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The Reality of Kindergarten Teachers using Smart Boards to Develop Health Awareness in Children

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ABSTRACT

The current study aims to identify the extent to which kindergarten teachers use interactive whiteboards to develop children's health awareness. The descriptive approach was used, and the study was conducted with (100) kindergarten teachers registered in government kindergartens in Najran. The following instruments were used in the study: - A questionnaire to measure the extent to which kindergarten teachers use interactive whiteboards to develop children's health awareness, which included the following sections: (the extent to which kindergarten teachers use interactive whiteboards to develop children's health awareness - obstacles to kindergarten teachers using interactive whiteboards to develop children's health awareness). The results of the study indicate a weak extent to which kindergarten teachers in Najran use interactive whiteboards to develop children's health awareness, as the arithmetic mean for the section was (2.42), which is a low average on a five-point scale, reflecting the limited implementation of this educational tool in classrooms. It can be concluded that the use of smart boards – despite their availability – remains below the required level to achieve educational goals related to developing children's health knowledge. Conversely, the axis of obstacles to using smart boards received a high average score of (4.21), indicating that teachers face significant difficulties hindering the application of technology in classroom practices. Based on the study's findings, the researchers offered several recommendations: Conducting specialized training programs for kindergarten teachers in the use of smart boards and the production of interactive health content for children; providing technical support and suitable technological infrastructure within kindergartens to ensure uninterrupted and easy use; developing educational guides that include digital health activities applicable via smart boards; encouraging teachers to share successful experiences and highlight outstanding practices to promote effective usage models; and promoting partnerships between kindergartens and health authorities to produce targeted and simplified digital health content for children.

Keywords: Smart boards - Health awareness - Kindergarten teachers

INTRODUCTION

Nations cherish their children as their true wealth, for they are the hope and the real investment for the future. Caring for them, nurturing their upbringing, meeting their needs, and ensuring their safety and security is vital, as it shapes the future and determines the nation's strength in implementing its plans. Early childhood is therefore a crucial stage in a child's life, where their initial personality traits are formed, their attitudes and inclinations are determined, and the foundations for their evolving concepts are laid. The integration of information and communication technologies (ICTs) into preschool education has long been a point of contention among

researchers. However, due to the significant and dynamic integration of computers into the global educational landscape and the impact of related research, computer-assisted learning has become more practical than ever before. Consequently, it has gradually replaced any initial resistance to the use of ICTs in the educational environment. A diverse range of ICT applications is increasingly accepted as suitable educational resources for the cognitive development of preschool and primary school children. These applications include activities, programs, and practices designed to cultivate healthy concepts in children, encourage healthy behaviors, and empower them to make decisions about their health. Kindergartens have a significant impact on the health concepts a child learns. A child's good health increases their activity and play, reveals their talents and creativity, and allows them to develop and nurture these abilities more effectively. This, in turn, creates a well-adjusted citizen capable of contributing to their community, building their future, and fulfilling their duties towards their country effortlessly (Mansi, 2021). Interest in health problems has increased due to the serious threat they pose to human and economic resources as a result of new changes stemming from health issues such as immunodeficiency diseases, environmental pollution, malnutrition, and infectious diseases. These problems lead to a decrease in children's physical and psychological well-being, which has serious repercussions on production and national income, in addition to increasing the costs of healthcare and treating diseases that can be prevented or mitigated by adopting a healthy lifestyle (Mushira Balboush, 2014, p. 420). The future of any society depends to a large extent on the level of care and attention it gives to children, and on providing the opportunities that enable them to live happy lives and grow healthily, reaching a stage of healthy maturity. Therefore, officials in various communities have exerted their utmost efforts to provide everything necessary for the physical, psychological, social, and educational well-being of these children, to help them develop appropriately in all aspects of their personalities (Mohammed Al-Attar, 2020).

The educational process has become increasingly evolving with the rise of e-learning. Therefore, teachers must be constantly innovative in their communication with students to foster a positive mindset towards learning, especially among children. Technological change necessitates that everyone, without exception, keep pace with the new technological age.

A study by Taha and Bastawisi (2019) confirmed the lack of attention given by kindergarten teachers to developing health awareness among kindergarten children, resulting in many children contracting illnesses that negatively impact their health. Furthermore, the study highlighted the teachers' limited use of engaging educational activities. Areas of Health Awareness:

Iman Taha and Sherine Bastawisi (2019) identified three areas of health awareness:

First: Safety and security measures against household hazards.

Second: Proper nutrition.

Third: Personal hygiene and environmental cleanliness.

A study by Rabab Saleh (2019) identified the areas of health awareness as:

Personal health; Nutritional health; Environmental health and safety; and Health and safety in related occupations.

Abeer Amin (2019) stated that there are several areas of health awareness for kindergarten children:

1. Personal hygiene, which is considered one of the most important ways to prevent epidemics and infectious diseases. This is achieved by instilling and practicing hygiene rules from a young age, including hand, mouth, teeth, nose, and general body hygiene.
2. Healthy nutrition, which consists of a complete, balanced, and clean diet that is varied and contains all the necessary nutrients.

Rania Hussein's study (2020) identified the areas of health awareness as nutrition, physical activity, and personal health. The researcher believes that, through reviewing the areas of health awareness identified by several educational researchers, she extracted the following areas of health awareness that align with the characteristics of the program and the current sample:

The results of numerous studies, such as Al-Qallaf (2021), Zaranis (2017), Papadakis et al. (2016), Papadakis and Kalogiannakis (2017), Papadakis et al. (2018), and Tavernier and Hu (2020), confirm the importance of integrating technology into the educational process at all levels, including kindergarten. This integration is crucial for saving time and effort, facilitating the learning process, and offering other advantages. These studies also emphasize that introducing computers into preschool education yields positive results in learning appropriate educational topics. Furthermore, studies by Trucano (2015), Kokkalia et al. (2016), Konca et al. (2016), Predavoric et al. (2017), and Sundus (2018) support this view. Zaranis (2019) stated that information and communication technology (ICT) plays a fundamental role in achieving the goals of kindergarten curricula in all areas and topics appropriate for development in suitable educational scenarios. In addition to the educational purpose, the use of computers in kindergarten is primarily a learning activity, whereas the average child would see it as a game. Therefore, we need to focus research on purposeful learning through play. Thus, it has become clear that using this learning process is more than just suitable for achieving specific educational goals for children in the kindergarten stage. The introduction of tablets into children's daily lives positively supports the integration of

digital applications into children's education. There is a positive connection between children's daily lives and their school life, as it is important that the technological education provided by the school equips children with the knowledge and skills necessary for the future (Al-Shahrani, 2019). Digital learning activities on electronic platforms have gained great popularity among students, especially younger children. In recent years, there has been a growing trend of integrating digital learning activities as educational tools into the learning process. The term "e-activity" or "digital activity" refers to all types of activities conducted using digital technology. This includes activities and games played on large, classic game consoles, specialized game consoles, personal computers (Chiong and Shuler, 2010; Kucirkova and Falloon, 2017), smartphones, and tablets, as emphasized by Kashgari and Al-Jazzar (2015). High-resolution screens enable tablet users to easily share content and static resources such as images and videos. Furthermore, most tablets lack the features of a phone, making them ideal learning tools due to the absence of distractions like incoming text messages or unwanted calls, which are common on smartphones. Tablets can offer the benefits of mobile applications more broadly across all levels of education, not only as an affordable solution for individual learning but also as a feature-rich tool for both inside and outside the classroom.

In light of the above, we can confirm that smart board technology is important and enjoyable and can be employed as an educational strategy in childhood, in light of the need to use educational technologies to improve and develop children's learning, and to equip them with sufficient technological skills.

The Problem of the Study

The problem addressed in this study stems from our work as supervisors of early childhood students in practical training. We observed certain 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 for developing these concepts. Furthermore, a review of previous studies on developing health concepts in kindergarten children 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, as confirmed by the studies of Al-Maliji (2021) and Nassar et al. (2019). The results of the Dias, Maria J.A (2020) study also recommended the necessity of eradicating health illiteracy from childhood to old age. Many conferences have also recommended employing modern educational technologies in the field of learning and teaching, and focusing on ways to develop them to help achieve the desired educational goals. Among the most prominent of these conferences was the Fifth Teacher Preparation Conference held at Umm Al-Qura University (2016). A study confirmed this. Zaranis (2017) found that children of this age can successfully use computers with appropriate instruction. Comparing home learning with kindergarten classes, he discovered that information and communication technologies (ICTs) are used to enhance three main areas of learning: expanding knowledge about the world (cognitive objects), acquiring functional skills (such as operating a mouse), and developing a predisposition to learning by fostering a range of emotional, social, and cognitive functions. Recent studies have identified several emerging digital devices, such as tablets, as suitable for children's education and entertainment. Bird (2017) and Lawrence (2018) noted that young children aged 3 to 6 years engage in a wide variety of digital learning activities, now available on desktop and mobile screens, leading them to spend increasing amounts of time doing so. Many technologists affirm that the tablet is an ideal tool for all levels of education. Tablets have been introduced into classrooms in many schools in the United States, and students have reported wanting to participate in learning activities due to the novelty of the medium, its visual characteristics, and ease of use. It is possible to use tablets in the classroom to create text, audio, or video notes. Students—regardless of age—can store educational materials in a digital wallet. Through the electronic tablet, the learning process can be conducted through student participation in activities and the use of interactive activities and animations (Wakefield and Smith, 2012; Gokcearslan). The attractive appearance of the work environment and the innovative touch interface are key factors in facilitating the learning process for young children and students with special needs (Qashqari, 2011). The characteristics of tablets include their light weight, portability, and touch screens.

Research Questions

What is the reality of kindergarten teachers using interactive whiteboards to develop children's health awareness?
This leads to the following questions:

1. What is the reality of kindergarten teachers using interactive whiteboards to develop children's health awareness?
2. What are the obstacles preventing kindergarten teachers from using interactive whiteboards to develop children's health awareness?

RESEARCH METHODOLOGY

The current study adopted a descriptive approach to identify the reality of kindergarten teachers' use of smart boards to develop children's health awareness, and the obstacles that hinder their use of smart boards for this purpose.

- ***Spatial Scope:*** The study was conducted with kindergarten teachers enrolled in a government-run kindergarten affiliated with the Early Childhood Education Department in Najran.
- ***Human Scope:*** Kindergarten teachers enrolled in a government-run kindergarten affiliated with the Early Childhood Education Department in Najran.
- ***Temporal Scope:*** The study was conducted during the second semester of the academic year 1447 AH.
- ***Thematic Scope:*** The study addressed the reality of kindergarten teachers' use of smart boards to develop children's health awareness, and the obstacles they face in using smart boards for this purpose.
- ***Research Sample:*** The study sample consisted of a random sample of 100 kindergarten teachers from Najran, all enrolled in a government-run kindergarten affiliated with the Early Childhood Education Department in Najran.

Study Terminology

Tablets Smart Devices

Operationally defined as mobile devices such as laptops, smartphones, and tablets (iPads) that run on an operating system allowing the execution of applications suitable for developing health awareness in children.

Health Awareness

Areeqat (2018) defines it as a continuous and ongoing process aimed at encouraging children to adopt a healthy lifestyle and practices, in order to improve their behaviors and preserve their health and the health of their community by preventing or reducing the incidence of diseases.

Operationally defined as the kindergarten child's familiarity with health knowledge and information, the formation of positive attitudes towards healthy behavior, and encouraging them to maintain their health and accustom them to practicing healthy behaviors such as (environmental health, healthy sleep, diseases and their prevention, the concept of first aid, personal hygiene, etc.).

Kindergarten Teachers

Atiya (2021) defines them as educators and leaders tasked with nurturing learners and providing them with various types of knowledge. They are characterized by virtuous morals, refined character, and sound mental, physical, psychological, and moral well-being. They possess the necessary skills to fulfill their educational role effectively, build positive relationships with their students, and serve as good role models for them.

Operationally, it is defined as a person holding an academic qualification (Bachelor's degree in Early Childhood) and working in government kindergartens affiliated with the Ministry of Education in Najran, as a teacher concerned with developing children's health awareness.

Research Tools:

- A questionnaire to measure the reality of kindergarten teachers' use of interactive whiteboards to develop children's health awareness.
- Defining the objective of the scale: This tool was developed to identify the reality of kindergarten teachers' use of interactive whiteboards to develop children's health awareness and the obstacles that hinder their use of these whiteboards. The researchers relied on the following sources to develop the research tool: research and studies that addressed the early childhood stage and its philosophies, interactive whiteboards, and health awareness. The tool consists of two axes: The first axis is the reality of kindergarten teachers' use of interactive whiteboards to develop children's health awareness and consists of (12) statements. The second axis is the obstacles that hinder kindergarten teachers' use of interactive whiteboards to develop children's health awareness and consists of (8) statements. The total number of statements in both axes is 20, which are answered. The teachers were given a five-point Likert scale. Each statement was scored as follows: (5) strongly agree, (4) agree, (3) neutral, (2) disagree, and (1) strongly disagree. The total score for the questionnaire was 100. Instructions for the teachers were provided before the questionnaire was administered, explaining the concept of the test in the simplest possible terms, how to answer the questions, and providing an example of how to respond.

Statistical Analysis Methods for the Study

- The data were analyzed using the Statistical Package for the Social Sciences (SPSS) version 25, and the results were extracted according to the following statistical methods:
- Pearson's correlation coefficient; to verify the internal consistency and construct validity of the research instrument.
- Cronbach's alpha coefficient and split-half reliability; to verify the reliability of the research instrument.
- Calculating the arithmetic mean for each statement; to determine the degree of agreement with each statement in the questionnaire, as follows:
- Numerical rating = k1 × 5 + k2 × 4 + k3 × 3 + k4 × 2 + k5 × 1, where k1, k2, k3, k4, and k5 represent the frequency of responses (strongly agree, agree, sometimes, disagree, strongly disagree), and 'n' represents the sample size. The statements were then ranked according to their arithmetic mean (in case of a tie, the smaller standard deviation was used to determine the higher of the two). - The chi-square (χ^2) test was used to assess the fit of each item on the Emotional Intelligence Scale to identify differences in the participants' choices of the five response options (strongly agree, agree, sometimes, disagree, strongly disagree.(
- The range equation was used to describe the mean responses to each questionnaire item on a five-point Likert scale. The response score for each item was assigned as follows: 5 for strongly agree, 4 for agree, 3 for neutral, 2 for disagree, and 1 for strongly disagree.
- If the mean score was between 1 and less than 1.80, the score was (strongly disagree).
- If the mean score was between 1.80 and less than 2.60, the score was (disagree).
- If the mean score was between 2.60 and less than 3.40, the score was (neutral). If the mean score is between 3.40 and 4.20, the level of agreement is (I agree).

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, specifically by determining the validity and reliability of the study instrument: the use of interactive whiteboards by kindergarten teachers to develop health awareness in children.

Results of the Validity and Reliability of the Research Instrument

***Face Validity (Interviewer Validity)*:**

The researchers confirmed the face validity of the test by presenting it to a group of nine expert reviewers with experience in the field of study. These reviewers evaluated the test after reviewing the study's title, questions, and objectives. They were asked to provide their opinions and observations on the suitability of the questionnaire items for measuring the actual use of smart boards by kindergarten teachers to develop children's health awareness. This included assessing the appropriateness of the statements for the study's focus, the accuracy of the language used, and the suitability of the images. The wording of some statements and images was modified based on the reviewers' feedback.

***Statistical Analysis Used*:**

Internal Consistency Validity. The internal consistency of the questionnaire was verified by calculating the correlation coefficient between the scores of each questionnaire item and the total scores of the axis to which the item belongs. The results are as follows:

Table (1): Shows the correlation coefficients between the scores of each item and the total scores of the axis to which the item belongs

Reality		**Obstacles**	
N	**Correlation coefficient**	**N**	**Correlation coefficient**
1	**0.574	13	**0.722
2	**0.721	14	**0.758
3	**0.547	15	**0.841
4	**0.747	16	**0.679
5	**0.523	17	**0.654
6	**0.460	18	**0.505
7	**0.560	19	**0.789
8	**0.549	20	**0.715

9	**0.601		
10	**0.592		
11	**0.586		
12	**0.634		

***Statistically significant at the (0.01) level*

Table (1) shows a statistically significant correlation between the scores of each questionnaire item and the total score for the axis to which the item belongs. The correlation coefficients ranged from 0.460 to 0.841, indicating that the questionnaire items are valid for what they were designed to measure.

Construct Validity

The construct validity of the questionnaire was verified by calculating the correlation coefficient between the scores of the questionnaire's axes and the total questionnaire score. The results are shown in Table (2):

Table (2): Shows the correlation coefficients between the scores of each questionnaire axis and the total questionnaire score.

Aspects	Correlation coefficient
Reality	**0.788
Obstacles	**0.697

***Statistically significant at the (0.01) level*

Table (2) shows a statistically significant correlation between the scores of the two questionnaire axes and the total questionnaire score, reaching (0.788, 0.697) respectively, indicating the validity and homogeneity of the questionnaire axes.

Results of Questionnaire and Axe Reliability

The reliability of the questionnaire and its axes was verified using Cronbach's alpha coefficient and the split-half method (Spearman-Brown, Gitman). The results are shown in Table (3):

Table (3): Reliability Coefficients for the Questionnaire and its Axes.

Half splitting	Cronbach's alpha coefficient	N	Aspects
0.796	0.830	12	Reality
0.922	0.855	8	Obstacles
0.853	**0.820**	**20**	Total grade

Table (3) shows the reliability coefficients for the questionnaire and its sections. Using Cronbach's alpha, the coefficients for the sections were (0.830 and 0.855) respectively, and for the questionnaire as a whole (0.820). Using the split-half method, the coefficients for the sections were (0.796 and 0.922) respectively, and for the questionnaire as a whole (0.853). These are considered acceptable reliability values, which reassures the researcher about the results of the questionnaire application.

Field Study Results and Interpretation:

***Answer to the First Research Question*:**

The first question states: "What is the reality of kindergarten teachers' use of interactive whiteboards to develop health awareness in children, from the perspective of the research sample"?

To answer this question; The arithmetic mean, standard deviation, relative weight, degree of agreement, and ranking were calculated, and the chi-square test was used for each statement in the first axis and for the overall evaluation of the axis. The results were as follows:

First Axis: The reality of kindergarten teachers' use of smart boards to develop children's health awareness:

Table (4): Frequencies, arithmetic means, standard deviations, relative weights, degree of agreement, and chi-square test results for the responses of the research sample to the statements of the first axis.

Chi-squared value	Rank	Agreement score	Relative weight	Standard deviation	Arithmetic mean	Responses = 100					phrase	N
						Strongly disagree	Disagree	Sometimes	Agree	Strongly agree		
***25.30	6	disagree	%48.80	1.33	2.44	34	18	29	8	11	The kindergarten teacher uses the interactive whiteboard to display images and videos related to health awareness.	1
***78.00	11	disagree	%40.00	1.35	2.00	54	17	15	3	11	The interactive whiteboard is used to explain health concepts in an interactive way that encourages children's participation.	2
***35.30	5	disagree	%51.40	1.37	2.57	22	42	9	11	16	The teacher uses the interactive whiteboard to demonstrate practical activities about personal hygiene.	3
***26.70	4	sometimes	%53.00	1.23	2.65	16	37	26	8	13	The teacher uses the interactive whiteboard to promote healthy behaviors such as handwashing and maintaining good hygiene.	4
***31.10	8	disagree	%46.20	1.33	2.31	39	19	24	8	10	Digital educational programs are integrated into the interactive whiteboard to support children's health awareness.	5
***14.80	3	sometimes	%54.40	1.26	2.72	18	29	29	11	13	The interactive whiteboard provides opportunities for collaborative learning among children about health topics.	6
***21.80	7	disagree	%47.20	1.33	2.36	36	23	19	13	9	The teacher interacts with children's responses through the activities presented on the interactive whiteboard.	7
***48.70	2	sometimes	%55.00	1.29	2.75	11	47	16	8	18	The interactive whiteboard helps to capture children's attention and engage them with the health information presented.	8
***52.60	10	disagree	%43.80	1.03	2.19	33	24	37	3	3	The teacher regularly uses health-related educational applications on the interactive whiteboard during lessons.	9
***25.30	1	sometimes	%56.20	1.27	2.81	12	39	21	12	16	The interactive whiteboard helps simplify health information in a way that is appropriate for children's level of understanding.	10

***26.20	9	disagree	%46.00	1.21	2.30	32	29	23	9	7	The teacher uses the interactive whiteboard to implement educational games related to daily health practices.	11
***73.30	12	disagree	%39.40	1.16	1.97	50	16	26	3	5	The teacher uses the interactive whiteboard to assess children's understanding of health information through interactive activities.	12
		disagree	**%48.40**	**1.29**	**2.42**	**Overall assessment of reality**						

*******Statistically significant at the (0.001) level*

Table (4) shows statistically significant differences between the responses of the research sample to the statements of the first axis (the reality of kindergarten teachers' use of smart boards to develop children's health awareness). The chi-square (χ^2) values for all statements of this axis were statistically significant, and the responses ranged between (neutral and disagree). The arithmetic mean values for the statements of this axis ranged between (1.97 and 2.81), and the relative weights ranged between (39.40% and 56.20%). The arithmetic mean for the overall evaluation of the first axis was (2.42) with a relative weight of (48.40%) and a degree of "disagree," indicating the weakness of kindergarten teachers' use of smart boards to develop children's health awareness. The statements of this axis were ranked according to their arithmetic mean - in descending order - as follows:

- Statement number (10), which states, "The smart board helps in simplifying health information in a way that is appropriate for The statement "Children's level of understanding" ranked first among the statements in the first axis, with a mean score of 2.81, a relative weight of 56.20%, and a score of "Sometimes".
- Statement number 8, which states, "The smart board helps attract children's attention to the health information presented," ranked second among the statements in the first axis, with a mean score of 2.75, a relative weight of 55.00%, and a score of "Sometimes".
- Statement number 6, which states, "The smart board provides opportunities for collaborative learning among children on health topics," ranked third among the statements in the first axis, with a mean score of 2.72, a relative weight of 54.40%, and a score of "Sometimes".
- Statement number 4, which states, "The teacher uses the smart board to promote healthy behaviors such as handwashing and maintaining hygiene," ranked third. The fourth statement in the first axis was "Sometimes," with a mean score of 2.65, a relative weight of 53.00%, and a rating of "Sometimes".
- Statement number (3), which states, "The teacher presents practical activities about personal hygiene using the interactive whiteboard," ranked fifth in the first axis, with a mean score of 2.57, a relative weight of 51.40%, and a rating of "Disagree".
- Statement number (1), which states, "The kindergarten teacher uses the interactive whiteboard to display images and videos related to health awareness," ranked sixth in the first axis, with a mean score of 2.44, a relative weight of 48.80%, and a rating of "Disagree".
- Statement number (7), which states, "The teacher interacts with the children's responses through the activities presented via the interactive whiteboard," ranked seventh in the first axis, with a mean score of 2.36, a relative weight of 47.20%, and a rating of "Disagree." - Statement number (5), which states, "Digital educational programs are integrated via the smart board to support children's health awareness," ranked eighth among the statements in the first axis, with a mean score of (2.31), a relative weight of (46.20%), and a score of "Disagree".
- Statement number (11), which states, "The teacher uses the smart board to implement educational games related to daily health practices," ranked ninth among the statements in the first axis, with a mean score of (2.30), a relative weight of (46.00%), and a score of "Disagree".
- Statement number (9), which states, "The teacher regularly uses health-related educational applications on the smart board during lessons," ranked tenth among the statements in the first axis, with a mean score of (2.19), a relative weight of (43.80%), and a score of "Disagree".

- Statement number (2), which states, "The smart board is used to explain health concepts in an interactive way that encourages children's participation." It ranked eleventh and second to last among the statements of the first axis, where its arithmetic mean was (2.00) and its relative weight was (40.00%) and with a degree of "I do not agree".
- Statement number (12), which states, "The teacher uses the smart board to assess children's understanding of health information through interactive activities," ranked twelfth and last among the statements of the first axis, with a mean score of (1.97) and a relative weight of (39.40%), resulting in a "disagree" rating.

From the above, it is clear that the axis concerning the reality of kindergarten teachers' use of smart boards in developing children's health awareness in Najran City has shown a significant decline in the level of application. The mean score was (2.42) on the five-point scale, reflecting the weak utilization of smart boards in educational activities aimed at developing children's health awareness. This low level indicates a deficiency in activating technology within the classroom environment, despite its importance in supporting interactive learning and developing health concepts in kindergarten children.

Answer to the Second Research Question:

The second question states, "What are the obstacles to kindergarten teachers' use of smart boards to develop children's health awareness, from the perspective of the research sample"?

To answer this question; The arithmetic mean, standard deviation, relative weight, degree of agreement, and ranking were calculated, and the chi-square test was selected for each statement in the second axis and for the overall evaluation of the axis. The results were as follows:

This is consistent with the study by Omran (2021), which aimed to identify the role of the kindergarten teacher in developing digital technology in children. The study concluded that the kindergarten teacher's role in developing digital technology in children was moderate, in addition to the kindergarten teacher's lack of awareness of enrichment activities that develop children's abilities and the limited acquisition of concepts using technology by the child. A study by Al-Bousafi (2021) and Mamaeva & Natalya (2021) found shortcomings in the performance of kindergarten teachers regarding their future educational and technological roles related to the use of educational media, managing technological learning, developing technological activities and experiences, employing digital learning strategies with children, and evaluating children's technological performance. The second axis: Obstacles to kindergarten teachers' use of smart boards to develop children's health awareness:

Table (4): Frequencies, arithmetic means, standard deviations, relative weights, degree of agreement, and chi-squared test results for the responses of the research sample to the statements of the second axis.

Chi-squared value	Rank	Agreement score	Relative weight	Standard deviation	Arithmetic mean	Responses = 100					phrase	N
						Strongly	Disagree	Sometimes	Agree	Strongly		
**123.10*	3	I strongly agree	%86.80	1.04	4.34	3	4	12	18	63	The use of interactive whiteboards faces challenges due to the lack of consistent technical maintenance in kindergartens.	1
**148.90*	2	I strongly agree	%90.20	0.82	4.51	1	3	6	24	66	Insufficient training for teachers on using interactive whiteboards hinders their integration into health awareness activities.	2
**172.20*	1	I strongly agree	%91.00	0.85	4.55	1	4	5	19	71	Frequent technical problems with the interactive whiteboards disrupt health education activities.	3

**100.20 *	4	I strongly agree	%86.00	0.99	4.30	3	3	11	27	56	There is a shortage of specialized digital educational materials for children's health awareness.	4
***69.00	7	I agree	%82.60	1.03	4.13	1	8	17	25	49	Poor internet connectivity limits the potential for enhanced use of interactive health applications.	5
***14.80	8	I agree	%68.20	1.33	3.41	11	13	29	18	29	Overcrowded classrooms hinder the effective use of interactive whiteboards.	6
***92.20	5	I strongly agree	%85.00	0.97	4.25	3	4	7	37	49	Insufficient class time reduces the possibility of integrating digital health activities.	7
***75.70	6	I agree	%83.80	0.96	4.19	2	4	14	33	47	Resistance from some children to digital use presents a challenge in implementing health activities via interactive whiteboards.	8
		I strongly agree	**84.20 %**	**1.06**	**4.21**	**Overall assessment of obstacles**						

*********Statistically significant at the (0.001) level*

Table (4) shows statistically significant differences between the responses of the research sample to the statements of the second axis (obstacles to kindergarten teachers' use of smart boards to develop children's health awareness). The chi-square (χ^2) values for all statements in this axis were statistically significant, and the responses ranged between (strongly agree, agree). The arithmetic mean values for the statements in this axis ranged between (3.41 – 4.55), and the relative weights ranged between (68.20% – 91.0%). The arithmetic mean for the overall evaluation of the second axis was (4.21) with a relative weight of (84.20%) and a score of "strongly agree," indicating the existence of obstacles preventing kindergarten teachers from using smart boards effectively to develop children's health awareness. The statements of this axis were ranked according to their arithmetic mean, in descending order, as follows:

- Statement number (3), which states "It affects The statement "Recurring technical problems with the smart board hinder the implementation of health education activities" ranked first among the statements in the second axis, with a mean score of 4.55, a relative weight of 91.00%, and a "strongly agree" rating. Statement number (2), which states "Insufficient training for teachers on using smart boards impedes their effective use in health awareness topics," ranked second among the statements in the second axis, with a mean score of 4.51, a relative weight of 90.20%, and a "strongly agree" rating. Statement number (1), which states "The use of smart boards faces challenges due to the lack of ongoing technical maintenance in the kindergarten," ranked third among the statements in the second axis, with a mean score of 4.34, a relative weight of 86.80%, and a "strongly agree" rating. Statement number (4), which states "There are not enough specialized digital educational materials in the field of health awareness for children," ranked fourth. It ranked fourth among the statements in the second axis, with a mean score of 4.30, a relative weight of 86.00%, and a "strongly agree" rating.
- Statement number (7), which states, "The lack of time available for the lesson reduces the possibility of integrating digital health activities," ranked fifth among the statements in the second axis, with a mean score of 4.25, a relative weight of 85.00%, and a "strongly agree" rating.

- Statement number (8), which states, "Some children's resistance to digital use presents a challenge in implementing health activities via the smart board," ranked sixth among the statements in the second axis, with a mean score of 4.19, a relative weight of 83.80%, and a "strongly agree" rating.
- Statement number (5), which states, "Poor internet connectivity limits the possibility of improving the use of interactive health applications." It ranked seventh and second to last among the statements in the second axis, with a mean score of 4.13 and a relative weight of 82.60%, earning the rating "I agree".
- Statement number (6), which states, "The density of children in classrooms affects the effective use of interactive whiteboards," ranked eighth and last among the statements in the second axis, with a mean score of 3.41 and a relative weight of 68.20%, earning the rating "I agree."

The above indicates that the axis of obstacles to using smart boards received a high score (4.21), demonstrating that teachers face significant challenges during practical implementation. These challenges may stem from inadequate training, a lack of technological equipment, a heavy teaching load, or limited technical and guidance support. These scores reflect a clear gap between the available theoretical capabilities and their actual use within the educational field. Therefore, it is evident that the low level of use is not necessarily due to a lack of conviction or perceived benefit, but rather largely to the high level of obstacles. This underscores the need for developmental interventions targeting specialized training, improving the technological infrastructure in kindergartens, and providing ongoing support to teachers. Such interventions would contribute to raising the level of implementation and transforming smart boards into an effective tool for developing children's health awareness.

These measures will help improve the application of smart boards and transform them into an effective tool for fostering health awareness in children. This aligns with the findings of both Hou's 2017 study, which aimed to identify the most important technological training kindergarten teachers need to effectively practice their teaching profession and the extent to which they implement and practice it. The study concluded that there were no statistically significant differences in the extent to which teachers utilize these competencies attributable to the specialization variable. The study offered several recommendations, most notably enrolling teachers in training courses to enhance the integration of technological competencies in education. Similarly, Al-Hussein's 2019 study recommended that the Ministry of Education hold competitions and activate monitoring indicators for young children's technological activities. It also recommended that the Ministry of Education establish a dedicated department within the Education and Kindergarten Administration for technological guidance. This department would contribute to the dissemination of e-learning and develop technological activities to align with contemporary technological advancements. This would be achieved by providing modern technological environments and activities after analyzing existing programs, environments, and electronic games to enhance their effectiveness and enrich their content.

DISCUSSION OF RESULTS

The research findings indicate a weak use of smart boards by kindergarten teachers in Najran for developing children's health awareness. The mean score for this axis was (2.42), a low average on a five-point scale, reflecting the limited implementation of this educational tool in classrooms. This suggests that the use of smart boards – despite their availability – remains below the required level for achieving educational goals related to developing children's health knowledge. Conversely, the axis of obstacles to using smart boards had a high mean score of (4.21), indicating that teachers face significant difficulties hindering the application of technology in classroom practices. This may stem from several factors, including: insufficient training, lack of suitable digital content, weak technological infrastructure in kindergartens, or the absence of technical and administrative support. The comparison between the two axes reveals a clear inverse relationship: the higher the level of obstacles, the lower the level of use, which explains the low application of smart boards in the field of children's health.

SUGGESTED RECOMMENDATIONS IN LIGHT OF THE FINDINGS

Based on the findings, the study recommends the following:

1. Conducting specialized training programs for kindergarten teachers on the use of interactive whiteboards and the production of interactive health content for children.
2. Providing technical support and suitable technological infrastructure within kindergartens to ensure uninterrupted and easy use.
3. Developing educational guides that include digital health activities applicable to interactive whiteboards.
4. Encouraging teachers to share successful experiences and highlight outstanding practices to promote effective usage models.

5. Encouraging partnerships between kindergartens and health authorities to produce targeted and simplified digital health content for children.

Suggestions

1. The current study suggests:
2. Conducting a study on the current use of interactive whiteboard technology in developing language concepts in early childhood.
3. Conducting a study on the impact of using interactive whiteboard technology on developing mathematical concepts in early childhood.
4. Conducting a study on the effectiveness of using interactive whiteboard technology in developing scientific concepts in early childhood.

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