marz (2006), conducted a study to determine the computer literacy skills and attitudes towards E-learning of freshmen in Medical University of Vienna. The aim of the study was to determine the needs for an initiated online learning project and the level of computer skills of the students, and the possible difficulties that students face in online learning. For this purpose, an introductory course was organized for the students, and data was collected through a questionnaire covering attitudes and experiences. As a result of the obtained data, it was concluded that the majority of the students had sufficient computer skills and accepted the advantages of learning materials developed with interactive methods and multimedia. In addition, it was stated that students' attitudes towards online learning were affected by variables such as age, computer use and previous experience with it.

Liaw, et al. (2007), also conducted a study aiming to examine university students' attitudes and behaviors towards online learning. An online learning platform was presented to the students and they were asked to use this system for two months. At the end of two months, a questionnaire was used to obtain data about their attitudes. As a result of the analysis, it was found that students' attitudes towards online learning differ in terms of gender, and male students have more positive attitudes than female students. In addition, students' experience of using computers, self-efficacy and motivations were expressed as an important determinant in influencing attitudes towards online learning. Moreover, it was stated that intrinsic and extrinsic motivations significantly predicted behavioral intention to use online learning. This is consistent with the finding by Çetinkaya (2019), who also concluded that the students who have an intrinsic motivation towards learning are more positive than students who have an extrinsic motivation.

Adewole-Odeshi (2014), conducted a research to determine the attitudes of students in Southwest Nigeria towards online learning. This study was carried out with the Technology Acceptance Model (TAM) application and the data was obtained through a questionnaire. The obtained data was analyzed, and it was concluded that the students have a positive attitude towards online learning.

Recent research studies have investigated the challenges and opportunities of online mode of education during pandemic. Niemi & Kousa (2020), conducted a case study in a Finnish high school where students have switched to distant mode of education for 2 months to determine their attitude toward online mode of education during COVID pandemic. The results revealed that students' main challenges were extreme workload and exhaustion which negatively affected their motivation. Hebebci, et al. (2020), also conducted a research among Secondary and High school students using structured interview forms. The data revealed that although implementing online education in a

planned manner under exceptional circumstances was one of the privileges, limited interaction, infrastructure issues and lack of equipment were among complains.

These are consistent with the findings by Shetty, et al. (2020), who conducted an observational study among undergraduate students using questionnaire and also added lack of socialization, punctuality and discipline, acquiring practical skills, distraction by social media and technology related issues to the challenges faced by students. However, the study also found ease of participation and better time management to be among benefits. Additionally, the survey conducted by PISA revealed that more than 30% of students in Indonesia, the Philippines and Thailand have poor condition to study at home. This number in approximately 9% for member countries of the Organization for Economic Co-operation and Development. Even in Korea, which got the highest scores in PISA, one out of every five students studying at the most socio-economically advantageous schools face the same problem.

Besides, Adnan & Anwar (2020), found response time and limited internet access as the major challenges of Pakistani higher education students. This is consistent with the findings by PISA where it is stated that although there are countries where internet access at home is stable, this rate covers only half of students in other countries. In Mexico, 94% of privileged students have internet access at home, while only 29% of the disadvantaged have. This situation differs in many countries due to the geographic position.

Online learning requires not only an environment to work, but also a technological device that enables students to work at home. The data from PISA reveal significant differences. While more than 95% of students in Denmark, Slovenia, Norway, Poland, Lithuania, Iceland, Austria, Switzerland and the Netherlands state that they have a device that they can use for their own work at home, this rate is only 34% in Indonesia. There are wide differences between socio-economic groups. For example, while every 15-year-old student in socio-economically advantageous schools in the United States has a device to work at home, three out of every four students in disadvantaged schools have a technological device. In Peru, 88% of students in privileged schools have technological devices, while only 17% of those in disadvantaged schools have them.

Ionescu, et al. (2020), analyzed the sustainability of the online learning system applied in Romania from three perspectives, teachers-students-parents. The data was gathered through online questionnaire that was intended for three levels of schooling (middle school, high school, and university). The research found that although e-learning is considered as an effective solution during this period, joint effort from all sides is required to achieve the desirable results. No internet connection was considered as a major problem of students from rural areas. Nevertheless, flexibility of schedule, convenience of remote study and access to diverse documentation sources were assumed as the benefits of online mode of education.

Participants of this study include 5791 secondary school students who were involved in online mode of education during pandemic. Out of 5791 respondents 2696 (47%) are male, while 3095 (53%) are female. The distribution of the students' grade level is approximately equal. 20% of the respondents are 5th grade students, 18% of respondents are 6th grade students, 20% of respondents are 7th grade students, 21% of respondents are 8th grade students and 21% of respondents are 9th grade students.

The characteristics of respondents based on gender and grade level are shown in Figure 1.
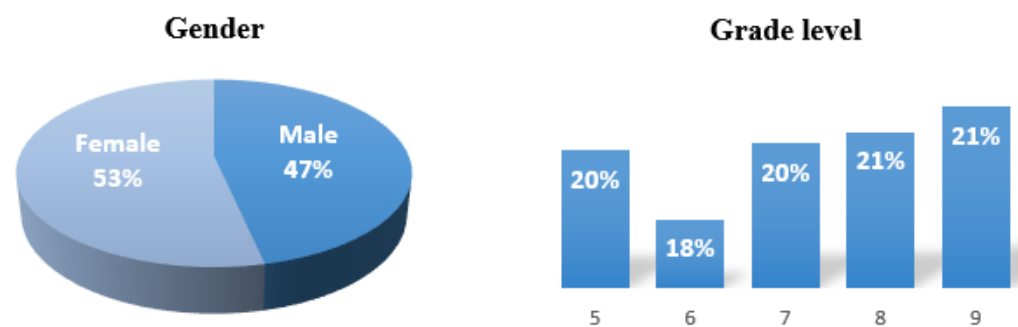

Figure 1. Demographic data analysis.

The data revealed that students use different types of technological devices to join online sessions. Although 79% of respondents have access to computer, 21% of this access is limited. The students stated that the reason for limited access is their sharing the computer with family members. 93% of students use mobile phones to join the sessions. However, 23% of them have limited access to mobile phones, meaning they are sharing the phone with other family members. According to the data, 35% of students do not have any other device to join the sessions except mobile phones. Considering limited access to device, it is not always possible to attend online sessions consistently. Additionally, 10% of the respondents stated that the tablet is the only device that they use to attend the sessions. Overall, 2% of the students do not have any device to join the classes.

Depending on current technological opportunities, several distant education methods were used in online mode of education. The data revealed that 75% of students use synchronous method, 2% of the respondents use asynchronous method, 2% of students use individual approach, while 17% of participants use these 3 methods altogether. However, 4% stated that they are not able to use any of the methods. This can be explained by the limited technological device.

The analysis of the frequency of responses on overall satisfaction level of students highlighted that only 26% of students are satisfied with online sessions. Moreover, 76% of the students are not keen to continue their education in online mode.

In response to the question targeted to find out the challenges of online learning environment, the most common problem encountered during online sessions is technical problem (71%) that include interruption of the lesson due to electricity or internet connection and lack of sound transmission. Another challenge reported by the students is lack of face-to-face interaction with the instructor (59%) and classmates (39%). 26% of the students stated that they have difficulties with poor learning conditions at home. Also, 25% of the students find the online courses challenging due to the concentration issue. Social isolation (19%), lack of self-discipline (11%), and homework submission (15%) are other challenges faced by students during the online mode of education (Table 1).

Table 1. Frequency of student responses to question on challenges of online education.

Technical problems	71%
Reduced interaction with the teacher	59%
Lack of interaction with classmates	39%

Poor learning conditions at home	26%
Lack of concentration	25%
Social isolation	19%
Homework submission	15%
Lack of self-discipline	11%
Other	2%
None	1%

As shown in Table 2, the satisfaction of male and female students with online sessions was compared where we hypothesized that females are more satisfied with online sessions than males as shown in equation 1.

Table 2. Summary of descriptive statistics for the satisfaction of male and female students with online sessions.

	Male	Female
Mean	2.68879822	2.641357027
Variance	1.635585049	1.491889561
Observations	2696	3095

$$H_0: \mu_F - \mu_M \leq 0$$
$$H_a: \mu_F - \mu_M > 0 \tag{1}$$

Since the variances of the satisfaction of male and female students with online sessions differed (F= 1.0963, F_α= 1.0631), we compared the means of the two groups using a one-tailed test assuming unequal population variances. The result showed us that there is not enough evidence to conclude that female students are more satisfied with online sessions than male students (t= 1.4378, t_α=0.0128).

Next, as can be seen in table 3, the satisfaction of upper secondary (year 8,9) and lower secondary (year 5,6,7) school students with online sessions was compared where we hypothesized that upper secondary school students are more satisfied with online sessions than lower secondary school students (equation 2).

Table 3. Summary of descriptive statistics for the satisfaction of upper secondary (year 8,9) and lower secondary (year 5,6,7) school students with online sessions.

	Lower Secondary School Students (5-7)	Upper Secondary School Students (8-9)
Mean	2.679821958	2.640644362
Variance	1.565903204	1.54932256
Observations	3370	2421

$$H_0: \mu_{upper\ secondary} - \mu_{lower\ secondary} \leq 0$$
$$H_a: \mu_{upper\ secondary} - \mu_{lower\ secondary} > 0 \tag{2}$$

Since the variances of the satisfaction of upper secondary (year 8,9) and lower secondary (year 5,6,7) school students with online sessions did not differ (F= 1.0107, F_α= 1.0641), we compared the means of the two groups using a one-tailed test assuming equal population variances. The result showed us there is not enough evidence to conclude that upper secondary school students are more satisfied with online sessions than lower secondary school students. (t= 1.1777, t_α= 1.6451).

Also, it was compared the student satisfaction level between the students who joined the sessions only with computer and the ones who joined with mobile phone or tablet (table 4). We hypothesized that students joining with computer are more satisfied with online sessions than students joining with mobile phone or tablet (equation 3).

Table 4. Summary of descriptive statistics for the satisfaction of male and female students with online sessions.

	Mobile phone/Tablet	Computer
Mean	2.722943723	2.731808732
Variance	1.635949558	1.535598124
Observations	231	3367

$$H_0: \mu_{computer} - \mu_{mp/tablet} \leq 0$$
$$H_a: \mu_{computer} - \mu_{mp/tablet} > 0 \qquad (3)$$

Since the variances of the satisfaction level between the students who joined the sessions only with computer and the ones who joined with mobile phone/tablet did not differ (F= 1.0653, F_α= 1.1646), we compared the means of the two groups using a one-tailed test assuming equal population variances. The result showed us that there is not enough evidence to conclude that students who join sessions with computers are more satisfied than students joining with mobile phone/tablet. (t= -0.1049, t_α= 1.6452).

The next step was to run a regression analysis to analyze the relationship between a dependent variable (overall satisfaction of students with online mode of education) and independent variables. Multiple regression technique was used to analyze the joint relation of provided variables on satisfaction level of the students. The results are described in the figures below (Figures 2, 3, 4, 5, 6, 7, 8, 9 and 10).
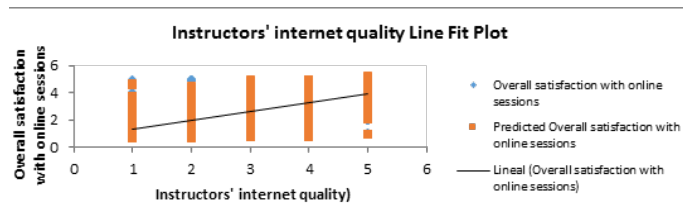

Figure 2. Relationship between overall satisfaction with online session and instructors' internet quality.
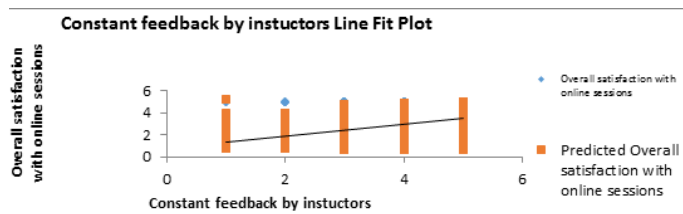

Figure 3. Relationship between overall satisfaction with online session and constant feedback by instructors.
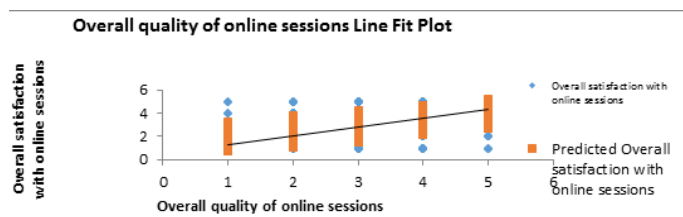

Figure 4. Relationship between overall satisfaction with online session and overall quality of online sessions.
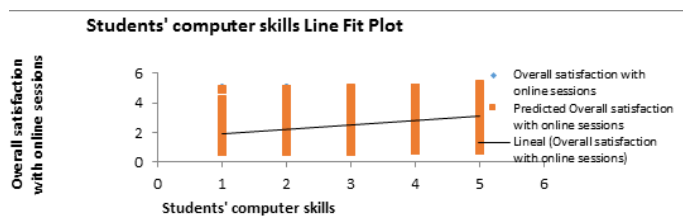

Figure 5. Relationship between overall satisfaction with online session and students' computer skills.

Figure 6. Relationship between overall satisfaction with online session and interruption of classes by technical problems.
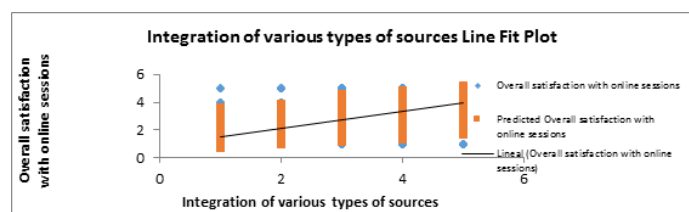

Figure 7. Relationship between overall satisfaction with online session and integration of various types of sources.
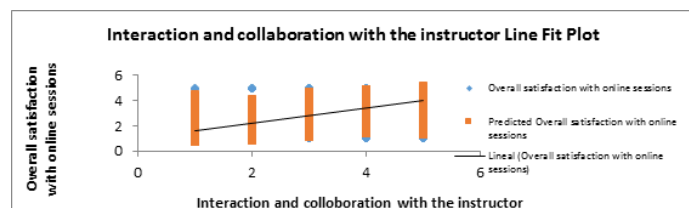

Figure 8. Relationship between overall satisfaction with online session and interaction and collaboration with the instructor.
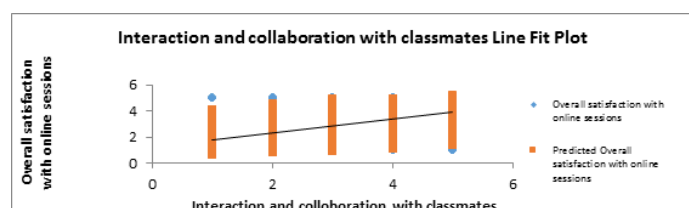

Figure 9. Relationship between overall satisfaction with online session and interaction and collaboration with classmates.
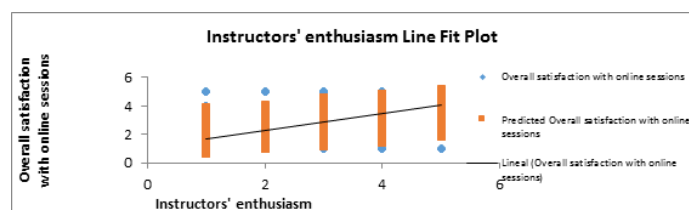

Figure 10. Relationship between overall satisfaction with online session and instructors' enthusiasm.

The model is significant, since F statistic has a p-value that is well below 0.05 or 0.01 for the 95% and 99% confidence. We see that p-values for all variables are all statistically significant at the 99% confidence level. We can see that out of 9 independent variables, 8 were found to have a significant positive correlation with the dependent variable. Meaning, all variables except "constant feedback by instructors" have significant relationship with overall satisfaction level of students.

No significant relation was found between constant feedback by instructors and overall satisfaction of students with online mode of education. As indicated in the previous figures, 4 variables, namely, overall quality of online sessions, instructor's enthusiasm, integration of various types of sources and interaction and collaboration level with the instructor are the most significant predictors of the overall student satisfaction with the online mode of education. It can be said that ensuring the satisfaction with these 4 predictors is critical: for each 1-point increase in satisfaction with overall quality of online sessions, instructor's enthusiasm, integration of various types of sources and interaction and collaboration level with the instructor on our 1-5 scale, overall satisfaction of students results in increase by 0.40, 0.21, 0.18, 0.11, respectively. In other words, if the overall quality of online sessions is one times better than before then the level of overall student satisfaction is increased by 0.40 (40%).

Also, all variables analyzed have significant impact on overall student satisfaction with online mode of education. Also, p-values under 0.01 showed that the relationship between dependent and independent variables are the most significant in a statistical sense. The findings are summarized in table 5.

Table 5. Results of p-values obtained from analysis of regression.

Independent variable	P-value
Intercept	1.74468E-06***
Instructors' internet quality)	0.030233948**
Constant feedback by instructors	0.00586253***
Overall quality of online sessions	8.2798E-133***
Students' computer skills	0.001572839***
Interruption of classes by technical problems	7.16475E-06***
Integration of various types of sources	4.59566E-41***
Interaction and collaboration with the instructor	5.19623E-12***
Interaction and collaboration with classmates	2.97352E-07***
Instructors' enthusiasm	3.3753E-62***

CONCLUSIONS

Given the devastating impact of the Covid-19 pandemic, the adaption of latest innovation into education was an urgent issue in educational organizations. More clearly, the application process of online education at schools was a challenge of education authorities. With the closure of schools, countries have used various online education methods, where education system of Azerbaijan wasn't an exception. Since it was the first experience in the education history of Azerbaijan, students were not ready for

this unexpected change, and therefore, it was interesting to analyze students' attitude and overall satisfaction with this new format.

A survey was conducted and the frequency of responses was analyzed to find out the overall satisfaction level and students' willingness to continue with the online mode of education. The results revealed that majority of the respondents are not satisfied with the online learning and they are eager to continue their education with conventional method. This can be explained by the challenges of online learning stated by students in the survey. As reported in the data, technical problems including interruption of the lesson due to electricity or internet connection, lack of sound transmission, lack of face-to-face interaction with the instructor and classmates, poor learning conditions at home, and easy distraction were the most frequent challenges faced during online mode of education.

Furthermore, the analysis of the relationship between students' satisfaction level with lessons and different variables showed that overall quality of online sessions, instructor's enthusiasm, integration of various types of sources and interaction and collaboration level with the instructor were the most significant factors affecting the overall satisfaction level of student with the online mode of education. The results of the study also revealed no significant difference between satisfaction level of male and female students. This result is not aligned with the findings of Haznedar & Baran (2012), who found that females have higher satisfaction level than males.

REFERENCES

Adewole-Odeshi, E. (2014). Attitude of students towards E-learning in South-West Nigerian universities: An application of technology acceptance model. *Library Philosophy and Practice (e-Journal)*, *1035*, 669–673.

Adnan, M., & Anwar, K. (2020). Online Learning amid the COVID-19 Pandemic: Students' Perspectives. *Journal of Pedagogical Sociology and Psychology*, *2*(1), 45–51.

Altmann, T. K. (2008). Attitude: A Concept Analysis. *Nursing Forum*, *43*(3), 144–150.

Arndt, T., & Guercio, A. (2014). Ubiquitous e-Learning: Student attitudes and future prospects. *GSTF Journal on Computing*, *4*(1), 77–82.

Bordens, K. S., & Horowitz, I. A. (2001). *Social Psychology* (2nd ed.). Psychology Press.

Çetinkaya, T. (2019). The Analysis of Academic Motivation and Career Stress Relationships of the Students in Department of Physical Education and Sport. *International Education Studies, 12*(4), 24–35.

El Maarouf, M. D., Belghazi, T., & El Maarouf, F. (2021). COVID – 19: A Critical Ontology of the present1. *Educational Philosophy and Theory*, *53*(1), 71–89.

Fontanesi, L., Marchetti, D., Mazza, C., Di Giandomenico, S., Roma, P., & Verrocchio, M. C. (2020). The effect of the COVID-19 lockdown on parents: A call to adopt urgent measures. *Psychological Trauma: Theory, Research, Practice, and Policy*, *12*(S1), S79–S81.

Haznedar, Ö., & Baran, B. (2012). Eğitim Fakültesi Öğrencileri İçin E-Öğrenmeye Yönelik Genel Bir Tutum Ölçeği geliştirme çalışması. *Eğitim Teknolojisi Kuram ve Uygulama*, *2*(2), 42–59.

Hebebci, M. T., Bertiz, Y., & Alan, S. (2020). Investigation of Views of Students and Teachers on Distance Education Practices during the Coronavirus (COVID-19) Pandemic. *International Journal of Technology in Education and Science*, *4*(4), 267–282.

Ionescu, C. A., Paschia, L., Gudanescu Nicolau, N. L., Stanescu, S. G., Neacsu Stancescu, V. M., Coman, M. D., & Uzlau, M. C. (2020). Sustainability Analysis of the E-Learning Education System during Pandemic Period—COVID-19 in Romania. *Sustainability*, *12*(21), 9030.

Khan, B. H., & Joshi, V. (2006). E-Learning Who, What and How? *Journal of Creative Communications*, *1*(1), 61–74.

Liaw, S. S., Huang, H. M., & Chen, G. D. (2007). Surveying instructor and learner attitudes toward e-learning. *Computers & Education*, *49*(4), 1066–1080.

Link, T. M., & Marz, R. (2006). Computer literacy and attitudes towards e-learning among first year medical students. *BMC Medical Education*, *6*(1), 1–8.

Mailizar, A., Abdulsalam, M., Suci, B., & Sandra. (2020). Secondary school mathematics teachers' views on E-learning implementation barriers during the COVID-19 pandemic: The case of Indonesia. *Eurasia Journal of Mathematics, Science & Technology Education*, *16*(7), 1–9.

Niemi, H. M., & Kousa, P. (2020). A Case Study of Students' and Teachers' Perceptions in a Finnish High School during the COVID Pandemic. *International Journal of Technology in Education and Science (IJTES)*, *4*(4), 352–369.

Paris, P. G. (2004). E-Learning: A Study on Secondary Students' Attitudes towards Online Web Assisted Learning. *International Education Journal*, *5*(1), 98–112.

Rapanta, C., Botturi, L., Goodyear, P., Guàrdia, L., & Koole, M. (2020). Online University Teaching During and After the Covid-19 Crisis: Refocusing Teacher Presence and Learning Activity. *Postdigital Science and Education*, *2*(3), 923–945.

Shetty, S., Shilpa, C., Dey, D., & Kavya, S. (2020). Academic Crisis During COVID 19: Online Classes, a Panacea for Imminent Doctors. *Indian Journal of Otolaryngology and Head & Neck Surgery*, 1–5.

United Nations. (1948). *Universal declaration of human rights*. United Nations. https://www.un.org/en/universal-declaration-human-rights/