

# Statistical Study on the Impact of E-Learning on Children in Saudi Arabia

Jana Majdy Rehan, Elham Fahad Almutawa, Shaimaa Ali Towerib and Amal Tolba Badawi\*

Department of Statistics, University of Jeddah, Makkah, Kingdom of Saudi Arabia

## Abstract

In our research, we presented a statistical study about the impact of e-learning on the child's psychological and physical health, and the importance of the study is to draw attention to the child's psychological and physical health, which is essential in their influence at the academic level of the child on the elementary grades (kindergarten-primary stage), and most of the governments in the world have temporarily closed educational institutions, in an effort to reduce the spread of the corona pandemic (COVID-19), which led to their decision-making to convert urban classrooms into virtual classes as it had a great impact on children from kindergarten to primary. And the result was that e-learning had a negative impact on the health of the child, whereas, the result and data were obtained through a questionnaire that was answered by the parents.

**Keywords:** Child's psychological • E-Learning • Physical health • Poverty reduction

## Introduction

In this chapter we will talk about the importance, problems and the aims of the study, also the methodology we used to analyze the data.

### Problem of study

Most Governments in the world have temporarily closed educational institutions, in an effort to reduce the spread of the pandemic (COVID-19), which led to their decision-making to convert urban classrooms into virtual classes as it had a great impact on children from kindergarten to primary grades.

### Importance of study

The importance of the study is to draw attention to the child's psychological and physical health, which is essential in their influence at the academic level of the child. this the sudden reversal occurred with the emergence of the corona pandemic (COVID-19), this has transformed the classes into virtual classes across different platforms, making significant changes in the way of communication and learning the scientific content.

### Aim of study

The study aims were focused on the following questions:

- Is the opinion of parents different with regard to the impact of e-learning on the child's psychological and physical health by gender (male or female), ages, educational qualifications and level of income?
- Is the impact different of e-learning on the child's psychological and physical health varied according to the gender of child, the child's educational phase, the type of school, his or her health status and the number of brothers?
- Is there a difference between a child's academic level before and during (COVID-19) pandemic through the viewpoint of the parents?
- What are the opinions of parents about the impact of e-learning on the child's psychological and physical health?

### Methodology of study

In this study, a descriptive method was used to collect and classify data,

and the analytical method was also used to analyze data with statistical methods.

### Community of study

The research community consists of different backgrounds from different segments of society, including males and females, and different age groups, the diversity of educational qualifications and the level of income from different regions in the Kingdom of Saudi Arabia.

### Sample of study

The study sample was restricted to parents who have children in (Kindergarten-primary stage) the study contains a sample size of 212 people.

### Limit of study

- Spatial boundaries: Saudi Arabia.
- Temporal limits: The data were collected through a questionnaire during 18 Feb until 8 March.
- The questionnaire was published on social media through: (WhatsApp-Snapchat).

### Study tools

We made an online questionnaire as a study tool to collect the data to see the impact of e-learning on the child's psychological and physical health. The questions included:

- **Demographic questions:** questions that describe the respondent of the questionnaire like (gender, age, educational qualification, income level, information about the child).
- **The questionnaire axes questions:** questions that revolve around the subject of the study, and have an options answer (agree, neutral, disagree).

### Literature review

Latif AA has focused in his study on showing the advantages and disadvantages of e-learning so one of the advantages was how its encourage the students for self-learning and how its save the time and effort and has

\***Address for Correspondence:** Dr. Amal Tolba Badawi, Department of Statistics, University of Jeddah, Makkah, Kingdom of Saudi Arabia, Tel:00966541635824; E-mail: atbadawi@uj.edu.sa

**Copyright:** © 2021 Rehan JM, et al. This is an open-access article distributed under the terms of the creative commons attribution license which permits unrestricted use, distribution and reproduction in any medium, provided the original author and source are credited.

**Received date:** September 15, 2021; **Accepted date:** September 29, 2021; **Published date:** October 06, 2021

no time or place restrictions, and in the other hand the disadvantages, were the poor communication between the student and professor and, Also the lack of experience in dealing with modern technology in addition to putting a greater effort and financial cost for the professor, and certainly the problem of frequent blackouts, which is a major obstacle to implementing e-learning in their Iraqi universities, accordingly for that the recommendations were to provide a financial support to enable them to provide e-learning materials and technologies from computers and electronic display devices, And communication networks via the Internet, and databases and virtual libraries with their networks, and rooms and furnishing suitable for this type of education as well as holding training courses for teachers and students on the use of information technology, communications and educational software, and in view of the presence of some electronic devices, and given the presence of some disadvantages in e-learning, he recommended that e-learning not be a substitute for traditional education, but rather a complement [1].

Hosamo SA has focused in her study on define the reality of E-learning at Tishreen University from the point of view of faculty members and students [2]. The author prepared two questionnaires; the first one is for faculty members, and the second one for students. The results showed that there was a consensus on views between the faculty members and students that using emails to communicate between students, sending assignments via e-mail, online audio and video classes from anywhere was achieved very poorly. The results also showed that the most positive aspects of e-learning was; enabling students to self-learning, improve their computer experiences and skills, reduces the electronic illiteracy among parents who follow up their children progress electronically. As for the negative aspects of e-learning, both, the faculty members and students assert that long sitting in front of the computer has negative impact on health. As a result, they recommended providing appropriate training opportunities for members teaching staff and students on the use of computers and the Internet in a healthy way, the use of e-learning applications, educational training courses on the field of e-learning and its requirements, new roles that teachers and students should play according to patterns and mechanisms, and activating the E-learning in the field of self-learning.

Hamayel HJ has focused in his research on to study the reality of e-learning in the education in the northern governorates in Palestine [3]. His study included 1,643 principles where he used the analytical and Developmental Survey Approach. The results of the study concluded that e-learning improved the educational environment by providing alternative electronic educational media. E-learning works to refine students' skills through the use of educational websites and provided new educational alternatives to save time, effort, faster to understand, more flexibility, and more accurate understanding. The reasons were because it contains various educational media such as sound, image, text, graphic form, maps and other multimedia. In addition, the suspense and attractiveness of the educational content provided through it. Moreover, there is no connection between the ability to use e-learning tools and academic qualifications. Accordingly the study recommended improving the quality of the e-learning environment in Palestinian schools and focusing on developing the role of female teachers in e-learning and enhances their interaction with this type of education as well as working to provide teachers with training courses that are compatible with the existing reality of e-learning in the northern governorates of Palestine.

Muhammed T has focused in her study on identify the reality of e-learning in the National Success University and its role in achieving interaction between learners from the point of view of the students of the College of Graduate Studies at the College of Education and the members of the faculty and the study population consists of 9 faculty members and 428 students and used the descriptive analytical method through which I concluded that e-learning increases the interaction between the learners themselves and also between them and the teacher as I found that there is attitudes for students towards e-learning and thus recommended the need to develop the university's infrastructure and work to improve it to support this educational pattern and keep pace with the global educational arena [4].

Abdel-Baqi B has focused in her study on to define E-learning and its role in promoting the child's growth from a linguistic and cognitive aspect [5]. In her study, she used the questionnaire and followed it with the descriptive method. Her sample consisted of 40 students and the results were that e-learning has a role in enhancing the cognitive and linguistic development of the child and it helps kindergarten teachers to be creative and innovative, also saves them time and effort In addition, they faced challenges in applying E-learning to kindergartens in Jazan, so her study recommended that they hold courses and workshops for teachers in kindergartens and set up specialized laboratories for e-learning in kindergartens and that they program the curriculum to keep pace with technological development.

Coman C has focused in his research on identifying the way in which Romanian universities managed to provide knowledge during the coronavirus pandemic so they made an online survey and the data was collected from 762 students from two of the largest Romanian universities. The results of the research revealed that higher education institutions in Romania were not prepared for exclusively online learning Thus, the advantages of online learning identified in other studies seem to diminish in value, while disadvantages become more prominent and the technical issues are the most important, followed by teachers' lack of technical skills and their teaching style improperly adapted to the online environment also, the lack of interaction with teachers or poor communication with them, finally the recommendations is try to improve teachers' technical skills, developing training programs meant to help teachers remodel and adapt their teaching style and the way they interact with the students [6].

Di Pietro has focused in his report on shows to us how COVID-19 crisis have affected students learning and they found out that there was a greater learning loss among younger students compared to older students, also the effect of COVID-19 on students' achievement is likely to vary according to socio-economic status [7]. Students from less advantaged backgrounds are likely to experience a larger decline in learning compared to their more advantaged counterparts.

Mark has focused in his study on the evaluation of readiness for E-learning of higher education students in a less-economically developed country and it's been applied on 880 Filipino students and they found out the majority were actually not ready for the e-learning specially the less advantaged ones who had problems with not having an access to a computer with an Internet connection and adequate software Low readiness scores were observed among learners in low-income class and rural areas [8]. The results refers that it could be inferred that these groups of learners are not yet ready for E-learning ,the financial factors could be one factor that could explain this, also lack of equipment (e.g., computer, speakers) and Internet connection problems in several rural areas might also play a role in their readiness score, he recommended for school officials to my first address the lack of digital skills among students and formulate programs that would capacitate them, and the possible shift for e-learning should be considered also the Internet connectivity issues of learners in the low-income sector and rural areas are addressed so more strategic planning and quality management mechanisms should be directed towards an equitable and inclusive education without undermining quality learning.

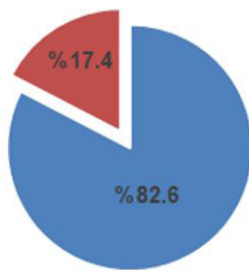
## Methodology

In this chapter, we mentioned the methods that were used in the study: Descriptive statistics, Statistical analysis, Hypothesis testing and Likert-Scale Analysis.

## Results and Discussion

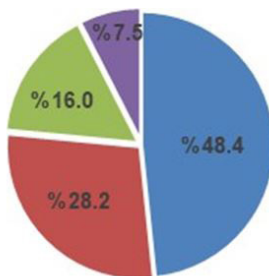
### Descriptive statistics

**The percentage of parent's gender:** We concluded that females have the highest participation by 82.6%, and the percentage of males was 17.4% (Figure 1).



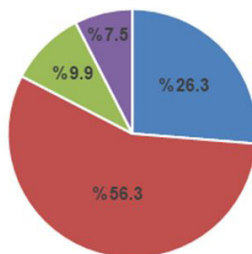
**Figure 1.** Percentage of parent's gender. **Note:** (■) Female, (■) Male

The ages of the parents, we concluded that ages between 25 to 35 had the highest percentage by 48.4%, followed by ages 36 to 45 by 28.2%, and then ages 46 to 55 by 16% and the lowest percentage was age of 55 and above by 7.5% (Figure 2).



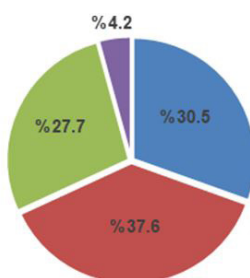
**Figure 2.** Ages of the parent's. **Note:** (■) [25-35], (■) [36-45], (■) [46-55], (■) [55 and above]

The educational qualification of parent's, where the bachelor was the highest percentage by 56.3%, followed by secondary by 26.3%, then followed by postgraduate by 9.9%, and the lowest percentage was PhD by 7.5% (Figure 3).



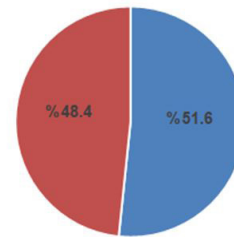
**Figure 3.** The educational qualification of parent's. **Note:** (■) Bachelor, (■) Secondary, (■) Post graduate, (■) PhD

The level of income for parents, we concluded that the highest percentage is (5000-1000) with 37.6%, then it followed by (less than 5000) and it was 30.5%, then the (10,000-50,000) was 27.7% and the lowest was (50,000) by 4.2% (Figure 4).



**Figure 4.** The level income for parents. **Note:** (■) [5000-1000], (■) [less than 5000], (■) [10,000-50,000], (■) [50,000]

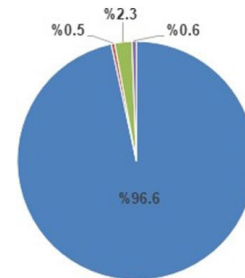
The gender of child's that they answered in the questionnaire; we concluded that males have the highest participation by 51.6%, and the percentage of females was 48.4% (Figure 5).



**Figure 5.** Gender of child's that they answered in the questionnaire.

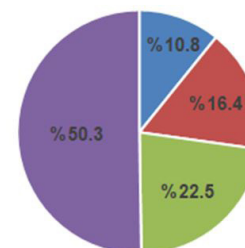
**Note:** (■) Male, (■) Female

Child's health, we concluded that highest percentage was healthy by 96.6%, followed by health problems at 2.3%, then Handicapped by 0.6%, and the lowest percentage was psychiatric problems by 0.5% (Figure 6).



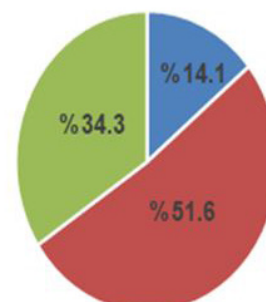
**Figure 6.** Child's health. **Note:** (■) Healthy, (■) Health problems, (■) Handicapped, (■) Psychiatric problems

The number of siblings for the child, where the highest percentage (3 and more brothers) by 50.3%, then it is followed by (2 brothers) with 22.5%, then it is followed by 1 brother with 16.4% and the lowest answer (0 brother) with 10.8% (Figure 7).



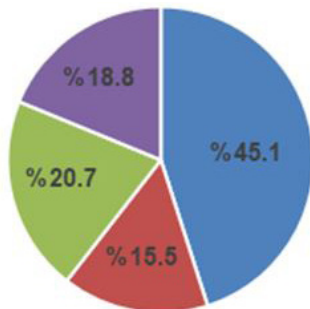
**Figure 7.** Number of siblings for the child. **Note:** (■) 3 and more brothers, (■) 2 brothers, (■) 1 brother, (■) 0 brother

The educational stage of children, where the highest percentage was (from 1<sup>st</sup> to the 3<sup>rd</sup> grade of primary stage) by 51.6%, then (from 4<sup>th</sup> to the 6<sup>th</sup> grade of primary stage) by 34.4% and the lowest percentage (kindergarten) by 14.1% (Figure 8).



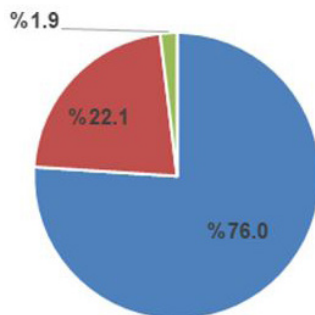
**Figure 8.** The educational stage of children. **Note:** (■) 1<sup>st</sup> to 3<sup>rd</sup> grade, (■) 4<sup>th</sup> to 6<sup>th</sup> grade, (■) kindergarten

The type of child's school, we concluded that highest percentage was public school with 45.1%, then it followed by special education with 20.7%, then it followed by international schools with 18.8%, and the lowest percentage was Qur'an memorization school by 15.5% (Figure 9).



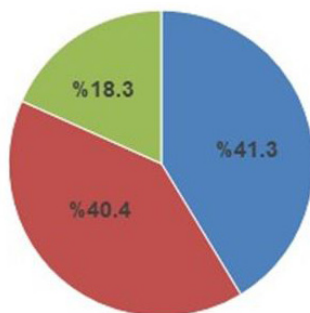
**Figure 9.** Type of child's school. **Note:** (■) Public school, (■) Special education, (■) International schools, (■) Qur'an memorization school

Parents evaluation of the child's level academic in 2018-2019 years before the COVID-19, where the highest percentage was excellent with 76.0%, then it followed by average with 22.1%, and the lowest percentage was weak by 1.9% (Figure 10).



**Figure 10.** Concluded parent's evaluation of the child's level academic in 2018-2019 years (before the COVID-19). **Note:** (■) Excellent, (■) Average, (■) Weak

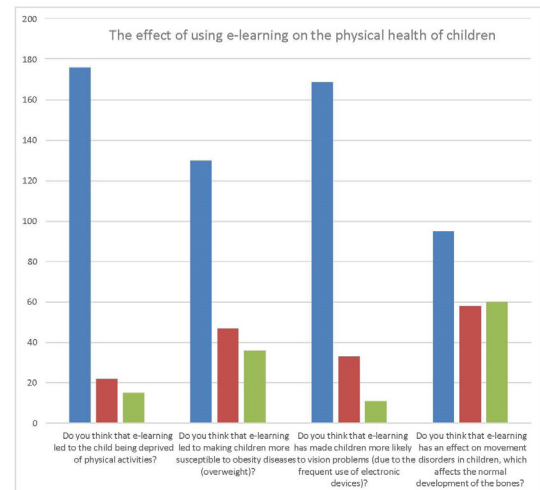
The parents evaluation of the child's level in the first semester of 2020-2021 during e-learning, where the highest percentage was excellent with 41.3%, then it is followed by average with 40.4% and the lowest percentage was weak with 18% (Figure 11).



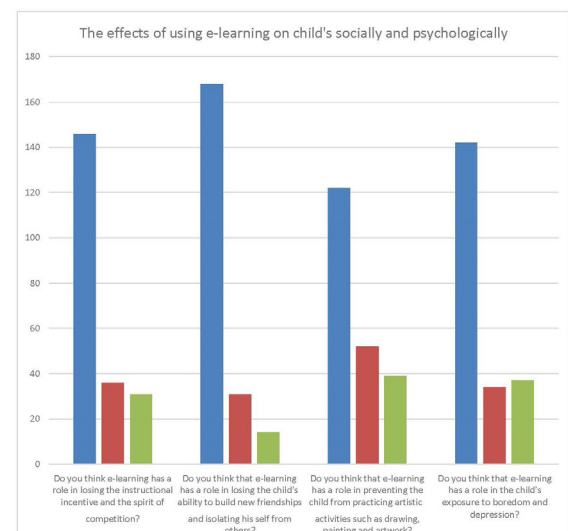
**Figure 11.** Concluded the parent's evaluation of the child's level in the first semester of 2020-2021 (during e-learning). **Note:** (■) Excellent, (■) Average, (■) Weak

The first axis so about the physical activities the highest percentage was agreed then it followed by neutral then not agreed, then about the overweight the highest percentage was agreed then followed by neutral then not agreed, about the eye vision problems the highest percentage was agreed then followed by neutral then not agreed, about the normal development of bones the highest percentage was agreed then followed by not agreed then neutral (Figure 12).

The second axis, about losing incentive and the spirit of competition so the highest percentage was agreed then it followed by neutral then not agreed, about losing the child's ability to build new friendships and isolating his self from others the highest percentage was agreed then it followed by neutral then not agreed, then about preventing the child from practicing artistic activities the highest percentage was agreed followed by neutral then not agreed, then about child's exposure to boredom and depression the highest percentage was agreed followed by not agreed then by neutral (Figure 13).



**Figure 12.** The first axis so about the physical activities the highest percentage was agreed then it followed by neutral then not agreed, then about the overweight the highest percentage was agreed then followed by neutral then not agreed, about the eye vision problems the highest percentage was agreed then followed by neutral then not agreed, about the normal development of bones the highest percentage was agreed then followed by not agreed then neutral. **Note:** (■) Agree (■) Neutral (■) Not Agree



**Figure 13.** The second axis, about losing incentive and the spirit of competition so the highest percentage was agreed then it followed by neutral then not agreed, about losing the child's ability to build new friendships and isolating his self from others the highest percentage was agreed then it followed by neutral then not agreed, then about preventing the child from practicing artistic activities the highest percentage was agreed followed by neutral then not agreed, then about child's exposure to boredom and depression the highest percentage was agreed followed by not agreed then by neutral. **Note:** (■) Agree (■) Neutral (■) Not Agree

### Statistical analysis

**Alpha Cronbach' test:** Cronbach's alpha was used to measure of internal consistency. We published an exploratory sample on 50 parents and the alpha Cronbach was 0.695 which is considered acceptable, so we modified the questionnaire and republished it (Tables 1 and 2). The result of alpha cronbach was based on the table below [9].

**Table 1.** Coefficient alpha and the internal structure of tests.

| Cronbach's alpha        | Internal consistency |
|-------------------------|----------------------|
| $\alpha \geq 0.9$       | Excellent            |
| $0.9 > \alpha \geq 0.8$ | Good                 |



|                         |              |
|-------------------------|--------------|
| $0.8 > \alpha \geq 0.7$ | Acceptable   |
| $0.7 > \alpha \geq 0.6$ | Questionable |
| $0.6 > \alpha \geq 0.5$ | Poor         |
| $0.5 > \alpha$          | Unacceptable |

**Table 2.** The reliability coefficients of questionnaire.

| Stability | The number of phrases | The axes                               |
|-----------|-----------------------|----------------------------------------|
| 0.699     | 4                     | First axis                             |
| 0.749     | 4                     | Second axis                            |
| 0.824     | 8                     | General stability of the questionnaire |

We concluded that the general stability coefficient for the study is high 0.824, and the reliability of the two axes is between a minimum of 0.699 and a maximum of 0.749, which means that we can rely on the questionnaire. We find that all the Pearson correlation coefficients between the questions of the first axis and the total mark for the axis at the level of 0.01 significance, and the correlation coefficient between a minimum of 0.622 and a maximum of 0.801, which means the questions of the first axis are internally consistent with their axis, which proves the sincerity of its internal consistency.

**Internal consistency validity:** The validity of the internal consistency of the questionnaire was verified and the table below shows the correlation coefficients between each question of the first axis (Tables 3 and 4).

**Table 3.** The reliability coefficients of questionnaire.

| Question number | Correlation coefficient | sig |
|-----------------|-------------------------|-----|
| 1               | 0.622                   | 0   |
| 2               | 0.801                   | 0   |
| 3               | 0.685                   | 0   |
| 4               | 0.79                    | 0   |

**Table 4.** The correlation of the second axis.

| Axis questions | Correlation coefficient | sig |
|----------------|-------------------------|-----|
| 1              | 0.743                   | 0   |
| 2              | 0.774                   | 0   |
| 3              | 0.765                   | 0   |
| 4              | 0.761                   | 0   |

We concluded from Table 3, that all the Pearson correlation coefficients between the questions of the second axis and the total mark for the axis at the level of 0.01 significance, and the correlation coefficient between a minimum of 0.743 and a maximum of 0.774, which means the questions of the second axis are internally consistent with their axis, which proves the sincerity of its internal consistency. Through the results of reliability and internal consistency in the previous tables, it is clear to us that the questionnaire is highly reliable.

**Hypothesis testing:** To test the hypotheses of the study, the non-parametrical statistical methods Chi-Square, Man-Whitney, and Kruskal-Wallis, tests have been used.

**There's no significant difference between parent's responses about E-learning effects on children's physical health according to their gender:** We found out the value of  $\text{Sig}=1.00 > 0.05$  which means that we will not reject the null hypothesis: there's no significant difference in means between the gender of parents and the physical health.

**There's no significant difference between parent's responses about E-learning effects on children's psychological health according to their gender:** We found out the value of  $\text{Sig}=0.520 > 0.05$  which means that we will not reject the null hypothesis: there's no significant difference in means between the gender of parents and the psychological health.

**There's no significant difference between parent's responses**

**about E-learning effects on children's physical health according to their child's gender:** We found out the value of  $\text{Sig}=0.793 > 0.05$  which means that we will not reject the null hypothesis: there's no significant difference in means between the gender of the child and the physical health.

**There's no significant difference between parent's responses about E-learning effects on children's physical health according to their child's gender:** We found out the value of  $\text{Sig}=0.128 > 0.05$  which means that we will not reject the null hypothesis: there's no significant difference in means between the gender of the child and the psychological health.

**There's no significant difference between parent's responses about E-learning effects on children's physical health according to educational qualification:** We found out the value of  $\text{Sig}=0.125 > 0.05$  which means that we will not reject the null hypothesis: there's no significant difference in means between the educational qualification and the physical health.

**There's no significant difference between parent's responses about E-learning effects on children's psychological health according to educational qualification:** We found out the value of  $\text{Sig}=0.103 > 0.05$  which means that we will not reject the null hypothesis: there's no significant difference in means between the educational qualification and the psychological health.

**There's a significant difference between parent's responses about E-learning effects on children's physical health according to level of income:** We found out the value of  $\text{Sig}=0.004 < 0.05$  which means that we will reject the null hypothesis and accept that there's a significant difference in means between the level of income and the physical health.

**There's a significant difference between parent's responses about E-learning effects on children's psychological health according to level of income:** We found out the value of  $\text{Sig}=0.002 < 0.05$  which means that we will reject the null hypothesis and accept that there's a significant difference in means between the level of income and the psychological health.

**There's no significant difference between parent's responses about E-learning effects on children's physical health according to type of school:** We found out the value of  $\text{Sig}=0.204 > 0.05$  which means that we will not reject the null hypothesis: there's no significant difference in means between the type of school and the physical health.

**There's no significant difference between parent's responses about E-learning effects on children's psychological health according to type of school:** We found out the value of  $\text{Sig}=0.327 > 0.05$  which means that we will not reject the null hypothesis: there's no significant difference in means between the type of school and the psychological health.

**There's no significant difference between parent's responses about E-learning effects on children's physical health according to health status:** We found out the value of  $\text{Sig}=0.306 > 0.05$  which means that we will not reject the null hypothesis: significant difference in means between the health status and the physical health.

**There's no significant difference between parent's responses about E-learning effects on children's psychological health according to health status:** We found out the value of  $\text{Sig}=0.938 > 0.05$  which means that we will not reject the null hypothesis: there's no significant difference in means between the health status and the psychological health.

**There's a significant difference between parent's responses about E-learning effects on children's physical health according to number of siblings:** We found out the value of  $\text{Sig}=0.000 < 0.05$  which means that we will reject the null hypothesis and accept that there's a significant difference in means between number of siblings and the physical health.

**There's a significant difference between parent's responses about E-learning effects on children's psychological health according to number of siblings:** We found out the value of  $\text{sig}=0.015 < 0.05$  which

means that we will reject the null hypothesis and accept that there's a significant difference in means between number of siblings and the psychological health.

**There's no significant difference between parent's responses about E-learning effects on children's physical health according to the age:** We found out the value of  $\text{sig}=0.236>0.05$  which means that we will not reject the null hypothesis: there's no significant difference in means between age and the physical health.

**There's no significant difference between parent's responses about E-learning effects on children's psychological health according to the age:** We found out the value of  $\text{sig}=0.358>0.05$  which means that we will not reject the null hypothesis: there's no significant difference in means between age and the psychological health.

**There's no significant difference between parent's responses about E-learning effects on children's physical health according to educational phase:** We found out the value of  $\text{sig}=0.695>0.05$  which means that we will not reject the null hypothesis: there's no significant

difference in means between educational phase and the physical health.

**There's no significant difference between parent's responses about E-learning effects on children's psychological health according to educational phase:** We found out the value of  $\text{sig}=0.913>0.05$  which means that we will not reject the null hypothesis: there's no significant difference in means between educational phase and the psychological health.

**There's a relationship between a child's academic level and E-learning:** We found out the value of  $\text{sig}=0.007<0.05$  which means that we will reject the null hypothesis and accept the alternative hypothesis which there's a relationship between a child's academic level and E-learning.

### Likert-Scale analysis

Likert-Scale is a method of measuring responses. The scale adopts on responses indicating the degree of approval or objection to a question (Tables 5-10).

**Table 5.** Degree of approval or objection to a question.

| Moving average    | Direction |
|-------------------|-----------|
| From 1 to 1.66    | Agree     |
| From 1.67 to 2.33 | Neutral   |
| From 2.34 to 3    | Not agree |

**Table 6.** The effect of using e-learning on the physical health of children.

| First axis's                                                                                                                     | Scale     | Agree | Neutral | Not agree | Mean | Std deviation | Direction |
|----------------------------------------------------------------------------------------------------------------------------------|-----------|-------|---------|-----------|------|---------------|-----------|
| Do you think that e-learning led to the child being deprived of physical activities?                                             | Frequency | 175   | 22      | 15        | 1.25 | 0.573         | Agree     |
|                                                                                                                                  | Percent   | 82.5  | 10.4    | 7.1       |      |               |           |
| Do you think that e-learning led to making children more susceptible to obesity diseases (overweight)?                           | Frequency | 129   | 47      | 36        | 1.56 | 0.767         | Agree     |
|                                                                                                                                  | Percent   | 60.8  | 22.2    | 17        |      |               |           |
| Do you think that e-learning has made children more likely to vision problems (due to the frequent use of electronic devices)?   | Frequency | 168   | 33      | 11        | 1.26 | 0.545         | Agree     |
|                                                                                                                                  | Percent   | 79.2  | 15.6    | 5.2       |      |               |           |
| Do you think that e-learning has an effect on movement disorders in children, which affects the normal development of the bones? | Frequency | 94    | 58      | 60        | 1.84 | 0.839         | Agree     |
|                                                                                                                                  | Percent   | 44.3  | 27.4    | 28.3      |      |               |           |
| First axis's                                                                                                                     |           |       |         |           | 1.47 | -             | Agree     |

**Table 7.** The effects of using e-learning on children both socially and psychologically.

| Second axis's:                                                                                                                             | Scale     | Agree | Neutral | Not agree | Mean | Std deviation | Direction |
|--------------------------------------------------------------------------------------------------------------------------------------------|-----------|-------|---------|-----------|------|---------------|-----------|
| Do you think e-learning has a role in losing the instructional incentive and the spirit of competition?                                    | frequency | 145   | 36      | 31        | 1.46 | 0.737         | Agree     |
|                                                                                                                                            | percent   | 68.4  | 17      | 14.6      |      |               |           |
| Do you think that e-learning has a role in losing the child's ability to build new friendships and isolating his self from others?         | frequency | 167   | 31      | 14        | 1.28 | 0.578         | Agree     |
|                                                                                                                                            | percent   | 78.8  | 14.6    | 6.6       |      |               |           |
| Do you think that e-learning has a role in preventing the child from practicing artistic activities such as drawing, painting and artwork? | frequency | 121   | 52      | 39        | 1.61 | 0.78          | Agree     |
|                                                                                                                                            | percent   | 57.1  | 24.5    | 18.4      |      |               |           |
| Do you think that e-learning has a role in the child's exposure to boredom and depression?                                                 | frequency | 141   | 34      | 37        | 1.51 | 0.776         | Agree     |
|                                                                                                                                            | percent   | 66.5  | 16      | 17.5      |      |               |           |
| Second axis's                                                                                                                              |           |       |         |           | 1.46 | -             | Agree     |

**Table 8.** The average mean of both axes is 1.465.

| Chi Square tests   | Value  | d.f | Sig   |
|--------------------|--------|-----|-------|
| Pearson Chi-Square | 14.090 | 4   | 0.007 |

**Table 9.** The nonparametric test of the effect of using e-learning on the physical health of child.

| Independent variable          | Levels of independent variable | Test used      | Sig   | The decision               |
|-------------------------------|--------------------------------|----------------|-------|----------------------------|
| Gender of child               | Girl                           | Mann-Whitney   | 0.793 | Accept the null hypothesis |
|                               | Boy                            |                |       |                            |
| The educational qualification | Secondary                      | Kruskal-Wallis | 0.125 | Accept the null hypothesis |
|                               | Bachelor                       |                |       |                            |
|                               | Postgraduate                   |                |       |                            |
|                               | PhD                            |                |       |                            |
| Level of income for parents   | Less than 5000                 | Kruskal-Wallis | 0.004 | Reject the null hypothesis |
|                               | 5000-10000                     |                |       |                            |
|                               | 10000-50000                    |                |       |                            |
|                               | 50000 and over                 |                |       |                            |
| Gender of parents             | Female                         | Mann-Whitney   | 1     | Accept the null hypothesis |
|                               | Male                           |                |       |                            |

|                    |                                                                                                |                |       |                            |
|--------------------|------------------------------------------------------------------------------------------------|----------------|-------|----------------------------|
| Type of school     | Public school<br>Qur'an memorization school<br>Special education<br>International              | Kruskal-Wallis | 0.204 | Accept the null hypothesis |
| Health status      | Healthy<br>Psychiatric problems<br>Health problems<br>Handicapped                              | Kruskal-Wallis | 0.306 | Accept the null hypothesis |
| Number of siblings | 0<br>1<br>2<br>3 or more                                                                       | Kruskal-Wallis | 0     | Reject the null hypothesis |
| Age of parents     | 25-35<br>36-45<br>46-55<br>55 and over                                                         | Kruskal-Wallis | 0.236 | Accept the null hypothesis |
| Educational stage  | Kindergarten<br>1st to the 3rd grade of primary stage<br>4th to the 6th grade of primary stage | Kruskal-Wallis | 0.695 | Accept the null hypothesis |

**Table 10.** The nonparametric test of the effect of using e-learning on children is socially and psychologically.

| Independent variable          | Levels of independent variable                                                                 | Test used      | sig   | The decision               |
|-------------------------------|------------------------------------------------------------------------------------------------|----------------|-------|----------------------------|
| Gender of child               | Girl<br>Boy                                                                                    | Mann-Whitney   | 0.128 | Accept the null hypothesis |
| The educational qualification | Secondary<br>Bachelor<br>Postgraduate<br>PhD                                                   | Kruskal-Wallis | 0.103 | Accept the null hypothesis |
| Level of income for parents   | Less than 5000<br>5000-10000<br>10000-50000<br>50000 and over                                  | Kruskal-Wallis | 0.002 | Reject the null hypothesis |
| Gender of parents             | Female<br>Male                                                                                 | Mann-Whitney   | 0.52  | Accept the null hypothesis |
| Type of school                | Public school<br>Qur'an memorization school<br>Special education<br>International              | Kruskal-Wallis | 0.327 | Accept the null hypothesis |
| Health status                 | Healthy<br>Psychiatric problems<br>Health problems<br>Handicapped                              | Kruskal-Wallis | 0.938 | Accept the null hypothesis |
| Number of siblings            | 0<br>1<br>2<br>3 or more                                                                       | Kruskal-Wallis | 0.015 | Reject the null hypothesis |
| Age of parents                | 25-35<br>36-45<br>46-55<br>55 and over                                                         | Kruskal-Wallis | 0.358 | Accept the null hypothesis |
| Educational stage             | Kindergarten<br>1st to the 3rd grade of primary stage<br>4th to the 6th grade of primary stage | Kruskal-Wallis | 0.913 | Accept the null hypothesis |

## Conclusion

Parents were agreed that using e-learning has an effect on the physical and psychologically health of children. Parents were agreed that using e-learning has an effect on children socially and psychologically. We found that there's a difference between the child's academics level before and during the Pandemic. There's a difference between parents opinions regarding to the effect of the level of income on the physical and psychological health of the child. There's no difference between parents opinions regarding to their gender and age on the effect of the psychological and physical health of the child. There's no difference between parents opinions regarding to the effect of the educational qualification on the psychological and physical health. There's no difference of e-learning impact regarding to child's gender on the psychological and physical health. There's no difference of e-learning impact on the psychological and physical health regarding to: child's health, child's school type, child's educational phase and child's number of siblings.

## Recommendations

Establishing laboratories specialized in e-learning for kindergartens and elementary schools. Programming the curricula to keep pace with technological development. Holding courses and workshops for teachers. Working more on the edutainment to preserve the child's psyche.

## References

1. Ahmed Mahmoud Abdel-Latif, "E-learning is an effective means for the refinement of higher education." *University of Babylo* (2011).
2. Soha Ali Hosamo, "Study the Reality of E-learning at Tishreen University from the Point of View of Faculty Members and Students." *Damascus University Journal* (2011).
3. Hussein Jadallah Hamayel "Status Quo of E-Learning in the Education Directorates in the Northern Governorates in Palestine." *Dirasat: Educational Sciences* 45 (2018): 197-218.

4. Affouneh, Saida. "The Reality of E-learning at An-Najah Un. and its Role in Achieving the Interaction between Learners from the Point of View of Students of the Faculty of Graduate Studies Faculty of Education Programs and Faculty Members." *Najah National University* (2016).
5. Batoul Abdel-Baqi, "E-learning and its role in promoting some of the different developmental aspects of children from the point of view of students of kindergarten section." *The Arab Journal of Child Information and Culture* (2019).
6. Coman Claudiu, Laurențiu Gabriel Țîru, Luiza Meseșan-Schmitz, and Carmen Stanciu, et al. "Online teaching and learning in higher education during the coronavirus pandemic: Students' perspective." *Sustainability* 12 (2020): 10367.
7. Di Pietro, Giorgio, Federico Biagi, Patricia Costa, and Zbigniew Karpiński, et al. "The likely impact of COVID-19 on education: Reflections based on the existing literature and recent international datasets." *Publications Office of the European Union* (2020): 30275.
8. Alipio, Mark. "Education during COVID-19 era: Are learners in a less-economically developed country ready for e-learning?" *IMCC Journal of Science* 1 (2020): 94-101.
9. Cronbach, Lee J. "Coefficient alpha and the internal structure of tests." *Psychometrika* 16 (1951): 297-334.

**How to cite this article:** Rehan, Jana Majdy, Almutawa, Elham Fahad, Towerib, Shaimaa Ali and Badawi, Amal Tolba. "Statistical Study on the Impact of E-Learning on Childs in Saudi Arabia". *Arts Social Sci J* 12 (2021):005.