JOURNAL OF CULTURAL ANALYSIS AND SOCIAL CHANGE

Journal of Cultural Analysis and Social Change,
2025, 10(4), 3590-3600
ISSN: 2589-1316

Effectiveness of a Program Based on the Use of Interactive Whiteboards to Develop Health Awareness in Kindergarten Children

Fayza Ahmed Ali Youssef[1*], Ebtesam Soltan Abd ElHamid Ahmed[2]

[1] *Assistant Professor of Early Childhood Education, Department of Kindergarten, College of Education, Najran University, Saudi Arabia, Email: Fayousf@nu.edu.sa*
[2] *Associate Professor, Department of Kindergarten, College of Education, Najran University, Saudi Arabia, Email: esahmed@nu.edu.sa*

***Corresponding Author:** Fayousf@nu.edu.sa

Citation: Youssef, F. A. A., & Ahmed, E. S. A. E. (2025). Effectiveness of a Program Based on the Use of Interactive Whiteboards to Develop Health Awareness in Kindergarten Children, *Journal of Cultural Analysis and Social Change*, 10(4), 3590-3600. https://doi.org/10.64753/jcasc.v10i4.3615

Published: December 24, 2025

ABSTRACT

The current study aims to investigate the effectiveness of using interactive whiteboards to develop health awareness among kindergarten children. A quasi-experimental design was employed, and the study was conducted with (50) boys and girls enrolled in government kindergartens in Najran. The following instruments were used in the study: a pictorial health awareness test (assessing the child's awareness of diseases and their prevention, first aid, and prevention and safety) among kindergarten children. A study investigating the effectiveness of using interactive whiteboards to develop health awareness among kindergarten children yielded the following results: The study found that using interactive whiteboards was effective in developing health awareness among kindergarten children. Statistically significant differences were found at the 0.05 level between the pre- and post-test mean scores of the study sample regarding children's awareness of diseases and their prevention, with the post-test scores being higher, attributed to the use of interactive whiteboards. Statistically significant differences were also found at the 0.05 level between the pre- and post-test mean scores of the study sample regarding children's awareness of first aid, again with the post-test scores being higher, attributed to the use of interactive whiteboards. Finally, statistically significant differences were found at the 0.05 level between the pre- and post-test mean scores of the study sample regarding children's awareness of prevention and safety, again with the post-test scores being higher, attributed to the use of interactive whiteboards. Based on these results, the researchers offered several recommendations: The importance of utilizing interactive whiteboards to develop health concepts among kindergarten children and to make the learning process more enjoyable and engaging. Training courses and workshops were held for kindergarten teachers to raise their awareness of the importance of interactive whiteboards in developing health concepts in kindergarten children and to teach them how to use them in various educational situations. It is essential to educate kindergarten children about healthy habits through the use of diverse methods.

Keywords: Interactive Whiteboard, Health Awareness, Kindergarten Child

INTRODUCTION

Kindergarten is one of the most important educational stages, during which the foundations of personality are laid and children's cognitive, motor, and social skills are developed. Modern educational trends emphasize the importance of investing in this stage by providing rich and engaging learning experiences that support the child's development in all areas. It is considered one of the most crucial age groups during which the features of a child's intellectual, sensory, and motor development are formed, thus requiring the provision of rich and stimulating

educational activities that contribute to developing the various skills necessary for this growth. Child health is of paramount importance. Health awareness is a tool for promoting health and a crucial factor in helping individuals enjoy well-being. It represents a cornerstone for positive change in the behavior of individuals and communities, especially since achieving health for society as a whole relies on health education before it depends on mere promotion. This was emphasized by Moussa (2020), who added that there is an urgent need to focus on raising and educating children in a sound health-conscious manner, not merely providing them with health information, but aiming to change their behaviors, attitudes, and habits that are harmful to health into behaviors, attitudes, and habits that lead them to maintain their health. The kindergarten's responsibility is evident in providing this. Marzouq (2018) also emphasized that health awareness is the first line of defense against disease and is necessary for both healthy and sick individuals. It constitutes one of the most important preventive steps for healthy people and plays a role in achieving recovery and avoiding complications for sick people. It can be said that many health problems that people experience are primarily due to unhealthy behaviors practiced by children in their daily lives (Kobel et al., 2017). Azouz (2020) also pointed out that the medical achievement increases the importance of changing lifestyles and individual behavior, which consequently increases the importance of the preventive approach in health care, because merely providing curative health services will not achieve health in any society. On the contrary, diseases resulting from the imbalance in lifestyles and the failure to avoid sources of disease will increase due to the ignorance of those affected or the failure to deliver the correct health message to them. Mar'i Al-Hila (2017) emphasized the necessity of promoting health in kindergartens through a program titled "Join the Healthy Boat." After implementing the program, children in the control group showed improved physical performance and a better understanding of healthy behaviors. Therefore, developing health awareness has become an urgent societal necessity in the current circumstances, to help children improve their behaviors in a way that preserves their health and protects them from the negative impacts of health awareness. Education is of paramount importance in human life; it is the primary driver of societal development and the building of civilization. A society cannot progress and advance without educating and training its individuals. The strength of a society lies in its educated members, who are its foundation and power. As a result of the emergence of rapid and modern means of communication and transportation, it has become imperative for schools to contribute updated and advanced information and knowledge, and to offer solutions to the problems that have accompanied scientific and technological progress. Furthermore, the use of computers in educational institutions has expanded to the point where they have become a preferred means of transferring knowledge to recipients in less time and with less effort. The use of computers in the educational process has led us to utilize numerous technological devices. Modern technology, and the interactive whiteboard, is one of the most prominent of these devices and a product of the technological advancements the world is experiencing today. Therefore, we must invest in this technology in our educational institutions to enhance the educational process and facilitate knowledge exchange, in order to build a generation capable of facing challenges with its accumulated scientific knowledge (Hussein, 2011).

The interactive whiteboard offers numerous benefits that support the educational process and facilitate learning for both teachers and students. Some of these benefits include:

- The interactive whiteboard makes it easier for teachers to teach complex concepts and facilitate student understanding by providing visual aids and enabling interactive presentations using simulations.
- The interactive whiteboard plays a vital role in supporting learning by helping students understand problems, gather relevant information, organize it, and develop a learning plan.
- The interactive whiteboard accelerates the learning process due to its various capabilities, such as the ability to review previous lessons, whether by referring to earlier pages of the same lesson or other lessons.
- It provides absent students with a copy of the lesson explanation, complete with all details, through the file stored on the interactive whiteboard.
- The interactive whiteboard allows for page-turning, providing flexibility and seamless transitions between learning points.
- The interactive whiteboard helps manage the classroom by capturing student attention and increasing interaction within the lesson, both among students and between the teacher and students. Hallam also emphasized that there is a continuing need for more applied studies comparing traditional methods with modern methods, such as the use of smart boards, to develop concepts in kindergarten children, which is what the current research seeks to address. Therefore, many studies have explored the impact of integrating technology into early learning environments, but most of them have focused on general academic achievement or the development of some linguistic and cognitive skills.

The Problem of the Study

There are many reasons that encouraged researchers to investigate the development of health concepts in kindergarten children. Through our work as supervisors of early childhood students in practical education, we

observed behaviors indicating a low level of children's awareness of the health concepts necessary to protect them from health risks and problems. This was compounded by teachers' reliance on traditional methods and approaches to developing these concepts. Furthermore, reviewing previous studies that addressed the development of health concepts in kindergarten children and the use of educational videos confirmed that most of them emphasized the low level of health awareness in kindergartens due to the use of traditional methods. This negatively impacted the children's understanding of health concepts. The World Health Organization (WHO) (2020) recommended the necessity of health awareness in all aspects of life, which helps reduce the incidence of emerging diseases (http://www.who.int). With rapid technological advancements, interactive technologies such as smart boards have become prominent tools used to develop teaching methods at various levels, including kindergartens. Smart boards are distinguished by their ability to integrate various elements. Sound, image, and movement create an engaging and stimulating learning environment for children, increasing their motivation to learn compared to traditional methods based on rote learning and abstract theoretical presentation (Mohammed Al-Muzaini (2018), Beauchamp & Kennewell, 2010). Researchers observed, through their observations in numerous kindergartens, the passion and love kindergarten children have for using modern technology of all kinds, and their great curiosity in dealing with it. Therefore, they considered how to utilize this curiosity to develop health awareness in kindergarten children. Furthermore, studies by Abdul Aziz (2016) and Aloraini (2012) confirmed that the smart board provides an interactive environment that allows the teacher and child to directly engage with educational content through touch, sight, and sound, thus increasing children's motivation to learn and enhancing their skill acquisition more effectively compared to traditional methods. Mohammed Al-Muzaini (2018) also emphasized that the smart board provides a stimulating educational environment that combines visual, auditory, and kinetic presentations, making the learning process more dynamic and enjoyable for children. The research problem can be formulated.

Research Questions

What is the effectiveness of using an interactive whiteboard in developing health awareness among kindergarten children?

This Leads to the Following Questions

Are there statistically significant differences at the 0.05 level between the mean scores of the study sample in the pre- and post-tests of children's awareness of the concept of diseases and their prevention, attributable to the use of the interactive whiteboard?

Are there statistically significant differences at the 0.05 level between the mean scores of the study sample in the pre- and post-tests of children's awareness of the concept of first aid, attributable to the use of the interactive whiteboard?

Are there statistically significant differences at the 0.05 level between the mean scores of the study sample in the pre- and post-tests of children's awareness of the concept of prevention and safety, attributable to the use of the interactive whiteboard?

RESEARCH METHODOLOGY

The current study adopted a quasi-experimental approach using a single-group experimental design to measure the effectiveness of the interactive whiteboard in developing health awareness among kindergarten children. This was achieved through pre- and post-testing, comparing the results of the two tests, and measuring the statistical significance of the differences between them.

Study Limitations

Spatial Limitations: The study was conducted with kindergarten children enrolled in a government-run kindergarten affiliated with the Early Childhood Education Department in Najran.

Personal Limitations: The study sample consisted of kindergarten children enrolled in a government-run kindergarten affiliated with the Early Childhood Education Department in Najran.

Temporal Limitations: The study was conducted during the first semester of the academic year 1447 AH.

Thematic Limitations: The study focused on the use of the interactive whiteboard in developing health awareness (children's awareness of diseases and their prevention, first aid, and safety and prevention) among kindergarten children.

Research Sample

The study sample consisted of a random sample of 50 kindergarten children enrolled in a government-run kindergarten affiliated with the Early Childhood Education Department in Najran.

Study Terminology

Interactive Whiteboard

Campbell (2010) defined it as: "A large white screen connected to a computer, which can be touch-screened or written on with a special pen. It can also be used to display information on the computer screen clearly to all students in the class".

The researchers define it operationally as: a special type of interactive, touch-sensitive whiteboard that can be operated by touch or stylus and on which writing is done electronically. It can also be used to display various computer applications. It does not operate independently but rather through connection to a computer and a data projector. (To develop a child's awareness of diseases and their prevention - First aid - Prevention and safety) in kindergarten children.

Health Awareness

Malham (2019) defined it as: "The extent to which individuals of all categories know the importance of avoiding dangers and means that threaten their health and protect them from all diseases that may afflict humans".

The researchers define it operationally as: the extent to which an individual understands basic health information that affects their health and leads to the formation of healthy ideas, practices, and attitudes that motivate and convince them to practice sound health habits in various life situations. The areas of health awareness are diverse, encompassing (children's awareness of diseases and their prevention, first aid, and prevention and safety) among kindergarten children.

RESEARCH TOOLS AND MATERIALS

Research Tools

- A pictorial health awareness test for kindergarten children, covering the following topics: (children's awareness of diseases and their prevention, first aid, and prevention and safety).

The scale was developed according to the following steps: Defining the test objective: The effectiveness of a program based on the use of interactive whiteboards in developing health awareness among kindergarten children. The researchers relied on the following sources to develop the test: research and studies that addressed early childhood development and its philosophies, interactive whiteboards, and health awareness. The test consists of three main sections: the first section is on the child's awareness of diseases and their prevention, and it comprises eight (8) statements; the second section is on first aid, and it also comprises eight (8) statements; and the third section is on prevention and safety, and it also comprises eight (8) statements. The total number of statements across the three sections is 24. Children answer by circling the appropriate answer. The test is scored in this way: if the child chooses the correct answer, they receive one (1), and if they choose the incorrect answer, they receive zero (0). The total score for the test is 24. Before beginning the test, the instructions are formulated for the children, explaining the concept of the test in the simplest possible terms, how to answer its questions, and providing an example of how to answer the test questions.

To ensure the validity of the initial version of the test, the researchers confirmed its suitability by calculating the psychometric properties of the scale and its items. This was done by calculating the validity and reliability of the study instrument (the Pictorial Health Awareness Test for Kindergarten Children, which includes the following sections: Children's Awareness of Diseases and Their Prevention, First Aid, and Prevention and Safety).

Validity and Reliability of the Research Instrument (A Pictorial Test for Measuring Health Awareness in Kindergarten Children).

Results of Internal Consistency Validity of the Test

To verify internal consistency validity, correlation coefficients were calculated between the scores of each test question and the total scores for the dimension to which the question belongs. The results are shown in Table (1):

Table (1): Shows the correlation coefficients between the scores of each test question and the total scores for the dimension to which the question belongs

Child's Awareness of Diseases and Their Prevention		First Aid		Prevention and Safety	
N	Correlation coefficient	N	Correlation coefficient	N	Correlation coefficient

1	**0.628	9	**0.654	17	**0.533
2	**0.482	10	**0.624	18	**0.648
3	**0.711	11	**0.671	19	**0.487
4	**0.716	12	**0.642	20	**0.745
5	**0.709	13	**0.747	21	**0.62
6	**0.881	14	**0.47	22	**0.737
7	**0.881	15	**0.663	23	**0.655
8	**0.628	16	**0.712	24	**0.82

**Statistically significant at the (0.01) level

Table (1) shows the correlation coefficients between the score of each test question and the total score for the dimension to which the question belongs. These coefficients ranged from (0.470 – 0.881), and all were statistically significant. Therefore, the test questions are considered valid for what they were designed to measure.

Construct Validity Results

To verify the construct validity of the test, the correlation coefficients were calculated between the total score for each dimension and the total test score. The results are shown in Table (2):

Table (2): Shows the correlation coefficients between the total score for each dimension and the total test score.

Aspects	Correlation coefficient
Child's Awareness of Diseases and Their Prevention	**0.856
First Aid	**0.712
Prevention and Safety	**0.708

**Statistically significant at the (0.01) level

Table (2) shows the correlation coefficients between the total score for each dimension and the total test score, which were (0.856, 0.712, and 0.708), respectively. All of these coefficients are statistically significant, indicating the validity and homogeneity of the test dimensions.

Reliability Results for the Test and its Dimensions.

The reliability of the test and its dimensions was verified using Cronbach's alpha coefficient, and the results are shown in Table (3).

Table (3): Shows the reliability coefficients for the test and its dimensions

Cronbach's alpha coefficient	N	Aspects
0.857	8	Raising children's awareness of diseases and their prevention
0.803	8	First aid
0.811	8	Prevention and safety
0.882	**20**	Total grade

Table (3) shows the reliability coefficients for the test and its dimensions, which were (0.857, 0.803, 0.811) respectively. The overall reliability coefficient for the test was (0.882), which are acceptable reliability rates, giving the researcher confidence in the test results.

Difficulty and Ease Indices and Discrimination Index for the Test Questions.

Table (4): Shows the difficulty and ease indices and discrimination index for the test questions

Discrimination index	**Ease index**	**Difficulty index**	N	Aspects
0.53	0.73	0.27	1	Raising children's awareness of diseases and their prevention
0.47	0.77	0.23	2	
0.73	0.63	0.37	3	
0.53	0.73	0.27	4	

0.67	0.67	0.33	5	
0.60	0.70	0.30	6	
0.60	0.70	0.30	7	
0.53	0.73	0.27	8	
0.60	0.70	0.30	9	First aid
0.60	0.70	0.30	10	
0.67	0.67	0.33	11	
0.67	0.67	0.33	12	
0.73	0.63	0.37	13	
0.67	0.67	0.33	14	
0.73	0.63	0.37	15	
0.87	0.57	0.43	16	
0.67	0.67	0.33	17	Prevention and safety
0.73	0.63	0.37	18	
0.47	0.77	0.23	19	
0.60	0.70	0.30	20	
0.67	0.67	0.33	21	
0.87	0.57	0.43	22	
0.60	0.70	0.30	23	
0.53	0.73	0.27	24	

Table (4) shows the following:

-The difficulty indices for the test questions ranged between (0.23 – 0.43), and the ease indices ranged between (0.57 – 0.77). Bloom (1971) indicates that a test is considered good if the average difficulty of its items ranges between (0.20 – 0.80) (Bloom, 1971: 66). Items whose difficulty exceeds (0.80) or falls below (0.20) need to be modified or removed from the test to make it suitable (Al-Zaher et al., 2002: 128-129), (Al-Zubaidi et al., 1981, p. 77.(

-The discrimination indices for the test questions ranged between (0.47 – 0.87), and an item is considered good if its discrimination power is (0.30) according to the Ebel standard. (1972), which indicates that an item is considered good if its discriminatory power is (0.30), and the higher the positive discriminatory index of the item, the better the item (Al-Nabhan, 2004, p. 434), indicating that the discriminatory power of the test items is appropriate.

Study Material:

- Second: The Effectiveness of Using the Interactive Whiteboard in Developing Health Awareness in Kindergarten Children

The program was implemented on an experimental group consisting of 50 boys and girls enrolled in kindergartens.

The program aims to identify the effectiveness of a program based on the use of the interactive whiteboard in developing health awareness in kindergarten children. The researchers relied on the following sources: research and studies that addressed early childhood and its philosophies, as well as studies that addressed the interactive whiteboard and health awareness, research and studies that addressed how to prepare a program for children, and research and studies that addressed how to prepare a program for children. The program duration is 6 weeks, with 2 days per week and two sessions per day. From March 29, 1447 AH to May 12, 1447 AH

Program Content

The program consists of a series of sessions designed to develop health awareness among kindergarten children in Najran. The researchers developed the program, which includes (24) sessions covering topics such as disease awareness and prevention, first aid, and safety. The program was implemented with 50 kindergarten children. The researchers employed various strategies and assessment methods (pre-test, formative assessment, and post-test).

Program Validity

The program was presented to a panel of nine (9) expert reviewers to gather their feedback on the program's activities, their suitability for the age group, and their alignment with the objective. Based on the reviewers' opinions, the necessary modifications were made. The program was then finalized and ready for implementation with the study sample.

The Practical Procedures for Conducting the Study Included the Following

After completing the pre-test of the research instrument, the researchers implemented the program from March 29, 1447 AH to May 12, 1447 AH with the experimental group. The program lasted six weeks, with two sessions per week, each day consisting of two sessions.

Steps of the study procedure: - Reviewing previous studies related to the research topic to prepare the theoretical framework, literature review, and research instruments.

- Developing the research instrument, a pictorial health awareness test for kindergarten children, after consulting with specialists and a language editor to ensure its suitability, correct wording, validity, and reliability. - The Early Childhood Education Department was contacted to facilitate the researchers' application of the study tools and materials to kindergarten children.
- A pilot sample of 30 children was selected to administer the test and ensure its validity and reliability.
- The test was administered to the main sample of 50 kindergarten children in Najran.
- An interactive whiteboard-based program was developed to enhance health awareness among kindergarten children. This program was implemented with the study sample.
- After the program was implemented with the study sample, a pictorial health awareness test was administered to assess the level of health awareness among the kindergarten children.
- The data was tabulated and coded in the SPSS statistical analysis program in preparation for analysis.
- The data was statistically analyzed to answer the study questions.

Interpreting and discussing the results, and writing recommendations and suggestions.

Statistical methods used:

- The researcher used the Statistical Package for the Social Sciences (SPSS 25) to conduct the statistical analyses and employed the following statistical methods:
- Pearson's correlation coefficient to measure internal consistency and construct validity.
- Cronbach's alpha coefficient to measure test reliability.
- Arithmetic mean and standard deviation.
- Paired samples t-test to measure the significance of differences between the pre-test and post-test.
- McGuigan's power ratio to measure the effectiveness of the proposed program.

STUDY RESULTS

Answering The Main Research Question

The main question states: "What is the effectiveness of a program based on the use of interactive whiteboards in developing health awareness among kindergarten children?" To answer the main question, the paired samples t-test was used, and McGuigan's efficacy ratio equation, which set the ratio (0.6) to judge efficacy, was used. The results were as shown in Table (1):

Table (1): Significance of differences between the mean scores of the children in the research sample in the pre- and post-tests of the pictorial test for measuring health awareness in kindergarten children.

Measure	M	St-dev	T test			Max grade	Gain
			T	df	$\propto$		
Pre-test	8.06	1.80	37.97	49	0.001	24	0.779
Post-test	20.48	1.72					

Table (1) shows the results of the t-test for the significance of the differences between the mean scores of the children in the research sample in the pre- and post-tests of the pictorial test for measuring health awareness in kindergarten children. The mean score of the children in the research sample was (8.06) in the pre-test and (20.48) in the post-test. The t-value was (37.97) and the significance level was (0.001), indicating a statistically significant difference between the two measurements in favor of the post-test. The effectiveness ratio was (0.779), which is greater than (0.6), indicating that the program based on the use of the interactive whiteboard, which the researcher used, was effective and led to the development of health awareness in kindergarten children. The results of the current study are consistent with the study by Hall, I., & Higgins, S., 2005. It helps in classroom management by attracting learners' attention and increasing interaction within the classroom. It allows learners to participate actively by touching or writing on the whiteboard. The ability to instantly repeat content to enhance understanding is a key factor. Researchers attribute these results to the variety of activities offered through the interactive whiteboard, which fosters children's health awareness, its appeal and enjoyment in viewing and using it, its ability to present concepts in a way that children understand, and the diversity of assessment methods employed. A statistically significant difference was found between the two measurements.

Answer to the First Sub-Question of the Research:

The first sub-question states: "Are there statistically significant differences at the significance level (≤ 0.05) between the mean scores of the children in the research sample in the pre- and post-tests of children's awareness of diseases and their prevention, attributable to the use of the interactive whiteboard"?

To answer this question, the paired samples t-test and McGuigan's efficacy ratio equation were used, which set the ratio (0.6) to judge efficacy. The results are shown in Table (2):

Table (2): Significance of the differences between the mean scores of the children in the research sample in the pre- and post-tests of children's awareness of diseases and their prevention

Measure	M	St-dev	T test			Max grade	Gain
			T	df	$\propto$		
Pre-test	2.66	0.96	21.88	49	0.001	8	0.783
Post-test	6.84	0.87					

Table (2) shows the results of the t-test for the significance of the differences between the mean scores of the children in the research sample in the pre- and post-tests of their awareness of diseases and their prevention. The mean score of the children in the research sample was (2.66) in the pre-test and (6.84) in the post-test. The t-value was (21.88) and the significance level was (0.001), indicating a statistically significant difference between the two measurements in favor of the post-test. The effectiveness ratio was (0.783), which is greater than (1.2), indicating that the program based on the use of the interactive whiteboard, which the researcher used, was effective and led to the development of awareness of diseases and their prevention among the kindergarten children.

The results of the current study are consistent with those of study 5 (Betcher, C., & Lee, M., 2000), which demonstrated that teachers can use multimedia (images, video, and audio) to attract learners' attention. Simplifying abstract concepts through illustrations and simulations helps. The researchers attribute these results to the variety of activities presented through the interactive whiteboard, its appeal and enjoyment in viewing and using it, its ability to embody concepts in a way that children understand, and the diversity of assessment methods employed. The second sub-question of the research:

The second sub-question asks: "Are there statistically significant differences at the significance level (≤ 0.05) between the mean scores of the kindergarten children in the research sample in the pre- and post-tests of children's awareness of the concept of first aid, attributable to the use of the interactive whiteboard?" To answer this question, the paired samples t-test and McGuigan's efficacy ratio equation were used, which set the ratio (0.6) for determining efficacy. The results came as shown in Tables (3):

Table (3): Significance of the differences between the average scores of the children in the research sample in the pre- and post-measurements of the child's awareness of the concept of first aid

Measure	M	St-dev	T test			Max grade	Gain
			T	df	$\propto$		
Pre-test	2.54	0.96	24.08	49	0.001	8	0.791
Post-test	6.86	0.87					

Table (3) shows the results of the t-test for the significance of the differences between the mean scores of the children in the research sample in the pre- and post-tests of their awareness of the concept of first aid. The mean score of the children in the research sample was (2.54) in the pre-test and (6.86) in the post-test. The t-value was

(24.08) and the significance level was (0.001), indicating a statistically significant difference between the two measurements in favor of the post-test. The effectiveness ratio was (0.791), which is greater than (0.6), indicating that the interactive whiteboard program used by the researcher was effective and led to the development of awareness of the concept of first aid among the kindergarten children.

The results of the current study are consistent with those of the study by Sheikha Al-Zoubi (2011), which confirmed that interactive whiteboards offer numerous benefits that support the educational process and motivate children to learn more in an enjoyable and engaging way, without boredom. Connecting them to the internet facilitates immediate access to external resources. The researchers attribute these results to the diversity of activities offered through the interactive whiteboard, which fosters children's health awareness; its appeal and enjoyment in viewing and using it; its ability to present concepts in a way that children understand; and the variety of assessment methods employed.

Answer to the Third Sub-Question of the Research

The third sub-question asks: "Are there statistically significant differences at the significance level (≤ 0.05) between the mean scores of the kindergarten children in the research sample in the pre- and post-tests of children's awareness of the concept of prevention and safety, attributable to the use of electronic stories?" To answer this question, a paired-samples t-test and McGuigan's efficacy ratio equation were used, which set the ratio (0.6) for judging efficacy. The results are shown in Table (4):

Table (4): Significance of differences between the mean scores of the children in the research sample in the pre- and post-tests of the child's awareness of the concept of prevention and safety

Measure	M	St-dev	T test			Max grade	Gain
			T	df	$\propto$		
Pre-test	2.86	0.97	18.20	49	0.001	8	0.763
Post-test	6.78	1.06					

Table (4) shows the results of the t-test for the significance of the differences between the mean scores of the children in the research sample in the pre- and post-tests of their awareness of the concept of prevention and safety. The mean score of the children in the research sample was (2.86) in the pre-test and (6.78) in the post-test. The t-value was (18.20) and the significance level was (0.001), indicating a statistically significant difference between the two measurements. This suggests that the interactive whiteboard program used by the researchers was effective and led to the development of awareness of the concept of prevention and safety among the kindergarten children.

The results of the current study are consistent with those of Levy, P. (2002), which confirmed that interactive whiteboards contribute to increasing learners' experience and their ability to present lessons in an engaging and attractive manner. This, in turn, helps to stimulate learners' motivation and encourages them to learn more. The researchers attribute these results to the diversity of activities offered through interactive whiteboards for developing children's health awareness, their appeal and enjoyment in viewing and using them, their ability to present concepts in a way that children understand, and the variety of assessment methods employed.

STUDY RECOMMENDATIONS

Based on the study's results and theoretical framework, the following recommendations can be made:

- The necessity of utilizing interactive whiteboards to develop health concepts for kindergarten children and to make the learning process more enjoyable and engaging.
- Conducting courses and workshops for kindergarten teachers to raise their awareness of the importance of interactive whiteboards in developing health concepts for kindergarten children and to teach them how to use them in different educational situations.
- The necessity of educating kindergarten children about healthy habits through the use of diverse methods.

STUDY SUGGESTIONS

- In light of the objectives and findings of the current study, a number of potential extension studies can be proposed:
- The effectiveness of using interactive whiteboards in developing social concepts in kindergarten children.
- The effectiveness of using interactive whiteboards in developing mathematical concepts in kindergarten children.

- The effectiveness of using interactive whiteboards in developing linguistic concepts in kindergarten children.

ACKNOWLEDGMENT

The authors are thankful to the Deanship of Graduate Studies and Scientific Research at Najran University for funding this work under the Growth Funding Program grant code (NU/GP/SEHRC/13/734-7).

REFERENCES

Al-Zoubi, Sheikha Mohammed Sagheer (2011): The Effect of an Interactive Whiteboard-Based Educational Program on the Academic Achievement of Fifth-Grade Students in Science in Kuwait. [Master's Thesis[. Kuwait University.

Saeed, Ali Abdel-Moez Moussa (2020) Designing Educational Activities and Measuring Their Effectiveness in Developing Some Health Awareness Concepts and Behaviors Among Kindergarten Children in Informal Settlements, Journal of the Faculty of Kindergarten, Port Said University, (17).

Shaheen, Abdel-Hamid Hassan (2011) Advanced Teaching Strategies, Learning Strategies, and Learning Styles. Retrieved from https://www.slideshare.net/KamalNaser/ss-47506664 Window

Abdel-Aziz, Naglaa (2016): The Effectiveness of Using the Smart Board in Improving Achievement and Developing Skills Among Kindergarten Children, Journal of Childhood Studies, Ain Shams University, 19(3), 55-89.

Abdel-Karim, Maha; Barghout, Marwa Al-Tawil and Saeed (2020): A Proposed Strategy for Teaching Rhythmic Solfège Using the Smart Board, Journal of Specific Education, (13), January 2021.

Azzouz, Houda Mohamed El-Sayed (2020): Public Reliance on Social Media in Developing Health Awareness During the Coronavirus Pandemic, Journal of Environmental and Energy Research, 9 (15).

Mohamed Al-Muzaini (2018): The Effectiveness of the Interactive Whiteboard in Developing Educational Skills Among Kindergarten Children, Journal of Specific Education, Mansoura University 2(19), 112-138

Marzouq, Samira (2018): The Importance of Health Culture: A Field Study, Al-Hikma Journal for Social Studies, Kunooz Al-Hikma Foundation for Publishing and Distribution, Algeria, (15)

Marai, Tawfiq Al-Hila Mahmoud (2017): Individualized Education. Amman, Jordan: Dar Al-Fikr for Publishing and Distribution.

Malham, Imran Abdel-Qader. (2019) The level of health awareness among students of Mu'tah University, Educational Sciences Studies.

. Betcher, C., & Lee, M. (2009). The Interactive Whiteboard Revolution: Teaching with IWBs. Camberwell: ACER Press.

Beauchamp, G., & Kennewell, S. (2010). Interactivity in the classroom and its impact on learning. Computers & Education, 54(3), 759-766

Campbell, C. (2010). Interactive whiteboards and the first-year experience integrating. IWBS into pre-service teacher education, Australian Journal of teacher education, 35, (6).67-75.

Elbyaly, M. Y. H., & Elfeky, A. I. M. (2023). The Effectiveness Of Project-Based Learning On Enhancing The Critical Thinking Skills Of Optimal Investment Students. Annals of Forest Research, 66(1), 1595-1606.

Elfeky, A. I. M., & Elbyaly, M. Y. H. (2023). The impact of augmented reality technology on developing hand embroidery skills among students of the college of education. Annals of Forest Research, 66(1), 1584-1594.

Elbyaly, M. Y. H., & Elfeky, A. I. M. (2023). FLIPPED CLASSROOM: ENHANCING FASHION DESIGN SKILLS FOR HOME ECONOMICS STUDENTS. European Chemical Bulletin, 12(Special Issue 6), 6559-6566.

Elfeky, A. I. M., Hassanein, M. S. E. A. A., Zayed, A., Mohamed, A. A. S., & Elbyaly, M. Y. H. (2025). How Project-Based Learning Improves Critical Thinking Skills for Sustainable Development. International Journal of Environmental Sciences, 11(1s), 650-658.

Elfeky, A. I. M., Hassanein, M. S. E. A. A., Zayed, A., Khalladi, Y. M., & Elbyaly, M. Y. H. (2025). Sustainable Education Systems: A Future Vision for Developing Higher-Order Thinking Abilities. International Journal of Environmental Sciences, 11(1s), 73-78.

Elfeky, A. I. M., Hassanein, M. S. E. A. A., Zayed, A., Mahmoud, S. M., & Elbyaly, M. Y. H. (2025). Project-Based Learning's Impact on Fostering The Socio-Environmental Attitude. International Journal of Environmental Sciences, 11(2s), 97-104.

Hassanein, M. S. E. A. A., Elfeky, A. I. M., Ismail, A. M. M., & Elbyaly, M. Y. H. (2025). The Efficiency of Blended

Learning on Developing Hand Embroidery to Achieve Sustainable Development. International Journal of Environmental Sciences, 11(2s), 56-61.

Hassanein, M. S. E. A. A., Elfeky, A. I. M., khttab Madkour, A. F., & Elbyaly, M. Y. H. (2025). Examining Vodcast's Potential to Improve Canadian Embroidery Skills in the Najran Region for Enhanced Community Sustainability. International Journal of Environmental Sciences, 11(1s), 291-296.

Hallam, S. (2010). The Power of Music: Its Impact on the Intellectual, Social and Personal Development of Children and Young People. London: Institute of Education.

Hall, I., & Higgins, S. (2005). Primary school students' perceptions of interactive whiteboards. Journal of Computer Assisted Learning, 21(2), 102-117

Kobel, S., Wartha, O., Wirt, T., Dreyhaupt, J., Lämmle, C., Friedemann, E. M., ... & Steinacker, J. M. (2017). Design, implementation, and study protocol of a kindergarten-based.

Levy, P. (2002). Interactive whiteboards in learning and teaching in two Sheffield schools: A developmental study. Department of Information Studies, University of Sheffield.

