

The effectiveness of the WebQuest strategy in improving the level of nutritional and health awareness and acquiring some cybersecurity skills for home economics students during the Corona pandemic

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Abstract

The current study aimed to know the level of nutritional and health awareness, and some cybersecurity skills for students in the Home Economics Department, Faculty of Specific Education, Damietta University during the Corona pandemic. Determine the efficacy of using the WebQuest strategy in developing nutritional and health awareness, and some cybersecurity skills among students during the Corona pandemic. Three hundred female students from the first and second years participated in main study. The scales were prepared to measure the level of the nutritional awareness, health awareness, and awareness of some cybersecurity skills before and after applying the WebQuest strategy to used as data collection tools. The results found that the level of the nutritional and health awareness for protection against the emerging Coronavirus decreased in the pretest, as well as the level of awareness of some cybersecurity skills of the study sample. The results revealed that there are statistically significant differences at ($p \leq 0.01$) between the students' scores average in the pre and post-tests for the nutritional and health awareness in favor of the post-test. There are also statistically significant differences at ($p \leq 0.01$) between the students' scores average the pre and post-tests for some cybersecurity skills in favor of the post-test. These results indicated the effectiveness of the WebQuest strategy. The study stressed the importance of improving the nutritional and health awareness, beside awareness of cybersecurity among university students in the light of Corona pandemic.

Key words: WebQuest - malnutrition - immune system - cybersecurity- Covid-19.

Introduction

Viral infections are the most common infectious diseases and are current triggers for constituting great health and socioeconomic harms (Meo *et al.*, 2020). About 150,989,419 confirmed cases of Coronavirus disease 2019 (COVID-19) caused by the 2019 novel Coronavirus (SARS-CoV-2) have been identified globally, with an estimated 3,173,576 deaths in approximately 150 countries (World Health Organization WHO, 2021). On March 11, 2020, WHO declared the COVID-19 outbreak a pandemic. COVID-19 is a respiratory disease caused by the novel Coronavirus, SARS-CoV-2, which infects respiratory epithelial cells and necessitates ventilatory support in extreme cases (Leung, 2020). COVID-19 affects all age groups, especially elderly and those with pre-existing morbidities such as obesity, diabetes, cardiovascular and respiratory (Dietz & Santos-Burgoa, 2020 and Wu *et al.*, 2020).

Alagawany *et al.* (2020) indicated that the functionality and efficiency of the immune response is the key factor in the protection against viral infections. WHO reports that the immune system requires an adequate supply of many nutrients to function optimally (Calder, 2020). These nutrients include vitamins A, D, C, E, B6, and B12, as well as folate, zinc, iron, copper, and selenium, all of which play critical, often synergistic roles at all stages of the immune response (Gombart *et al.*, 2020).

According to Patel *et al.* (2019) get vitamins A and D supplementation after an influenza vaccination increases pediatric patients' humoral immunity. Vitamin A is needed for normal epithelial tissue differentiation as well as immune cell maturation and function. As a result, vitamin A deficiency is linked to impaired barrier function, altered immune responses, and increased susceptibility to infections (Huang *et al.*, 2018), also increase predisposes to respiratory infections, diarrhea and severe measles (Hu *et al.*, 2018). Vitamin D increases phagocytosis, superoxide generation, and bacterial killing by innate immune cells (Sassi *et al.*, 2018 and Grant *et al.*, 2020). Zemb *et al.*

(2020) reported that vitamin D may fight against acute respiratory infections and promotes the production of antimicrobial peptides (e.g., cathelicidin), also showed that vitamin D deficiency is very common especially during the cold season owing to a lack of sunlight exposure. **Carr and Maggini (2017)** indicated that vitamin C is needed for collagen biosynthesis and is essential for epithelial integrity. It is also involved in leucocyte migration to infection sites, phagocytosis and bacterial killing, natural killer cell involvement, T lymphocyte function, and antibody production. Supplementing with vitamin C has been shown to reduce the duration and severity of upper respiratory tract infections, such as the common cold, particularly in people who are under physical stress (**Hemila, 2017**). **Yoshii et al. (2019)** reported that B vitamins are involved in intestinal immune control, which contributes to gut barrier function, according to research. Vitamins B6 and B12, as well as folate, both promote the activity of natural killer cells and T lymphocytes, which is essential in antiviral defense. Patients with vitamin B12 deficiency had low T lymphocyte counts and natural killer cell function.

Additionally, high doses of selenium had a beneficial effect on the immune response following influenza vaccination (**Ivory et al., 2017**). Besides many micronutrients, herbal therapeutics and probiotics be effective in the treatment and prevention of viral infections (**Mousa, 2017**). **Curtis et al. (2017)** reported that malnutrition severely weakens body's immune systems, raising infection rates and delaying recovery. Protein-energy malnutrition or even subclinical deficiencies of one micronutrient may often impair immune responses (**Jayawardena et al., 2020**). Iron, folate, vitamin A, and zinc deficiencies raise the risk of morbidity and mortality, and also leads to poor growth, cognitive impairment, and perinatal complications. This harms countries' human resources and development prospects. Unhealthy diets also are exacerbating pre-existing pathological conditions such as severe obesity, heart disease, and diabetes, that putting them at greater risk of contracting the Coronavirus (**Pate and Nieuwkoop, 2020**).

When it comes to constructing a healthy society, the importance of health education cannot be overlooked. Where, health education aims to develop in people a sense of responsibility, as an individual, a member of a family, and a community, towards health, both individually and collectively (WHO, 2012). The disease has now become a pandemic, so that requires persons all over the world to take urgent actions to reduce their risk for infection and the spread of the virus. Thus, health awareness provides health-related knowledge to the people for preventing and curing disease. also, food awareness and understanding the basis of proper nutrition are a tool of prevention for so many lifestyle diseases, it allows people to make informed and healthful choices about their meals (Khasawneh *et al.*, 2020).

Most people, especially students depends on browsing Internet to make use of its services in searching for, extracting, analyzing and disseminating information, benefit from the experiences of others, exchange views and ideas among themselves, and take decisions in solving problems. However, statistics indicate that approximately (25%) of the sites that the student reaches are related to the topic that he is searching for, and that about (75%) of the sites are not used from them, but may contribute to wasting time and effort. In addition the large percentage of the findings not related to the research is known as cognitive burden, which leads to impeding short-term memory from carrying out its role and leads to learners not remembering the information they find on the web (Abdelmagid, 2014).

One of the most important strategies related to the internet, and directing learners towards the process of searching for information for scientific, research, and educational purposes and others is the strategy of the WebQuest that called knowledge journeys across the web or learning exploratory journeys (Saleh, 2014). The good knowledge journeys through the web turn the learning process into an enjoyable one, and develops the learners skill of searching through different learning sources with high efficiency and quality (Hammadana and Al-Qatish, 2015). The WebQuest strategy is characterized by helping students in the

learning process by roaming for cognitive trips through the web through customized links prepared by the teacher with supervising, guiding, and guiding learners as they learn (**Shalabi, 2014**). While roaming through the Internet, students may be exposed to opening some unsafe links that expose them to penetrate their computers and phones. So it is important to practice of defending computers, servers, mobile devices, electronic systems, networks, and data from malicious attacks, that also known as cybersecurity, or electronic information security (**Jaborby, 2020**).

Saleh (2014) noticed that despite the different definitions of the WebQuest such as knowledge trips through the web, exploratory learning trips, web searching, web tasks, web search, network query, they all focused on common elements: the existence of an environment an organized web that represents a supportive structure for learning through the use of links to basic resources on the web, the existence of original tasks or real problems that motivate learners to investigate, search and investigate, and participate in collaborative and participatory learning environments among learners in order to create knowledge, build it on their own, achieve meaningful learning, and develop their mental capabilities.

Diab (2016) defined the WebQuest strategy as educational activities that depend on internet searches in order to properly access information in the fastest time and with the least effort. **Effa's (2020)** study findings showed that student's perceptions of incorporating WebQuest strategy had a substantial impact on learning effectiveness for global competitiveness among Open University students in Akwa Ibom State, Nigeria.

As per study of, **Corujo Vélez et al. (2020)** the students were taught by using a WebQuest created by the teacher, these students' learning improved, both in terms of didactic ability and the use of information and communications technology, when an alternative approach to the conventional one was used. According to **Ulu and Ulusoy (2019)** study, there was a substantial increase

in students' posttest grades compared to pretest grades of their reading strategies metacognitive awareness problem solving approach and supporting levels of reading strategies. Besides, it was determined that there was no significant difference but there was an increase between pretest and post-test grades of the level of global reading strategy. It was observed that students using reading comprehension strategies were more successful in practice and use time more efficiently.

Nowadays, the world depends on technology more than ever, therefore, everyone needs a cybersecurity presence whether in institutions, companies, factories, government agencies, and even homes. Cybersecurity provides a strong defense against undesirable attackers for computers, servers, networks, mobile devices, and the data held on these devices (**Al-Subaie and Al-Harbi, 2020**).

The Study Problem

Everyone is talking about Coronavirus. Everywhere we look, especially internet websites; there's a vast amount of information on the virus and how to protect our self from it. Knowing the correct information and truth is important for being adequately informed and protecting our self, families, friends and colleagues (**Khasawneh et al., 2020**). Unfortunately, there is a lot of inaccurate and false knowledge out that are circulating on social media in regard to transmission of the disease. During a health crisis, misinformation leaves citizens unprotected and vulnerable to the disease, as well as spreading anxiety and distrust (**Baines and Elliott, 2020**). Therefore, misunderstandings are often a partial cause of following unhealthy behavioural patterns.

University students represent a wide sector in society and they are among the most educated groups of society. They are at the forefront of the groups that the university is keen on promoting its cognitive and behavioural growth in all aspects, especially the nutritional and health aspect. This group is among the most vulnerable to a state of instability and more likely to be affected by the wrong information which may directly affect on

their nutritional and health status, especially with the spread of the Corona pandemic. Additionally, students may be vulnerable to opening some insecure links when surfing the internet, which exposes them to hacking their computers and phones. So, it is important promoting awareness from cybersecurity and reducing the risks that the student may be exposed to during the exercise of his educational tasks using the internet.

Considering all that, the aim of the present study is answering the following main question: What is the effectiveness of the WebQuest strategy in improving the level of nutritional and health awareness, and acquiring some cybersecurity skills among students of home economics during the Corona pandemic? This main question branches into further questions:

1. What is the level of nutritional awareness for students of home economics to protect against the emerging Coronavirus before applying the WebQuest strategy?
2. What is the level of health awareness for students of home economics to protect against the emerging Coronavirus before applying the WebQuest strategy?
3. What is the effectiveness of using the WebQuest strategy in improving the level of nutritional awareness for students of home economics?
4. What is the effectiveness of using the WebQuest strategy in improving the level of health awareness for students of home economics?
5. What is level of cybersecurity awareness among students of home economics before applying the WebQuest strategy?
6. What is the effectiveness of using the WebQuest strategy in acquiring some cybersecurity skills among students of home economics?

Aim of Study

The present study aimed to know:

1. The level of nutritional awareness for students of home economics to protect against the emerging Coronavirus before applying the WebQuest strategy.

2. The level of health awareness for students of home economics to protect against the emerging Coronavirus before applying the WebQuest strategy.
3. The extent of the effectiveness of using the WebQuest strategy in improving the level of nutritional awareness for students of home economics to confronting the emerging Coronavirus.
4. The extent of the effectiveness of using the WebQuest strategy in improving the level of health awareness for students of home economics to confronting the emerging Coronavirus.
5. The level of cybersecurity awareness among students of home economics before applying the WebQuest strategy.
6. The extent of the effectiveness of using the WebQuest strategy in acquiring some cybersecurity skills among students of home economics.

The Study Hypotheses

In light of the aims and questions of the study, the following hypotheses were formed:

1. There are statistically significant differences at ($p \leq 0.01$) between the mean values of the students' scores in the study sample in the pre and post-tests in improving the level of nutritional awareness to protect against the emerging Coronavirus using the WebQuest strategy, in favor of the post-test.
2. There are statistically significant differences at ($p \leq 0.01$) between the mean levels of the students' scores in the study sample in the pre and post-tests in improving the level of health awareness to protect against the emerging Coronavirus using the WebQuest strategy, in favor of the post-test.
3. There are statistically significant differences at ($p \leq 0.01$) between the mean levels of the students' scores in the study sample in the pre and post-tests in the acquisition of some cybersecurity skills using the WebQuest strategy, in favor of the post-test.

Search Terms

Effectiveness: It is the ability to perform the right actions or determine the desired effect that serves a specific purpose or means the ability to have a decisive effect in the learning time and the expected effect to define the goals for which it was set. This effect is measured by identifying the increase or decrease in the average scores of the sample members in positions within study lab (**Abu Hatab and Sadiq, 2000**). Effectiveness is defined procedurally in this study as the effect of learning using the WebQuest strategy on spreading nutritional awareness and health awareness and acquiring some cybersecurity skills for home economics students, which was identified and measured by the grades of the study sample.

Cognitive journeys strategy through the web: linguistically, the word “Web” means the international network of information (the Internet), and the word “Quest” has its literal meaning Searching For Information, and it means searching for knowledge, so the meaning of Web Quest becomes “searching for information on the Internet.” (**Omar, 2014**). A WebQuest is an inquiry-oriented lesson format in which most or all the information that learners work with comes from the web (**Tchutchulashvili, 2016**). The WebQuest is defined procedurally in this study as a knowledge journey around the world using the Internet to help and participate in the spread of nutritional and health awareness, and the acquisition of some cybersecurity skills for students of home economics, and researching it is directed to most of the information and knowledge that the learner interacts with through an educational site in which all the links And videos related to the cognitive journey.

Cybersecurity or information technology security (IT security): is the protection of computer systems, servers, mobile devices, electronic systems, networks, and data from information disclosure, theft of or damage to their hardware, software, or electronic data, as well as from the disruption or misdirection of the services they provide (**Jaborby, 2020**). Cybersecurity is defined procedurally in this study as instilling awareness of home economics students on ways to protect systems, networks,

programs, and geographic location from digital attacks, through the activation of the WebQuest strategy.

Nutritional Awareness: It is the university student's knowledge and understanding of information related to food and healthy nutrition and the ability to apply this information in daily life permanently so it becomes at the end a habit that directs his abilities to plan integrated and balanced meals which can preserve his health and protect him from diseases; and so, he becomes qualified to teach whomever he is communicating with such information (**Nasreddin, 2016**). Nutritional awareness is defined procedurally in this study as spreading the nutritional awareness of home economics students and their knowledge of foods and nutrients that protect them from infection with the emerging Coronavirus through the activation of the WebQuest strategy.

Health Awareness: It is the realizing of community members to the health information and facts improve the health level of society, teach them how to deal with some diseases and avoid infection with another. Through spreading the correct behaviors and avoiding the wrong methods that negatively affect health in general (**Johnson and Hariharan, 2017**). Health awareness is defined procedurally in this study as the student's ability to access, understand and benefit from health information for herself, her family, and community in ways that enhance the enjoyment of good health and protect them from the risks of infection with the Coronavirus and how to transact with it.

Design and Methods

This study relied on the semi-experimental methodology approach using an experimental design: it is used to measure the effectiveness of the WebQuest as independent variable compared to the other dependant variables nutritional and health awareness, and acquiring some cybersecurity skills. The sample in total was 300 female students of the First and Second year students of Home Economics Department, Faculty of Specific Education, Damietta University, Egypt during the first semester of the academic year 2020/2021. The study tools consist of a scale of

nutritional awareness, a scale of health awareness, and a scale of the acquisition of some cybersecurity skills.

Field Study Procedures

The stage of studying and analysis

1. Being aware of previous studies and research that put modern education strategies into effect, along with e-learning and distance education, which many studies have confirmed their effectiveness in teaching and knowledge acquisition.
2. Defining the general objectives related to activating modern educational methods and strategies in education.
3. Selecting the learning subject and content, which is nutritional and health awareness, and cybersecurity safety skills in light of the Corona pandemic.
4. Analysing the characteristics of the educated students.
5. Analysing of the needs of educated students.

The planning and designing stage

The current study was planned and designed as follows:

1. Analysing the content of the educational material for lessons in nutritional and health awareness, and cybersecurity skills.
2. Formulating learning objectives in the form of behavioural goals.
3. Identifying strategies and learning methods exemplified in the WebQuest strategy.
4. Diversity in the use of multimedia elements, such as video programs, PowerPoint presentations, and ready-made videos.
5. Selection of educational media to be used.
6. Selection of authoring software programs.
7. Designing the educational website. It could be noted that the only female registered students who have a password are allowed entry, and any unregistered person is only able to look at the home page of the educational website.
<https://alfaroksoft.com/REdu>
8. Pretesting.

9. Presenting the content links, videos, and presentations on food awareness, health awareness and cybersecurity safety skills.
10. Post-testing.
11. Analysing and discussing the results.

The stage of building the study tools and materials

Instrument of nutritional awareness scale: It is a scale about the awareness level of immune-enhancing foods during the Corona pandemic among the sample students. The scale consists of 60 phrases which were designed electronically <https://forms.gle/XPvP4nVfRGzJSSx49> and after taking the arbitrators' opinions, an amendment was made and the scale came out in its final form. The validity values were (0.91) and the reliability values of the scale reached (0.90) by calculating the coefficient (Cronbach's Alpha) reached (0.94).

Instrument of health awareness scale: It is a scale about the level of health awareness among the sample students during the Corona pandemic. The scale consists of 60 phrases divided into 5 dimensions, which are the information about the Coronavirus (28 phrases), rules for personal hygiene (12 phrases), rules for communicating with others (9 phrases), rules for safe shopping (10 phrases) and symptoms of Coronavirus infection (One phrase with multiple selections). The scale was designed electronically <https://forms.gle/b4TteSivXRd4M3kq9> and after taking the opinions of the arbitrators, the amendment was made and the scale came out in its final form, and the validity values were (0.89), and the reliability values of the scale reached (0.92) by calculating the coefficient (Cronbach's Alpha) reached (0.95).

Instrument of cybersecurity skills scale: It is scale to know the extent of cybersecurity skills awareness among the sample students. It consists of 80 phrases and was designed electronically <https://forms.gle/4P2KSQRX2gQwPrfh6>. After taking the opinions of the arbitrators, an amendment was made and the scale came out in its final form. The validity values were (0.89), the reliability values of the scale reached (0.93) by calculating the coefficient (Cronbach's Alpha), which reached (0.94).

Interaction design stage

1. Designing the map of sailing
2. Designing the interface.
3. Designing interactions and identifying the patterns of interaction.

Phases of use and implementation

1. The educational materials were prepared from presentations using the *PowerPoint* program, the preparation of videos for explaining the lessons using the *Camtasia studio Recorder 8 program*, and using links to the ready-made videos from *YouTube, World Health Organisation and The Ministry of Health and Population of Egypt*, according to the number of lessons taught to the students of the study sample.
2. Presenting the educational website to a group of specialists, to express their opinions and suggestions.
3. Testing the educational website on a survey sample.
4. The survey study was conducted with the aim of ensuring the validity and reliability of the study instruments.

Survey study on sample

Researchers experimented with the strategy on a survey sample consisting of (15) students from the second year of Home Economics Department, Faculty of Specific Education, Damietta University (2019/2020), who proved their lack of knowledge of learning subjects by applying study instruments at them before learning. The students answered a few of the nutritional and health awareness statements on the scale, and most of them were random answers. As for the cybersecurity skills scale; they reported that they had no experience with it, and the survey sample was excluded from the main sample for experimenting with the study.

The actual implementation phase of the basic experiment

Basic study sample: The basic sample of experimental was consisting of (300) female students from the 1st and 2nd year of

Home Economics department , Faculty of Specific Education, Damietta University, in the first semester of the academic year (2020/2021).

Apply the experimental: Researchers began to apply the study that lasted for a period of two months from the date 1/11/2020 to the date 1/1/2021, divided into 8 study weeks. The first week; introduction and general knowledge about WebQuest strategy, how to deal with the educational website, setting the foundations and standards that will be needed in the learning process, along with the application of pre-tests. The three main topics were taught nutritional awareness, health awareness and cybersecurity skills, then application of post-tests within 7 weeks.

Statistical methods

In this study, the two researchers used the Statistical Packages for Social Sciences SPSS 22 in conducting statistical analyses and the methods used in the study, namely: Cronbage's alpha coefficient, mean and standard deviation, "T" test for independent samples, "T" test for linked (double) samples - the equation of the efficacy ratio.

Results and Discussion

The results will be presented according to the objectives of the study and the hypotheses adopted by the researchers, as well as the study questions as follows:

To answer the first question of the study; What is the level of nutritional awareness for students of home economics to protect against the emerging Coronavirus before applying the WebQuest strategy? Also, to achieve the first goal of the study objectives, the results of the students' responses depended on the nutritional awareness scale. Virtual Average, experimental Average, and the t-test equation for pre-test were applied on one sample and the results were as shown on Table (1).

Through Table (1), T-score for each dimension of the nutritional awareness (76.20) were significance at ($p \leq 0.01$). The results also indicated that, the mean score of the total experimental average for all dimensions of nutritional awareness (86.42 ± 5.17) was less than the virtual average (120) approximately by (34 degrees), which indicates about the reduction in the level of nutritional awareness among the students; it includes unawareness about the foods and drinks that enhance the body's immunity, vitamins and mineral salts that protect the body from disease, including the Corona virus.

These results are in line with study by **El-Gazaly et al. (2019)** who found a decrease in a cognitive food awareness among students of the Faculty of Specific Education in Minia University before illustrated the applying the program. **Al-Qudah, T. (2018)** who investigated dietary awareness level among students of Nutrition and Food Technology program at Mu'tah University. There were statistically significant differences at ($p \leq 0.05$) in the level of nutrition awareness among the students in nutrition and food technology majors at Mu'tah University according to the level of study. The difference in the level of food awareness was increasing with the increase in the academic level from the second to the fourth year. Based on the results of this report, the researcher suggested that nutrition seminars and workshops be held for nutrition and food technology students in order to improve their awareness.

Table (1): Results of the nutritional awareness scale in the study sample during the Corona pandemic before applying the WebQuest strategy

Dimensions of Nutritional Awareness	V. Avg.	Exp. Avg. \pm SD	T-score	P-value
Awareness of immune-boosting foods	56	45.70 \pm 4.40	57.93	0.01
Awareness of immune-boosting vitamins	26	18.14 \pm 3.87	48.72	0.01
Awareness of immune-boosting mineral salts	24	16.87 \pm 3.61	41.26	0.01
Awareness of water intake and immune-boosting drinks	14	10.35 \pm 2.23	36.50	0.01
Total sample	120	86.42 \pm 5.17	76.20	0.01

Exp. Avg: Experimental Average. V. Avg.: Virtual Average.

To answer the second question of the study; What is the level of health awareness for students of home economics to protect against the emerging Coronavirus before applying the WebQuest strategy? Also, to achieve the second goal of the study objectives, the results of the students' responses depended on the health awareness scale. Virtual Average, experimental Average, and the t-test equation for pre-test were applied on one sample and the results were as shown on Table (2).

Health is the other side of life. Life grows and develops with health, but if health is absent Life decayed. The responsibility for maintaining health rests primarily with the individuals themselves, as the individual can display behavioral patterns avoiding the infection of many diseases. The high level of health awareness reduces the possibility of developing diseases, especially the fatal diseases like Coronavirus. In addition to increasing individual productivity rates, reducing medical spending rates (**Abdel Fattah, 2017**). In light of the spread of the Corona pandemic; the societal awareness of citizens by health is represented in the permanent wearing of a muzzle and avoiding large gatherings, as well as permanent cleansing of the hands and body in general, and getting rid of unhealthy habits and traditions such as kisses, hugs and Shake hands.

From data in Table (2), it was revealed that T-score for each dimension of the health awareness (81.36) were significance at ($p \leq 0.01$). The results also showed that, the mean score of the total experimental average for all dimensions of health awareness (91.28 ± 6.24) was less than the Virtual average (130) approximately by (39 degrees), which indicates about the reduction in the level of health awareness among the students; it includes the information about the Coronavirus, rules for personal hygiene, rules for communicating with others, rules for safe shopping and symptoms of Covid-19 infection. Results are in line with **khaled and Yahya (2020)** who found a decrease in the average grade of the students from the school in the pre-test of nutritional and health awareness scale and this confirms the need

for students to study programs to develop their nutritional and health awareness.

Table (2): Results of the health awareness scale in the study sample during the Corona pandemic before applying the WebQuest strategy

Dimensions of Health Awareness	V. Avg.	Exp. Avg. ± SD	T-score	P-value
information about the Corona virus	56	46.42±5.04	69.23	0.01
rules for personal hygiene	24	16.20±4.81	52.45	0.01
rules for communicating with others	18	13.32±5.37	46.84	0.01
rules for safe shopping	20	12.30±4.64	42.26	0.01
symptoms of Covid-19 infection	12	8.14±3.02	30.50	0.01
Total sample	130	91.28±6.24	81.36	0.01

Exp. Avg: Experimental Average. V. Avg.: Virtual Average.

The first hypothesis: There are statistically significant differences at ($p \leq 0.01$) between the mean values of the students' scores in the study sample in the pre and post-tests in improving the level of nutritional awareness to protect against the emerging Coronavirus using the WebQuest strategy, in favor of the post-test. To verify this hypothesis, the results of the experimental Average, and the t-test equation for the pre and post measures were applied on one sample and the results were as shown on Table (3).

The results in Table (3) and Fig. (1) observed the differences between the mean scores of the pre and post application of the nutritional awareness scale during the Corona pandemic, where the experimental average of the sample was (86.42) with a standard deviation (5.17), before applying the WebQuest strategy to develop students' nutritional awareness of foods and drinks that enhance the body's immunity during the Corona pandemic, to reach (149.84) with a standard deviation (3.98) after applying the WebQuest strategy, so the difference

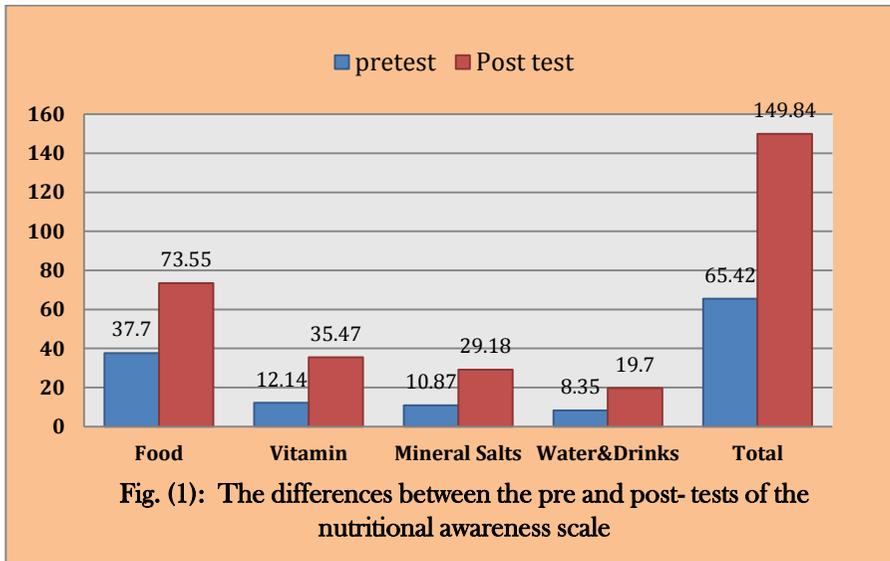
between the two averages becomes (63.42) degrees in favor of the post application. To ensure that this difference is statistically significant at ($p \leq 0.01$), the (T) test was used to measure the significance level of the difference between the mean scores of the students in the study sample and the value of the total T-score was (86.24), which indicates that these differences are due to the effect of the experimental treatment (WebQuest strategy).

Similar results were reported by **El-Gazaly et al. (2019)** who illustrated the impact of a program to develop cognitive food awareness among students of the Faculty of Specific Education in Minia University. They concluded that there is a statistically significant ($p \leq 0.01$) difference between the female students' mean scores in the study group of the cognitive food awareness scale before and after exposure to the program in favor of post-application. **Molhem (2019)** recommended the need to promote health education among students at all educational levels through workshops and educational lectures.

Table (3): The differences between the mean scores of the sample in the pre and post-tests of the nutritional awareness scale

Dimensions of Nutritional Awareness	Measures	V. Avg. \pm SD	T-score	P-value
Awareness of immune-boosting foods	Pre	4.40 \pm 45.70	58.64	0.01
	Post	73.55 \pm 2.68		
Awareness of immune-boosting vitamins	Pre	18.14 \pm 3.87	48.75	0.01
	Post	35.47 \pm 1.24		
Awareness of immune-boosting mineral salts	Pre	16.87 \pm 3.61	43.50	0.01
	Post	29.18 \pm 1.81		
Awareness of water intake and immune-boosting drinks	Pre	10.35 \pm 2.23	29.65	0.01
	Post	19.70 \pm 1.64		
Total sample	Pre	86.42 \pm 5.17	86.24	0.01
	Post	149.84 \pm 3.98		

Exp. Avg: Experimental Average.



The second hypothesis: There are statistically significant differences at ($p \leq 0.01$) between the mean levels of the students' scores in the study sample in the pre and post-tests in improving the level of health awareness to protect against the emerging Coronavirus using the WebQuest strategy, in favor of the post-test. To verify this hypothesis, the results of the experimental Average, and the t-test equation for the pre and post measures were applied on one sample and the results were as shown on Table (4).

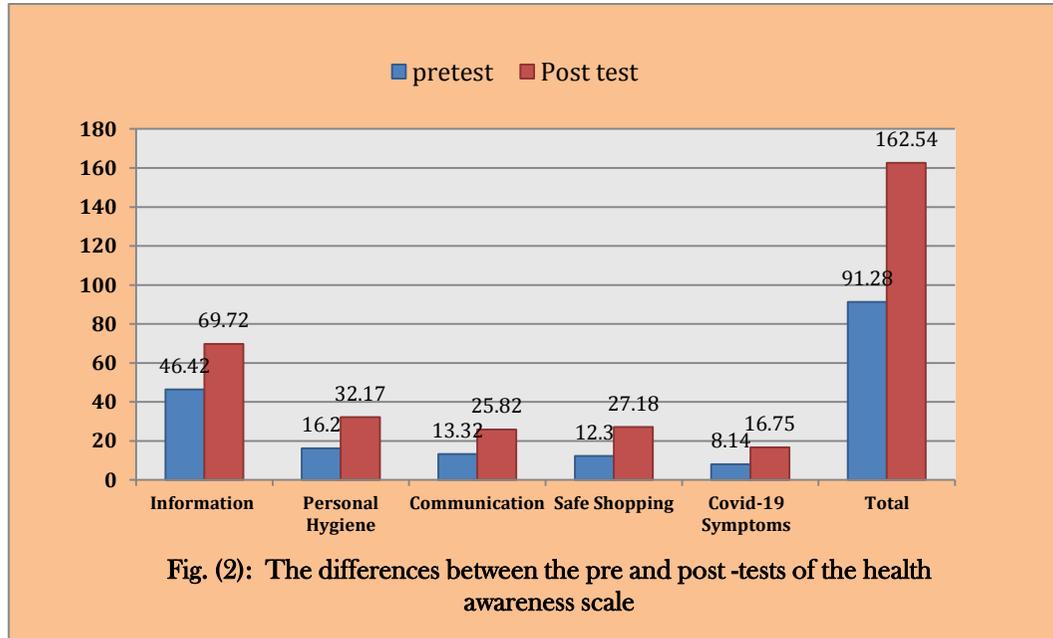
Mullan et al. (2017) pointed that, the health literacy represents the cognitive and social skills which determine the motivation and ability of individuals to gain access to, understand and use information in ways which promote and maintain good health. Additionally, **Spring, (2020)** reported that a health-literate society recognizes both the gravity of the situation and how to protect oneself and others by simple acts. However, it is also the duty of information providers to provide transparent, simple, and understandable information. the responsibility for health literacy is everyone's.

The results in Table (4) and Fig. (2) showed the differences between the mean scores of the pre and post application of the health awareness scale during the Corona pandemic, where the experimental average of the sample was (91.28) with a standard deviation (6.24), before applying the WebQuest strategy to develop students' health awareness during the Corona pandemic, to reach (162.54) with a standard deviation (3.73) after applying the WebQuest strategy, so the difference between the two averages becomes (71.26) degrees in favor of the post application. To ensure that this difference is statistically significant at ($p \leq 0.01$), the (T) test was used to measure the significance level of the difference between the mean scores of the students in the study sample and the value of the total T-score was (90.43), which indicates that these differences are due to the effect of the experimental treatment (WebQuest strategy).

Table (4): The differences between the mean scores of the sample in the pre and post- tests of the health awareness scale

Dimensions of Health Awareness	Measures	V. Avg. \pm SD	T-score	P-value
Information about the Covid-19	Pre	46.42 \pm 5.04	58.04	0.01
	Post	69.72 \pm 3.14		
Rules for personal hygiene	Pre	16.20 \pm 4.81	55.10	0.01
	Post	32.17 \pm 2.21		
Rules for communicating with others	Pre	13.32 \pm 5.37	49.84	0.01
	Post	25.82 \pm 3.06		
Rules for safe shopping	Pre	12.30 \pm 4.64	45.71	0.01
	Post	27.18 \pm 2.89		
Symptoms of Covid-19 infection	Pre	8.14 \pm 3.02	39.62	0.01
	Post	16.75 \pm 2.27		
Total sample	Pre	91.28 \pm 6.24	90.43	0.01
	Post	162.54 \pm 3.73		

Exp. Avg: Experimental Average



Results are in line with **khaled and Yahya (2020)** who showed the effectiveness of the computer program in food culture in developing cognitive achievement, nutritional and health awareness among the sample students.

To answer the fifth question of the study; What is level of cybersecurity awareness among students of home economics before applying the WebQuest strategy? Also, to achieve the fifth goal of the study objectives, the results of the students' responses depended on the cybersecurity skills scale. Virtual Average, experimental Average, and the t-test equation for pre-test were applied on one sample and the results were as shown on Table (5).

From data in Table (5), it was observed that T-score for each dimension of the cybersecurity skills (96.22) were significance at ($p \leq 0.01$). The results also showed that, the mean score of the total experimental average for all dimensions of cybersecurity skills (99.15 ± 6.03) was less than the virtual average (160) approximately by (61 degrees), which indicates about the reduction in the level of cybersecurity skills among the students; it

includes the URL information, internet safe search, data security, file security and safe use of the internet.

These results agree with **Al-Zahrani et al. (2020)** who concluded that there are no statistically significant differences between the targeted individuals despite the difference in demographic data regarding the extent of their awareness of cybersecurity. It also recommended: 1) the continuous development of modern technologies in securing cyberspace, 2) the continuous development of the infrastructure in the field of protecting the cyberspace of vital sectors and qualifying human competencies, 3) the necessity for cooperation between cybersecurity departments, students and researchers to provide academic support.

Table (5): Results of the cybersecurity skills scale in the study sample during the Corona pandemic before applying the WebQuest strategy

Dimensions of Cybersecurity Skills	V. Avg.	Exp. Avg. \pm SD	T-score	P-value
URL information	24	17.61 \pm 4.14	41.12	0.01
Internet safe search	18	10.20 \pm 3.28	32.64	0.01
Data security	30	18.34 \pm 4.91	46.51	0.01
File security	50	36.38 \pm 5.73	68.35	0.01
Safe use of the internet	38	22.61 \pm 4.52	53.02	0.01
Total sample	160	99.15 \pm 6.03	96.22	0.01

Exp. Avg: Experimental Average. V. Avg.: Virtual Average.

The third hypothesis: There are statistically significant differences at ($p \leq 0.01$) between the mean levels of the students' scores in the study sample in the pre and post-tests in the acquisition of some cybersecurity skills using the WebQuest strategy, in favor of the post-test. To verify this hypothesis, the results of the experimental Average, and the t-test equation for the

pre and post measures were applied on one sample and the results were as shown on Table (6).

The results in Table (6) and Fig. (3) showed the differences between the mean scores of the pre and post application of the cybersecurity skills awareness scale during the Corona pandemic, where the experimental average of the sample was (99.15) with a standard deviation (6.03), before applying the WebQuest strategy to develop students' cybersecurity skills during the Corona pandemic, to reach (209.46) with a standard deviation (4.51) after applying the WebQuest strategy, so the difference between the two averages becomes (110.31) degrees in favor of the post application. To ensure that this difference is statistically significant at ($p \leq 0.01$), the (T) test was used to measure the significance level of the difference between the mean scores of the students in the study sample and the value of the total T-score was (112.81), which indicates that these differences are due to the effect of the experimental treatment (WebQuest strategy).

These results agree with **Al-Shahrani et al. (2020)** who concluded that there is a statistically significant difference at the level of significance ($p \leq 0.05$) between the mean scores of the female students in the pre and post test in favor of the post test in promoting the concepts of cybersecurity (e-mail protection - data and information protection - mobile devices security - encryption).

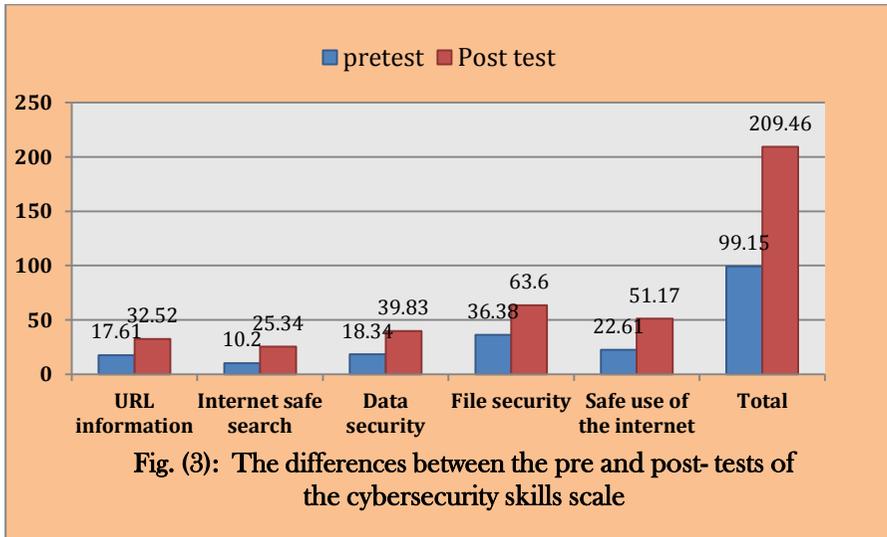
Also, **Al-Subaie and Al-Harbi (2020)** who pointed out that the specialists in the information and technology centers in Saudi universities in the city of Riyadh believe that the most important roles of the information and technology centers in raising awareness of the threat of cyber terrorism are summarized as follows: workshops on cyber terrorism to educate students, coordinate efforts between different systems within the country to raise awareness of the threat of cyber terrorism, activate the role of preventive control against the threat of cyber terrorism through community institutions, and the *National Cybersecurity Authority* accredits awareness programs to address for cyber terrorism. Among the most important recommendations: 1) The necessity of

technically qualifying workers to know how to confront any potential security breach, along with providing specialized training courses in the means of protection for workers. 2) The need to develop security and legal protections through developing security e-government agreements.

Table (6): The differences between the mean scores of the sample in the pre and post-tests of the cybersecurity skills scale

Dimensions of Cybersecurity Skills	Measures	V. Avg. \pm SD	T-score	P-value
URL information	Pre	17.61 \pm 4.14	42.25	0.01
	Post	32.52 \pm 2.94		
Internet safe search	Pre	10.20 \pm 3.28	38.20	0.01
	Post	25.34 \pm 1.55		
Data security	Pre	18.34 \pm 4.91	55.24	0.01
	Post	39.83 \pm 2.67		
File security	Pre	36.38 \pm 5.73	65.71	0.01
	Post	63.60 \pm 2.14		
Safe use of the internet	Pre	22.61 \pm 4.52	54.22	0.01
	Post	51.17 \pm 2.56		
Total sample	Pre	99.15 \pm 6.03	112.81	0.01
	Post	209.46 \pm 4.51		

Exp. Avg: Experimental Average.



Commentary on Search Results

The findings show the effectiveness of the learning method employing the WebQuest strategy is evident in enhancing the ability of the sample students and their motivation towards learning through the results of the nutritional and health awareness scales, and cybersecurity skills acquisition scale. The study shows the need to increase the level of nutritional and health awareness among students in light of the Corona pandemic. In addition to raising awareness and safety in cyber uses, where the WebQuest strategy effected of improving common cyber practices in daily use among students.

Recommendations

In light of the results of the study that have been reached, the two researchers recommend the following:

1. Using the WebQuest strategy to teach the educational curricula, especially in the light of the existing Corona epidemic.
2. Increasing the societal awareness of cyber risks, their causes, and methods of prevention through various means.

3. Directing and teaching students about the correct practices of technology and how to make the greatest use of it.
4. Creating a section inside the university that specializes in "nutritional education" to assist students in improving their nutrition and health knowledge and guiding them to maintain a healthy diet, as well as rectifying certain nutritional and health practices.
5. The importance of introducing nutritional education programs into academic curricula for all students in order to increase both students' and families' nutritional awareness, which eventually benefits society.

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فاعلية استراتيجية الويب كويست في تحسين مستوى الوعي الغذائي والصحي واكتساب بعض مهارات الامن السيبراني لدي طالبات الاقتصاد المنزلي خلال جائحة كورونا

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المخلص:

استهدفت الدراسة الحالية التعرف علي مستوى الوعي الغذائي والصحي وكذلك مستوى الوعي بمهارات الامن السيبراني لدي طالبات الاقتصاد المنزلي بكلية التربية النوعية جامعة دمياط، تحديد مدى فاعلية استخدام استراتيجية WebQuest في تحسين مستوى الوعي الغذائي والصحي وبعض مهارات الأمن السيبراني لدى الطالبات خلال جائحة كورونا (كوفيد-19). اشتملت العينة الرئيسية علي 300 طالبة من الفئتين الاولى والثانية. تم اعداد المقاييس لقياس مستوى الوعي الغذائي والصحي وكذلك الوعي ببعض مهارات الامن السيبراني لاستخدامها كأداة لجمع البيانات قبل وبعد تطبيق استراتيجية WebQuest. أظهرت النتائج أن مستوى الوعي الغذائي والصحي للوقاية من فيروس كورونا المستجد قد انخفض في الاختبار القبلي، كما انخفض مستوى الوعي ببعض مهارات الأمن السيبراني لدى عينة الدراسة. أسفرت النتائج عن وجود فروق ذات دلالة إحصائية عند مستوى ($p \leq 0.01$) بين متوسط درجات الطالبات في الاختبارين القبلي والبعدي للوعي الغذائي والصحي لصالح الاختبار البعدي. كما وجدت فروق ذات دلالة إحصائية عند مستوى ($p \leq 0.01$) بين متوسط درجات الطلاب في الاختبارين القبلي والبعدي لبعض مهارات الأمن السيبراني

لصالح الاختبار البعدي، اشارت النتائج إلى فاعلية استراتيجية WebQuest. وقد اوصت الدراسة بأهمية تحسين الوعي الغذائي والصحي ، إلى جانب تعزيز التوعية بالأمن السيبراني لدى طلبة الجامعات في ظل جائحة كورونا.

الكلمات المفتاحية: الويب كويست - سوء التغذية - جهاز المناعة - الامن السيبراني - كوفيد19