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## **Investigating the Educational Problems of High School Students in Virtual Education During the Outbreak of Covid 19**

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### **Keywords:**

*Virtual Education, High School Students, Exploratory Factor Analysis, Outbreak of Covid 19*

The purpose of this study was to investigate the educational problems of high school students in virtual education during the outbreak of Covid 19 in Khuzestan province.

310 students were selected in a multi-stage cluster sampling and the most important problems were identified by descriptive method of exploratory factor analysis with the help of SPSS software version 21. The results showed that six factors (absentee communication in the virtual classroom, lack of sufficient coercion and responsibility to do work, school and teacher characteristics, lack of social interaction, stress on families and limitations in teaching courses) contains 38 items with 89.32% of total of variance. It is suggested that these problems be reduced by holding training courses and empowering students, teachers and parents and providing the appropriate internet network and the necessary software and tools.

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## **Introduction**

Attention to informed planning and intelligent organization in the activities of education organizations in the community is one of the most essential parts in achieving success and improving the quality of education; Especially now that the international community is facing a major problem such as Covid-19 pandemic disease, the mission of this institution in achieving its main goals and raising awareness and promoting culture and safety among students and the general public is heavier than ever.

The official announcement of the first report on the outbreak of Covid-19 virus in Iran in February 2020, and the recommendations of the Ministry of Health and the concern of parents and teachers caused Until March 31, 2020, the Ministry of Education of Iran has issued an order to close all schools as one of the immediate measures to prevent the further spread of this disease, and since then, almost all Iranian students, more or less in homes They were imprisoned themselves and this caused social and school activities in Iranian families to be minimized (Ali Akbari Dehkordi, Isazadeh and Aghajانبegloo, 2020).

Non-observance of safety tips and health instructions by the people and the resumption of peaks of this disease in a short period of time has shown that the extent of harm and dangers of this disease is not well known to the people of Iranian society. Organizations and institutions related to this issue, however, in many cases the necessary commitment is still not seen, while in this situation, the best option is to stay at home (Chen et al., 2020).

The main reason for the fear of this disease and the closure of schools was its rapid spread through the air or physical contact, which caused a state of emergency in global health in less than a few months in all countries of the world. Deficiencies resulting from direct and indirect issues arising in these unfavorable conditions, caused the attention of the people and officials to the dimensions and mechanisms of adaptation to the situation.

Previous experiences in this field have shown that this type of training, with a focus on the web as a powerful tool in improving the quality and effectiveness of training has shown high efficiency (Delshad, Hydernia, Hydernia, Niknami and Pourhaji, 2016). These highly flexible networks provide users with a wide range of easily accessible facilities and are able to meet the needs associated with the implementation and creation of learning environments (Grosk, Brann & Tiro, 2011).

Turning to e-learning in a way other than the traditional face-to-face methods (Sanabria, Chavez and Gomez Zramono, 2018) and paying attention to the slogan of education entitled:

"Education is not closed" led to extensive efforts to create a suitable platform and the growth and development of this type of education. These activities and planning throughout the country have reduced the burden of concern for parents and made them more interested in educating their children through virtual networks.

Launching a student education network (Shad) and students using this application in cyberspace were among the quick and early measures that were prepared in the Ministry of Education and were communicated to departments and schools in the form of letters and necessary instructions.

With the use of this application, it was possible to hold classes online, and teachers and students were able to attend classes through the Internet and home computers, laptops, tablets, or mobile phones, without attending physical classes. Announce the lesson in a new way. The use of a happy app and online education in general, despite the great help it has given to the student learning process in the absence of face-to-face education, has been associated with limitations, obstacles and side effects that need to be adequately researched. Arslan et al. (2020) argue that virtual education has transformed the context of face-to-face educational interactions into systematic face-to-face communication and eliminated the presence of learners in the school learning environment and gaining experience by learners in a dynamic face-to-face school environment.

In addition, effective e-learning requires a planned infrastructure by providing facilities and facilities to students to benefit more from the training (Grosk, Bran and Tiro, 2011). Some recent research findings have shown that students do not interact much with online education and are more interested in attending face-to-face classes. Although they liked freedom of action and flexibility in online education, they preferred face-to-face classes if they had the choice (Young, 2020). In a number of other studies conducted abroad, the long-term closure of schools and home quarantines of students and teachers during an outbreak can have negative effects on their physical and mental health (Brazandal et al., 2017; Brooks et al., 2020).

The dimensions of e-learning problems and its limitations have also been considered in other studies (Grosick et al., 2011; Hanin and Newhoon, 2019; Workville and Hoggs, 2019; Delshad et al., 2016; Ali Yari et al., 2009). It is necessary to pay more attention to further study and use of the obtained results. Due to the sudden onset and spread of this disease and the lack of necessary preparation in education and other relevant devices, the use of online education in a hurry and without grounding and accurate and regular planning, as the only way out of the bottleneck. It has been implemented on a large scale, and today, after a short period of time since the implementation of this program, it seems necessary to pay attention to its various dimensions and find strengths and weaknesses and try to make this program more productive. Accordingly, in this study, the problems of high school students in Khuzestan province in virtual education during the outbreak of Covid 19 are investigated.

## **Materials and methods**

This research is descriptive in terms of practical purpose and according to the type of questions formulated (exploratory factor analysis). The statistical population of this study includes all high school students in Khuzestan province who were studying in the academic year 2020-2021. The research sample was 310 students who were selected according to Morgan and Krejcie table and

multi-stage cluster sampling. In order to analyze the data in this study, descriptive statistical methods such as frequency table and percentage and bar graph, mean and standard deviation and inferential statistics including exploratory factor analysis test using SPSS software version 21 were used. Researcher-made questionnaire on the problems of high school students in virtual education during the outbreak of Covid 19. In order to construct this questionnaire, after studying the background of research and available resources and asking students, a list of 58 items of all e-learning challenges in Covid 19 was prepared and by removing duplicate items and overlapping items 49 items were selected. According to the professors in this field, 4 items that were not deemed appropriate were removed and 2 necessary items were added; this 45-item scale was provided to 100 students during a pilot study to carefully evaluate it and find irrelevant, inappropriate, Identify duplicates or ambiguities. And in the final quarter, in 38 articles with the Likert spectrum in 5 options, I completely agree, I agree, I have no opinion, I disagree and I completely disagree, it was prepared and performed on the sample group. To evaluate the validity of this questionnaire, content validity was used, which the opinion of the professors indicated that various aspects of the questionnaire were approved by experts in this field.

Also, in the present study, to calculate the reliability coefficients for the six factors and the whole scale, Cronbach's alpha method and the halving method were used. The total alpha coefficient of the questionnaire was 0.76 and the correlation between the two halves was 0.66. Its psychometric properties are acceptable.

## **Results**

Descriptive findings of this study include statistical indicators such as mean, standard deviation and number of sample subjects as well as frequency and percentage table. Examining the defaults showed performing factor analysis The KMO value is equal to 0.76 and the Bartlett spherical test score is 398.43. In terms of adequacy of sampling, there is

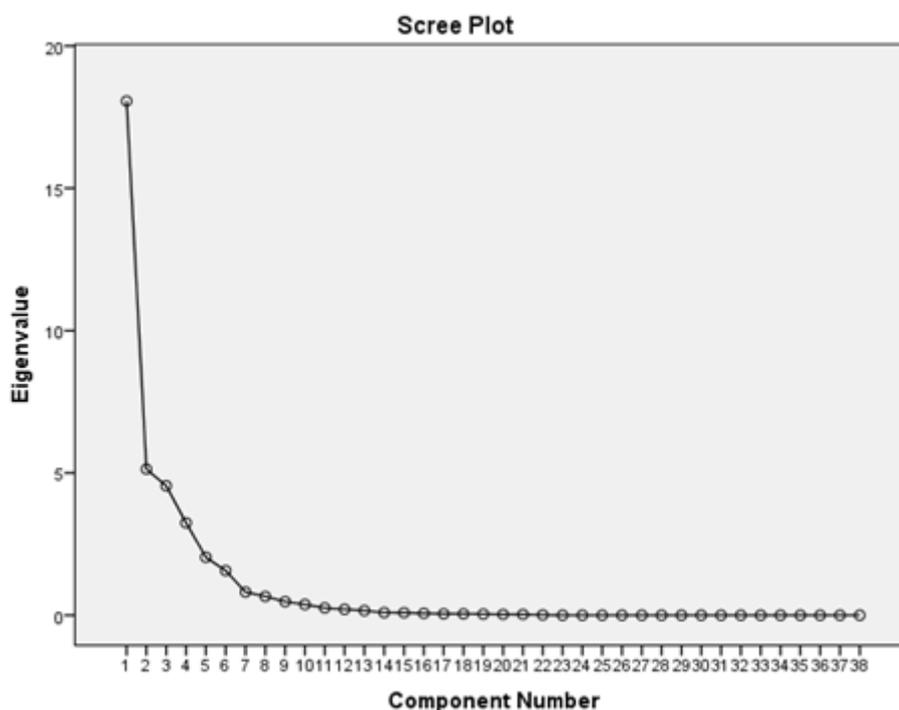
a basis for performing factor analysis and the implementation of factor analysis based on the correlation matrix obtained from the two groups of the sample will be justified. Based on this data, the extraction of factors can be trusted. In order to extract appropriate factors in harmony with the structure Cultural and social of the sample group, factor analysis was performed several times with different solutions.

The initial analysis yielded an 8-factor structure with an explained variance of 69.21. This structure contained a number of incomprehensible and overlapping materials.

By implementing multiple solutions and eliminating 4 turbulent materials during the 8 and 7 factor structures, it was decided to use the structure of the scree diagram (Figure 1) to continue the analysis and adopt the appropriate solution.

It can be inferred from the Scheme diagram that the contribution of the first and second factors in the variance of the total variables is significant and completely different from the share of the other factors, but this diagram does not show that the set of questionnaire materials is really saturated with several factors.

Because this graph becomes uniform after the ninth factor, but its steep slope peaks from the sixth factor, and the plateau of the graph actually starts from the sixth factor. Due to this issue and the removal of large items from the scale in the structure of 9, 8 and 7 factors, the 6-factor solution that made the fewest removed items possible was deemed appropriate and this solution was selected for research.



**Figure 1. Screen diagram of the 38-item set of the scale of lived experiences of secondary school students from the perspective of students**

In order to obtain a meaningful structure from the factor loads, the factors extracted based on conventional methods and using inclined rotation,

were transferred to new axes that are placed at non-perpendicular angles to each other.

After performing factor analysis several times and extracting various factors and comparing the extracted factors with the theoretical structure of

the questionnaire and the existing theoretical foundations, as well as considering the assumptions of factor analysis mentioned above.

It was decided to extract 6 factors by direct ablation method.

**Table 1. Eigenvalues, percentage of variance and percentage of variance of density of six factors**

Variance percentage	Eigenvalue	factor
47.53	18.06	1
13.50	5.31	2
11.96	4.54	3
8.54	3.24	4
5.36	2.03	5
4.12	1.567	6

As can be seen in this table, the coverage percentage of common variance between the variables for these 6 factors together explains 89.32% of the total variance of the variables. Among these, the first factor with an eigenvalue of 18.06 about 47.53% of the total variance, the second factor with an eigenvalue of 5.13 about 13.50% of the total variance, the third factor with an eigenvalue of 4.54 about 11.96% of the total variance, The fourth factor with an eigenvalue of 3.24 is about 8.54% of the total variance, the fifth factor with an eigenvalue of 2.04 is about 5.36% of the total variance and finally the sixth factor with an eigenvalue of 1.56 is about 4.12% of the total variance Explains.

Naming of extracted agents:

After comparing the extracted factors with the theoretical structure of the questionnaire and the existing theoretical foundations and also considering the assumptions of factor analysis and content each one of the extracted factors, these factors were named as follows.

In the first factor, there are issues in the field of face-to-face communication with the teacher and the atmosphere of the class. And the second item of this factor "is another problem of e-learning is not using auxiliary methods in education." is; Therefore, this factor is called "absentee communication in the virtual classroom".

The second factor also includes issues such as insufficient compulsion to do work and students' irresponsibility, for example, the first item of this factor "One of the problems of students in e-

learning is the reduction of adherence to the rules of classroom discipline."

And the second item of this factor is "Another problem of e-learning is the lack of sufficient motivation in students."; This factor is therefore called "lack of sufficient coercion and responsibility to do work."

In the third factor, there are issues related to the characteristics and functions of the teacher and the school. For example, the first item of this factor is "one of the problems of students in virtual education. Teachers are not familiar enough with online teaching methods. "And the second item of this factor is" the lack of motivation of some teachers, lack of proper and principled planning of school officials is one of the problems of virtual education. "; Therefore, this factor is called" characteristics of school and teacher ".

In the fourth factor, there are issues in the field of the role of social interaction in the situation of students. For example, the first item of this factor "One of the problems of students in e-learning is the lack of experience in the classroom." and the second item of this factor is "lack of familiarity with friends and classmates is one of the problems of e-learning."; Therefore, this factor is called "lack of social interaction".

The fifth factor obtained in this study is related to the problems and pressures that are placed on the families and parents of students in the absence of school; For example, the first item of this factor is "the involvement of parents' time and energy in doing e-learning is one of the problems of e-learning. "and the second item of this factor

"problems of student presence at home and place and work space is one of the problems of virtual education." is.; Therefore, this factor has been named as "pressure on families". In the last first factor, issues related to the limitations of e-learning in some courses or sections of the book have been raised; For example, the first item of this factor is "the inefficiency of the virtual classroom in laboratory courses is one of the problems of virtual

education." and the second item of this factor is "the inefficiency of the virtual classroom in the courses that need face-to-face examination is one of the problems of virtual education." is. ; Therefore, this factor is called "limitation in teaching courses". These factors can be seen in the table below.

**Table 2. Final factors and extracted materials in the Virtual Education Challenges Questionnaire during the Covid period 19**

Material	Row	Agent
Lack of teacher presence in the classroom and with students is one of the problems of virtual education.	1	Offline communication in virtual classroom
In-person communication in the virtual classroom	2	
Another problem of e-learning is the lack of auxiliary methods in education.	3	
Lack of attention to individual characteristics is one of the problems of e-learning.	4	
Loss of problems of e-learning.	5	
Lack of appropriate and necessary repetition and practice by the student is one of the problems of virtual education.	6	
One of the problems of e-learning is its weakness in accurate assessment of students.	7	
The lack of visual appeal of some of the videos or content provided is one of the problems with e-learning.	8	Lack of sufficient coercion and responsibility to do the job
Another problem with e-learning is the lack of Q&A in the classroom.	1	
One of the problems for students in e-learning is the reduction of adherence to classroom discipline rules	2	
Another problem with e-learning is the lack of motivation among students.	3	
Failure to complete homework on time is one of the problems of e-learning.	4	
Another problem with e-learning is the lack of time management by students.	5	
Waste of students' time is one of the problems of e-learning.	6	
Lack of sufficient responsibility is one of the problems of e-learning.	7	School and teacher features
One of the problems for students in e-learning is that teachers have less control over students.	8	
Inability to organize oneself and the programs ahead is one of the problems of e-learning.	1	
One of the problems of students in virtual education is the lack of familiarity of teachers with the method of online teaching.	2	
The lack of motivation of some teachers and the lack of proper and principled planning by school officials is one of the problems of e-learning.	3	
Lack of follow-up by students and schools is one of the problems of e-learning.	4	
One of the problems of e-learning is the lack of objective observation of the way students' activities and homework are performed by teachers.	5	
Lack of necessary infrastructure in the implementation of virtual education is one of its problems.	6	Lack of social interaction
The belief that e-learning is temporary among some teachers has reduced its effectiveness.	7	
Some teachers' distrust of the effectiveness of e-learning has created problems for its teaching.	1	
One of the problems for students in e-learning is the lack of classroom experience.	2	
Lack of familiarity with friends and classmates is one of the problems of e-learning.	3	
Another problem with e-learning is the lack of necessary social skills.	4	Lack of social interaction
Lack of opportunity to participate in class discussions is one of the problems of e-learning.	5	
One of the problems for students in e-learning is the elimination of charisma due to the presence of the teacher.		

<b>Isolation and isolation of students are among the problems of e-learning.</b>	<b>6</b>	
<b>Involvement of parents' time and energy in virtual education is one of the problems of virtual education.</b>	<b>1</b>	
<b>Problems of student presence at home and place and work space is one of the problems of virtual education.</b>	<b>2</b>	
<b>Another problem with e-learning is the lack of complete parental control over information and communication technology.</b>	<b>3</b>	<b>Pressure on families</b>
<b>The high cost of using the Internet is one of the problems of e-learning.</b>	<b>4</b>	
<b>Compensating for the lack of teacher pressure by parents is one of the problems of e-learning.</b>	<b>5</b>	
<b>The inefficiency of the virtual classroom in laboratory courses is one of the problems of virtual education.</b>	<b>1</b>	
<b>The inefficiency of the virtual classroom in the courses that need face-to-face examination is one of the problems of virtual education.</b>	<b>2</b>	<b>Restrictions on teaching courses</b>
<b>Limitations of e-learning in teaching parts of the textbook are among the problems of e-learning.</b>	<b>3</b>	
<b>The limitations of virtual education in teaching technical and art courses are among its limitations.</b>	<b>4</b>	

In this research, after comparing the extracted factors with the theoretical structure of the questionnaire and the existing theoretical foundations and also considering the assumptions of factor analysis and the content of each of the extracted factors, Six factors (absenteeism in the virtual classroom), (lack of sufficient coercion and responsibility to do work), (school and teacher characteristics), (lack of social interaction), (pressure on families) and (restrictions on teaching lessons ) Obtained.

In the first factor (absentee communication in the virtual classroom), issues such as the effect of the teacher's absence in the classroom and the lack of use of auxiliary methods in teaching and repetition and classroom practice are seen and has 8 items.

One of the disadvantages of distance learning, including e-learning in other studies, is the lack of face-to-face communication. In this regard, some students. They are not able to keep up with other students and the ability to adjust the speed of learning and self-organization is very difficult for some of them. Some can do the same but at the same time, the presence of classroom space and teaching aids and repetition and practice tools make them do the job better. It should also be noted that feedback is one of the biggest factors in student progress. Students are better able to grow and progress when they know the shortcomings of their work. Although e-learning teachers provide the necessary feedback to students, But the space for

feedback and not having enough time means that it does not have the necessary efficiency and the details of the issues are not addressed. This leads to gaps in the learning process, especially for students who are more retarded.

This factor has also been shown in the researches of Delshad, Hydernia, Hydernia, Niknami and Pourhaji (2016) and Yang (2020). Paying attention to the items extracted in this factor indicates the need to pay more attention to student assessment and spend more time on student feedback.

Reducing the number of students and setting enough time to offer lessons and repetition and practice are some of the solutions to solve this problem.

The second factor (lack of sufficient coercion and responsibility to do work) includes issues such as lack of motivation to do work and refers to problems such as "lack of order" and "lack of sufficient responsibility" of young people.

This factor has 8 articles. Many students believe that the e-learning system reduces adherence to the rules of classroom discipline and as a result they are reluctant to do homework due to lack of compulsory education in the form of face-to-face classes.

In addition to receiving education and learning in the classroom, the student needs to have regular legal systems established in the school and the rules of attending the class, establishing a friendly relationship with peers, communicating with the

teacher, attending the school yard and ... Unfortunately, with the virtual method, teaching these cases has become almost impossible.

Parts of the constituents of this factor in the research of Delshad, Hydernia, Hydernia, Niknami and Pourhaji (2016); Arslan and Allen (2020) and Meratido et al. (2020) are also shown. The issues presented in this factor, which are mostly due to the elimination of charisma due to the presence of teachers in e-learning,

Indicates the need to pay attention to creating a regular environment to fill the gap created beyond what is taught to students.

In the third factor (school and teacher characteristics), there are issues related to the teacher and the school, including the items "lack of proper and principled planning", "lack of follow-up of students' attendance", etc. This factor has 7 articles. Some teachers do not believe in virtual education (Queers, 2008) and as a result do not see the desire to allocate time for educational activities in the virtual environment.

Insufficient familiarity of teachers with virtual teaching methods and reduced motivation to do work are among the important issues that adversely affect the process of teaching and learning of students. Some teachers do not have much motivation to continue teaching virtually due to unfamiliarity with the technology of the day or not seeing their teaching feedback;

Some of them do not follow the set time for training and do not consider virtual training time as one of their teaching priorities. This causes both teachers and students to be unmotivated and uncertain about the effectiveness of this type of education in learning and expecting to return to the usual ways of attending the classroom and school.

Evidence from other studies in this field also confirms the findings of the present study (Arslan and Allen, 2020; Meratido et al., 2020; Hanin and Newhon, 2019; Verquille and Hoggs, 2019; Grosick and colleagues, 2011; Queers, 2008; Delshad et al., 2016; Ali Yari et al., 2009 and Memar et al., 2012). In general, in order to implement effective virtual education, the

necessary infrastructure in the field of teacher education and the necessary facilities and planning should be provided while planning for teacher empowerment (Grosik et al., 2011).

For example, Workville and Hoggs (2019) believe that the context created in online education requires attention to infrastructure and technology development; While eliminating or reducing the necessary facilities in this field reduces the motivation of teachers and also reduces the motivation of students.

In the fourth factor (lack of social interaction), there are issues related to the lack of classroom attendance experience; This factor has 6 articles. For some college and school students, in addition to being a place to learn, it is a good opportunity to socialize and make new friends, and such relationships learn more than what teachers learn.

This aspect of school and classroom can hardly be provided through virtual education. In fact, by eliminating communication and establishing constructive interactions with teachers, school staff and other students, virtual education has eliminated group and face-to-face group activities. And it drowns them in social media and entertains them with a variety of hobbies different from what they have ever experienced. Arslan et al. (2020) believe that in the educational dimension, in addition to providing more leisure space for learners, it has also enabled them to engage in creative activities.

But virtual education has turned the field of face-to-face educational interactions into face-to-face and systematic communication and has eliminated the presence in the school educational atmosphere and gaining experience by learners in the dynamic school environment face to face. This factor has also been shown in the researchers conducted by Shamshiri and Nozari (2011).

The issues presented in this factor indicate the need to pay attention to the emotional needs of students and their physical presence among their friends, as well as finding appropriate channels to address these shortcomings in virtual education and the current emergency period.

The fifth factor obtained in this study (pressure on families) also includes issues such as the involvement of parents' time and energy in virtual education and has 5 articles. In the virtual education system, the burden of education falls on parents and students. Research findings in other studies also confirm these cases (Meratido et al., 2020; Verquille et al., 2019; Sanabria et al., 2018; Young, 2020; Queers, 2008; Saad Mohammadi (2014) and Delshad et al., 2016).

The issues presented in this factor show the heavy burden that in terms of cost, time, hardware facilities and the context of holding classes for families, which in the current economic situation, the need for more attention of officials and planners to the family and accompany them in providing Requires the implementation of virtual education in the home environment through financial assistance and the provision of necessary facilities and equipment.

In the last factor (limitation in teaching courses), issues related to the inefficiency of the virtual classroom in different courses have been raised; This factor has 4 articles and due to the nature of virtual education in the current situation, the use of this type of education in some courses or special sections has faced problems. Evidence from other studies confirms the findings of the present study (Hanin and Newhon, 2019; Verquille and Hoggs, 2019; Sanabria et al., 2018; Delshad et al., 2016; Memar et al., 2012). Accordingly, it is necessary to take measures in this regard to use other dimensions of virtual education and creativity of teachers and officials to eliminate this shortcoming.

## **Conclusion**

In general, the results of reviewing the results obtained in this study are subtle and thought-provoking points that have been raised in this questionnaire, as well as changes and differences that can be seen from the perspective of students compared to previous research; Students participating in this study, in addition to the factors expressed in previous research, have emphasized new issues such as lack of motivation of some

teachers and administrators and lack of confidence in the effectiveness of e-learning on students' learning.

The most important limitations and obstacles of the present study are its attitude and its dependence on students' perceptions, and that the statements made by the participants may not be 100% true and the result of the work may be affected; Also, considering that the present study is the first study in the period of Covid 19 disease outbreak and the researches related to this subject are few, the lack of a suitable questionnaire ruled out the possibility of comparing the questionnaire.

With the use of this application, it was possible to hold classes online, and teachers and students were able to attend classes through the Internet and home computers, laptops, tablets, or mobile phones, without attending physical classes. Announce the lesson in a new way. The use of a happy app and online education in general, despite the great help it has given to the student learning process in the absence of face-to-face education, has been associated with limitations, obstacles and side effects that need to be adequately researched. Arslan et al. (2020) argue that virtual education has transformed the context of face-to-face educational interactions into systematic face-to-face communication and eliminated the presence of learners in the school learning environment and gaining experience by learners in a dynamic face-to-face school environment.

Based on the findings of this study and in order to make the most of the use of virtual education space, especially in the current context of the outbreak of coronavirus, it is recommended In order to hold better virtual educational classes for students, all organizations and educational and technology institutions have used their facilities in various dimensions and by holding empowerment courses for teachers and teaching staff and parents and paying attention to improving the personality traits of students from On the one hand, and providing a suitable Internet network, software and related hardware on the other hand, take the necessary care. In the end it is necessary to ask all professors, administrators, Dear teachers and parents who

accepted the effort, as well as dear high school students who cooperated in answering the questions and reflecting it to the facilitators, would be very grateful and appreciated.

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