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Effectiveness of Virtual Tours to Archaeological Sites in Al-Ahsa in Developing Historical Concepts among Kindergarten Children

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Abstract

The study aimed to reveal the effectiveness of virtual tours to the archaeological sites in Al-Ahsa in developing historical concepts among kindergarten children and to identify the differences between boys and girls in acquiring historical concepts. To achieve these objectives, a quasi-experimental approach based on one group design was used. The sample of the study consisted of (30) boys and girls between the ages of (5-6) years in the third level in the kindergarten attached to the third elementary school for early childhood in Hofuf in Al-Ahsa Governorate. The pictured historical concepts test was applied after calculating the coefficients of validity and reliability. The virtual tours to the archaeological sites in Al-Ahsa included "Al-Qarah Mountain, Suq Al-Qaysariyya, Ibrahim Palace, Jawatha Mosque, Al-Amiriya School, Al-Bay'ah House, Al-Uqair Port, and Al-Asfaar Lake". The results showed statistically significant differences at (0.05) between the means of the scores of the experimental group in the pre-and post-applications in the pictured test of historical concepts in favor of the post-application. Also, there was an effect size of virtual tours to archaeological sites on the development of historical concepts among kindergarten children. In addition, the results showed no statistically significant differences at (0.05) between the means of the scores of boys and girls in the historical concepts test pictured in the post application. The study recommended the inclusion of virtual tours and historical concepts in the self-learning curriculum for kindergarten.

Keywords:

Virtual Tours, Archaeological Sites, Historical Concepts, Kindergarten

Introduction

The current world is characterized by rapid growth in all fields and an information revolution in the field of educational technology. Electronic technologies developed, and modern educational patterns based on electronic technologies spread because of its many advantages represented in jumping over the barriers of time and space, overcoming problems related to traditional education, raising the level of independence of the learner, and motivating him to play positive educational roles.

The advent of the Internet contributed to the speed of access to knowledge and keeping pace with technological developments. It has become imperative for every educational institution to keep pace with these rapid developments. This is done by integrating technology into the educational process in a way that contributes to stimulating the child's motivation to learn and enhancing his senses. It also contributes to understanding abstract concepts difficult to acquire at this stage to achieve the desired educational outcomes (Al-Subaihi, 2019).Virtual tours through the Internet simulate the real environment and are considered a suitable means for the teacher and the learner. Through this, the learner acquires experiences and knowledge that may be difficult to achieve through traditional tours. They also make it possible to show tours to hard-to-reach places; either because of distance, like the South Pole and the planets, or the danger of reaching it, such as learning about the occurrence of volcanoes. They, in addition, develop the self-learning, research, and exploration skills of the learner. Furthermore, they can be done at any time and any place, and they can be performed more than once. In turn, this saves effort, time, and money. Further, they also contribute to providing a safe, interesting, fun, and attractive environment for learning and provide children with an environment similar to the real environment, which gives it an atmosphere of realism (Hassan, 2011). Historical concepts with human interaction with time and space and the process of recording and monitoring the historical facts and achievements of the ancestors and transmitting them to the current or future generations are considered of high priority. This helps in preserving the cultural and human heritage and transmitting it to future generations, following the example of the ancestors, and developing feelings of loyalty and belonging to the homeland (Badir, 2021).

Historical concepts are the cumulative nature of diverse and multiple knowledge. They make history and its facts, information, and concepts meaningful. History helps children understand how others live, and how they go about their lives spontaneously. It helps children feel more self-respect and learn to share ideas and roles, and how to get along with others. It also brings them up in the confines of civilization with its historical, cultural, scientific, and artistic depth. It is considered one of the most important entrances to education for the child, and it provides opportunities for him to know his heritage and his past and to link him to his present and future (Hijazi, 2020). The historical records in Al-Ahsa Governorate in the Eastern Province of the Kingdom of Saudi Arabia, from the pre-Islamic period to the history of the modern Saudi state, include a list of important evidence from these periods. This historical evidence includes cultural heritage resources, mosques, palaces, military fortresses, museums, schools, wells, etc. Also, there are naturally flowing hot and cold water springs. It is, in addition, famous for Limestone Mountains with caves and hollows. Accordingly, heritage resources and archaeological monuments played a positive role in the local economy by increasing the volume of internal and external tourism (Najm, 2019). Hence, giving the child the history of his country during his first years of education will have a lasting impact on him and affects a visible impact on his future and his life. The study of history broadens one's horizons, highlights the relationship between results and causes, stimulates thought, helps one face new situations, and predicts what will happen next (Badawi, 2006).

The Kingdom of Saudi Arabia has contributed to preserving the cultural heritage throughout history and passing it on to future generations. Educational tours are one of the important and appropriate strategies for children's developmental characteristics. They are a successful educational tool that arouses their interest in learning through the interesting and varied materials it offers. Despite the importance of educational field tours, they face many challenges and difficulties. The most important is the fear of teachers and parents of security and safety measures during the tour, or the lack of financial support for the implementation of such tours (Al-Subaihi, 2019). The process of acquiring the concept in the child is based on sensory perception and observing the surrounding things, people, events, generalization, and discrimination (Botros 2004). At the same time, historical concepts have a close relationship with chronological order. They refer to things or past events that a person has done in a past period, so it is difficult for children to understand them. Children suffer as the concept deepens, especially if it is related to time (Abdel-Wahhab et al., 2019).

Historical concepts are among the concepts that are difficult to present to the kindergarten child traditionally. Endocott's (2005) study aimed to search for some solutions to facilitate the acquisition of historical concepts for children due to the difficulty of the historical concept. The study concluded that children suffer as the concept deepens if it is related to time. Ismail's (2012) study measured the effectiveness of a multimedia computer program in imparting some historical concepts to kindergarten children. Muhammad (2015) also found the effectiveness of an activities program based on a simulation strategy in all its educational activities to develop some historical concepts among kindergarten children.

Based on the foregoing, the importance of learning and teaching historical concepts and archaeological sites has been demonstrated using organized programs with clear objectives. These programs require educational attitudes and strategies that are appropriate and beloved by the kindergarten child,

which enhance his motivation to learn, comprehend, and consolidate abstract historical concepts with ease. Given the difficulties that prevent kindergartens from implementing organized field tours, hence the need to use virtual tours arises to develop historical concepts and measure their effectiveness in order to benefit from and implement them in the educational field in kindergartens. Therefore, the current study, which is based on virtual tours of the archaeological sites in Al-Ahsa, aims to develop historical concepts among kindergarten children. This is done using panoramic virtual tours, whose content is presented in the form of 3D images for their suitability for this specific age group. They are also characterized by interesting elements that increase the effectiveness of the educational situation, ease of control and roaming freely within it and opportunities for searching and discovering aspects of the journey without leaving the classroom, through the application of (Google Earth). The study is expected to contribute to presenting a developed educational reality through traditional educational tours with a scientific professional vision through virtual tours. Also, it will show the procedural steps of virtual tours for kindergarten teachers in order to enable them to develop their performance and activate their use of virtual tours. In addition, it will provide guiding standards that may benefit virtual tour designers. Finally, it draws the attention of experts and curriculum developers in the field of childhood to the importance of integrating technology into the learning and teaching process. The problem of the study was reformulated in the following research questions:

1. What is the effectiveness of virtual tours to archaeological sites in Al-Ahsa in developing historical concepts among kindergarten children?

2. Are there any statistically significant differences at (0.05) between the mean scores of boys and girl in the historical concepts pictured test in the post-application?

Theoretical Framework

The theoretical framework deals with a description of virtual tours and historical concepts.

Virtual Tours

Virtual tours are an exciting component of the learning environment. Technology has helped in the development of educational means in an unprecedented manner and made its use something indispensable. The use of technology is no longer an unavoidable option in educational settings because it made a fundamental change in people's lives and their work. It has become an integral part of individuals' personal and practical lives (Faisal, 2014). Virtual tours contribute to enriching the educational process and motivating children's performance towards further excellence and progress and providing them with scientific and information outcomes that help them understand school subjects or public life. Tours enhance children's knowledge by linking them to their study units. In addition, they work on developing their skills and building their capacities by learning about global history, human history, and global technological developments within various virtual resources. Furthermore, they promote the values of tolerance and positive global citizenship among children by providing virtual sources and destinations such as the various historical, cultural, and religious sites of different peoples. They open the child's perceptions and develop his life and scientific and behavioral skills (Halawa, 2020). Piaget believes that education is not easy, as it needs planning and knowledge of the concepts that the learner can study at a certain age. Therefore, it is necessary to prepare and define the activities that the learner can carry out and to provide the opportunity to discover the information by himself and to focus in the education process on experimentation and exploration, not on indoctrination and memorization (Zaitoun, 2002). Therefore, virtual tours emerged as an alternative to actual field tours in order to enhance field work and enable educated children to solve these limitations, through modern technological education applications. The field of virtual tours is constantly being improved, developed, and renewed, as it is possible to create very advanced virtual tours capable of replacing real field tours (Caliskan, 2011).

Virtual tours are one of the modern technological innovations that appeared through the Internet. The first use of a virtual tour was in 1994 by Queen Elizabeth II, when the visitor center was officially opened and was called a "Virtual Tour". It was conducted through virtual reality. Virtual tours have become an effective means used via the Internet to display some archaeological and tourist sites and museums and use them in education. Through this, maximum benefit can be achieved in classrooms because they help learners to understand the different curricula (Hassan, 2010). When planning educational virtual tours, their objectives must be clear and related to the content of the curriculum activities. Parents should also participate in them and cooperate whenever possible. Tours motivate children to think about the environment and express their experiences and benefit from them. They also provide suitable opportunities for children to acquire facts and concepts related to the natural, human, and social phenomena surrounding them. They are an opportunity to identify, change, and remove the feeling of boredom from the children’s souls by moving to other places different from their kindergarten and homes, opening them the opportunity to go out and express themselves (Sharif, 2015). Virtual tours

are an interactive online environment that simulates any location using panoramic images. They include multiple media such as text, images, sound effects, and audio clips, and allow the learner to obtain the information he wants and contributes to the development of the skills he needs (Khamis, 2016). They are a technological innovation that allows the learner to learn in a safe and attractive virtual environment anywhere and at any time, by activating several technologies to achieve planned educational goals (Al-Sobhi, 2019).

Types of Virtual Tours

Al-Meligy (2020) explained the types of virtual tours. Frist, text-based virtual tours are tours that depend on a detailed presentation of the tour through the use of written texts. This type of virtual tour is the simplest and least expensive. It does not use optical tools. Second, sound-based virtual tours rely on audio clips, by displaying content that includes sound effects such as the sound of sea waves or the sound of footsteps. Third, video-based virtual tours depend on the presence of video copies that are completely identical to the original copies of the tour. These tours feature audio and text feedback about the contents of the tour. However, one of the disadvantages of this type of tour is the high cost of production as well as the difficulty of continuously updating it. Fourth, panoramic virtual tours give learners a great sense of reality. They present their content in three-dimensional form and rely on the presence of a group of images that are linked together to form a 360-degree panorama. In this type of tour, accuracy is taken into account in the production and assembly of images, which must be of high quality. Fifth, three-dimensional virtual tours depend on a group of three-dimensional scenes, which are kinetic. These scenes allow the learner to control and interact with the elements of the journey, such as walking from one place to another, as if moving in a real environment simulating reality. Sixth, synchronous virtual tours are the most attractive and exciting types. They are a combination of video-based and panoramic flight. This type of tour allows the learner to wander in a three-dimensional environment simulating the real environment, using tour tools and is considered one of the most expensive types of virtual tours. No matter how many types of tours are, activating them in education requires defining the purpose of their use and linking them to the content and method of teaching. The male or female teacher may depend on one of the types according to the capabilities available to him (Al-Sobhi, 2019). According to the objectives of the current study, the study relied upon panoramic virtual tours, the content of which was presented in a three-dimensional form. It relies on the presence of a set of images that are linked together to form a 360-degree panorama, due to its suitability for this specific age group of the research sample. Also, they provide ease of use and navigation within the software at a low cost.

Characteristics of Virtual Tours

Virtual tours provide a great deal of interaction between the environment and the user. They also provide realistic ways to access and explore the different components of the environment. They have a lower material cost compared to real tours. They are easily accessible since they can be published on the Internet. In addition, they are subject to continuous modification and updating due to their flexibility. They are characterized by the sharing of learning resources and the provision of products to individual participants. The user can move within the environment without any restrictions. Finally, they allow visual information and data to be visualized graphically so that it appears real (Falih & Harith, 2021). The advantages of virtual field tours are: integrating various types of data in immediately available ways, providing images from a variety of different scales, and displaying invisible data such as corn, geochemistry, etc. Also, they are useful for offering tours to inaccessible areas and enable the display of extensive field tours with a great variety of landform diversity. In addition, they enhance and expand students' experience and enable flexibility of access through time and space. Furthermore, they provide a repeatable experience and can be used to reinforce concepts in the classroom (Caliskan, 2011). Khamis (2016) also summarized the factors that require the use of virtual tours, including the spread of Internet services and their low cost, low prices of computers and the spread of laptops, directing learners to internet sites and expanding their use, and what real tours face in terms of obstacles that prevent their employment in light of security and economic conditions in the communities, including lack of administrative support., increasing expenses, and lack of sufficient time.

Al-Meligy (2020) revealed that using virtual tours software has high effectiveness in developing archaeological awareness and strengthening the values of national belonging among children in the research group. Zain El Din (2018) also demonstrated the effectiveness of 3D virtual tours in providing kindergarten children with basic geographic concepts in the developed curriculum for kindergarten and came up with a list of technical and educational standards for virtual tours. In addition, Hussein (2020) showed the impact of providing performance support in virtual learning tours to develop the life skills of kindergarten children. Moreover, Badir and Khamis (2020) indicated the impact of the museum trips program on tourism development for children in the early childhood stage in the Kingdom of Saudi Arabia and tourism awareness. Finally, Faleh and Harith (2021) concluded that there is a relationship between

panoramic virtual trips and the development of the concept of color among kindergarten children.

Historical Concepts and Children

Historical concepts are one of the educational fields concerned with the study of man, in terms of his growth, way of thinking, behavior, and the natural surroundings in which he lives through his history and its intellectual, social, economic, and political differences. History represents a prominent place among the branches of human knowledge. It is the totality of what happened previously in terms of historical events, which discovers the roots of the present human problems and the results that led to them. It is also a children's window to look at the past of their country and their leaders, and what civilization went through in light of the experiences of the former (Budair & Khamis, 2020). Some educators stress the importance of starting to learn historical concepts at an early age, on the condition that an appropriate traditional environment is provided, and that various and different activities are made available, in a manner commensurate with the child's nature, trends, and inclinations. Therefore, the acquired concepts of this stage must be included and integrated into the activities that the child interacts with. We may find that the society in which the child lives is a living, ever-evolving, and changing society. Therefore, the child must feel the impact of the past in the present, and what is expected of the impact of the present in the future (Al-Hayla, 2001).

The importance of learning historical concepts for the kindergarten child is concentrated in the following: identifying the natural and cosmic phenomena that children see and seek to try to explain them, developing the child socially, emotionally, and intellectually through various events, and making him more efficient in dealing with his environment. They allow summarizing surrounding information about the child, which makes it easier to store and retrieve it from memory and deal with it in different situations of life, or educational situations, so the child memorizes as much vocabulary as possible that helps him retrieve it and deal with it flexibly at the time of need. In addition, every child's learning is based on a sense of time and place that helps to learn historical concepts in their later learning and contributes to organizing the child's mental experiences. Historical concepts are a starting point or a guiding point, and a path for the various activities of the child, as they may be a result of the educational process, or be a constructive means for lessons or other concepts. Moreover, the teaching of historical concepts is an important factor in correcting incorrect or abstract concepts alike. Likely, historical concepts enable the transfer of learned scientific experiences to new situations without the need to learn to solve each problem separately, so it is sufficient to generalize to all similar situations. Furthermore, historical concepts elevate the child to a level where he can extract new ideas, laws, and explanations for a number of phenomena and events, which is the level at which creativity and innovation of all kinds appear. They simplify and organize the environment surrounding children and facilitate children's communication with each other. Finally, they help to identify the events and facts, the date of their occurrence, and the accompanying changes and events.

The development of historical concepts among kindergarten children aims to introduce children to the history of their country, prominent personalities, and important historical events and to encourage them to respect their historical heritage and belonging to their homeland. It also satisfies the motive of knowledge and curiosity of the child in knowing himself and understanding his relations with the past and his relations with other societies and their culture. It, in addition, develops the child's ability to understand historical events through various historical activities and teaches the child how to think within his capabilities and realize the relationships between knowledge, reason, and historical events. Moreover, it helps the child to be acquainted with the civilization of his country and to try to strive for the elevation and progress of his country, to be attached to it and his land, to take lessons and cues from the events of the past, and to benefit from its lessons in addressing the present and the future. Finally, it helps children to realize the great effects that Islam has made in the history of humankind in general and to recognize the importance of historical places that attract tourists to their homeland (Bawazir & Qurban, 201; Chick, 2006; Ibrahim & Muhammad, 2016).

The foundations that the kindergarten teacher must take into account when teaching historical concepts are to start teaching tangible concepts, then abstract ones, then more abstract ones, and choose the lower educational levels, then the upper levels according to the children’s levels. Care must also be taken on the practical application when teaching historical concepts and setting a good example for children. In addition, when choosing scientific experiences, the nature of the learner himself must be taken into account in terms of his inclinations, interests, and curiosity. Humans and nature influence each other directly or indirectly. Finally, when developing plans and curricula, teachers must take into account the individual differences between children's cultural, religious, social, and mother tongues (Botros, 2004; Cohen, 2010; Dikmenli, 2014; Zahran et al., 2007). Ibrahim and Muhammad (2016) also demonstrated that the training program motivated kindergarten teachers to use the story for the kindergarten child to acquire some historical concepts in the Pharaonic

era after their knowledge of this era. Also, Al-Mounir et al.'s (2019) study revealed the development of some historical concepts among kindergarten children using a program based on the systemic approach. In addition, Badir (2021) demonstrated the effectiveness of using the virtual museum in developing historical concepts in early childhood.

Aim of the Study

The current study aims:

- to discover the effectiveness of virtual tours to archaeological sites in Al-Ahsa in developing historical concepts among kindergarten children.
- to detect differences between boys and girls in acquiring historical concepts.

Methodology

The quasi-experimental approach was used, given that it is appropriate for the nature of this study, achieving its objectives, and revealing the effectiveness of virtual tours to the archaeological sites in Al-Ahsa in developing historical concepts among kindergarten children. The study also relied on the design with one treatment group. Quasi-experimental studies evaluate interventions but that do not use randomization. Also, they demonstrate causality between an intervention and an outcome.

Population and Sample of the Study

The study population consisted of all kindergarten children in the third level for the first semester of the academic year 2022, in government kindergartens affiliated with early childhood schools in Al-Ahsa Governorate in the Eastern Province. The cluster sampling technique was applied to draw the study sample. One early childhood school (the Third Elementary for Early Childhood in Hofuf) was selected. The researchers chose (30) boys and girls to participate in the study based on their parents' approval. Those parents who agreed to allow their children's participation in the study completed two copies of the written informed consent form. They kept one copy and returned the other to the researchers. Also, the approval letter for conducting the research from the Ethical Approval Committee at the Deanship of Scientific Research, Kind Faisal University was obtained. They were recruited in the study in the first semester of 2022. It must be noted that authors did not have access to information that could identify individual participants during and after data collection. The participants are considered homogenous in terms of nationality (Saudi Arabia), culture, and economic status.

Instruments

The study tools consisted of a pictured test of historical concepts and a program based on virtual tours to develop historical concepts. After reviewing the theoretical framework and previous studies related to historical concepts (Al-Meligy, 2020; Bdeir & Khamis. 2020), the pictured historical concepts test was built. The test aimed to measure the extent to which kindergarten children acquired historical concepts. It has been prepared according to the following steps:

- The initial image was prepared for the pictured historical concepts test, which consisted of (16) paragraphs distributed over eight main dimensions. The first dimension includes Jabal Al-Qarah, the second Suq Al-Qaisariya, the third Ibrahim's Palace, the fourth Jawatha Mosque, the fifth Al-Uqair Port, the sixth Al-Amiriya School, the seventh Al-Bay'ah House, and the eighth Al-Asfaar Lake. Each dimension contains two sections; the first section measures the child's ability to know the shape of the historical landmark, and the second dimension measures the child's recognition of the area in which the historical landmark is located. The instructions were drafted, and a correction key was put in place.

- The initial picture of the test was shown to a jury of experts.

- The test was applied to the survey sample.

- The test in its final version consists of two parts: the first part is concerned with the child's basic data: name, gender, date of birth, date of application of the test, and its instructions. The second part includes questions distributed over the main criteria of historical concepts. Under each question, there are three pictures from which the child can choose the one that answers the correct answer.

- The test was corrected by giving one point if the answer was correct, zero point if the answer was wrong, and the total score was 16 degrees.

Test Validity

To verify the face validity of the test, it was presented to a number of (7) experts who are specialists in early childhood, educational techniques, and teaching curricula and methods.

Their comments and suggestions were taken into account in developing the test. Also, the test was piloted on a sample of (10) children. Then, the Pearson correlation coefficient was calculated between the child's score on the question and the total score on the test. Table 1 shows the results.

Table 1.
Pearson Correlation Coefficients between the Children's Score on the Question and the Total Score of the Pictured Test

No. of question	Pearson correlation coefficient	Sig.	No. of question	Pearson correlation coefficient	Sig.
1	.728*	.017	9	.838**	.002
2	.692*	.027	10	.692*	.027
3	.728*	.017	11	.633*	.049
4	.633*	.049	12	.768**	.009
5	.692*	.027	13	.654*	.040
6	.633*	.049	14	.838**	.002
7	.654*	.040	15	.768**	.009
8	.753*	.012	16	.809**	.005

**sig. at (0.01), * at (0.05).

Table 1 shows that the Pearson correlation coefficients between the scores of the test questions and the total score of the test were statistically significant at (0.01) and (0.05). Pearson's correlation coefficients ranged between questions with the total score of the test between (0.633* - 0.838**). This result confirms that the test has a high degree of validity.

Test Reliability

The reliability coefficient was calculated on the total score of the test using the Couder-Richardson equation -20. The test was applied to a survey sample, consisting of (10 children). The reliability coefficient was (0.93). The reliability coefficient was calculated through the split-half (Brown), and the reliability coefficient was (0.87). These values are high-reliability coefficients that are suitable for the study.

Virtual Tours-based Program

The program was built by looking at several sources represented in books, references, studies, and previous research that focused on virtual tours, sites, and historical concepts. The program consists of eight sessions that contain some historical concepts in Al-Ahsa Governorate in the Kingdom of Saudi Arabia, namely, Al-Qarah Mountain, Suq Al-Qaisariya, Ibrahim Palace, Jawatha Mosque, Al-Amiriya School, Bait Al-Allegiance, Al-Uqair Port, and Al-Asfaar Lake. The program aims to acquaint children of the third level in kindergarten with the antiquities in their environment and urge them to discover more about what the Al-Ahsa Governorate contains preserved and valuable historical antiquities over time. The program was carried out using panoramic virtual tours presented in 3D. It depends on the presence of a set of images linked together to form a 360-degree panorama because it is suitable for kindergarten children, as it provides ease of navigation, use, and navigation within the software, and its low cost through the application (Google Earth). The program includes objectives, means, strategies, and evaluation methods.

The content of the program was presented in its initial form to (7) experts specialized in the field of early childhood, educational technologies, curricula, and teaching methods, in order to take their opinions on the appropriateness of the general objective and the detailed objectives and to amend or delete what they deem appropriate. The experts' remarks about modifying some of the session's elements and activities and amending the wording of some procedural objectives with the content of the sessions were taken into consideration. In its final version, the program consisted of (8) sessions. Table 2 shows a summary of the content of the program sessions, its objective to be achieved, the necessary tools and means, and the proposed time for each session.

Table 2.
Summary of the Program Content

The overall goal of the program	Developing historical concepts through virtual tours for kindergarten children.
Session topic	The first session: the virtual tour to Al-Qarah Mountain The second session: the virtual tour to Suq Al-Qaisariya The third session: the virtual journey to Ibrahim's palace Fourth Session: Virtual Journey to Jawatha Mosque Fifth session: the virtual tour to Al-Amiriya School Sixth session: Virtual tour to Al-Bay'ah House Seventh session: Virtual tour to Al-Uqair Port Eighth session: the virtual tour to Al-Asfaar Lake
Session time	30-35 minutes
Used means	A smart tablet, projector or (smart board) to display virtual tours.
Activity course	-The introductory part includes a pre-diagnostic assessment. -The main part includes a phased (structural) assessment. -Concluding part.
Summative assessment	-A final assessment that includes questions about the virtual tours offered to determine the extent to which the child has achieved the objectives of each session.

Data Analysis

SPSS software (v. 23) was used to analyze the data. A number of statistical methods were used:

- Pearson correlation coefficient to calculate the validity of the internal consistency of the test.

-Couder-Richardson equation 20 to calculate the reliability of the test.

- T-test for paired and independent samples to verify the first and second hypotheses.

- The size of the effect to find out the effectiveness of virtual tours to archaeological sites in Al-Ahsa in developing the historical concepts of the kindergarten child.

Results and Discussion

What is the effectiveness of virtual tours to archaeological sites in Al-Ahsa in developing historical concepts among kindergarten children?

To verify the validity of the first questions, the t-test was used for paired samples to show the significant differences between the means of the scores of the children of the experimental group in the pre-and post-applications of the pictured historical concepts test. Table 3 shows the results.

It can be seen from Table 3 that there were statistically significant differences at (0.05) between the means of the scores of the experimental group in the pre-and post-tests in all dimensions of the test, in favor of the post-test. The level of the effect size of the effectiveness of virtual tours to the archaeological sites in Al-Ahsa in developing historical concepts in all dimensions of the test was high. This result validates the first hypothesis. Therefore, virtual tours to the archaeological sites in Al-Ahsa were effective in developing historical concepts among kindergarten children. This result is because the virtual tours embody the real reality of the historical places with their reliance on visual and kinetic effects that draw the child's attention towards acquiring and developing historical concepts. In addition, the virtual tours were more interesting for the child to listen to historical concepts than the usual traditional methods. Therefore, virtual tours were effective in developing historical concepts among kindergarten children.

Table 3.

The T-Test of Paired Samples for the Differences between the Means of the Scores of the Children of the Experimental Group in the Pre-and Post-Applications of the Pictured Historical Concepts Test

Dimensions of the Historical Concepts Test	Group	No.	Means	Standard deviations	t	df	Sig.	Differences	Effect size	Level
Al-Qarah Mountain	Pre-test	30	.90	.845	6.656	29	.000	Post-test	1.21	High
	Post-test	30	1.93	.254						
Suq Al-Qay-sariyya	Pre-test	30	.93	.740	6.513	29	.000	Post-test	1.01	High
	Post-test	30	1.87	.346						
Ibrahim Pal-ace	Pre-test	30	.63	.718	7.526	29	.000	Post-test	1.38	High
	Post-test	30	1.87	.346						
Jawatha Mosque	Pre-test	30	.33	.479	14.355	29	.000	Post-test	2.62	High
	Post-test	30	1.83	.379						
Al-Uqair Port	Pre-test	30	.57	.679	11.195	29	.000	Post-test	2.04	High
	Post-test	30	1.93	.254						
Al-Amiriya School	Pre-test	30	.43	.626	9.633	29	.000	Post-test	1.76	High
	Post-test	30	1.77	.504						
Al-Bay'ah House	Pre-test	30	.53	.681	11.195	29	.000	Post-test	2.04	High
	Post-test	30	1.90	.305						
Al-Asfaar Lake	Pre-test	30	.57	.626	12.339	29	.000	Post-test	2.26	High
	Post-test	30	1.97	.183						
Total degree	Pre-test	30	4.90	2.023	24.954	29	.000	Post-test	4.56	High
	Post-test	30	15.03	1.520						

The result of this study agrees with that of Zain El Din's (2018) study, which demonstrated the effectiveness of 3D virtual tours in providing kindergarten children with basic geographic concepts in the developed curriculum for kindergarten at Port Fouad Experimental Language School in Port Said. It also converges with that of Hussein's (2020) study, whose results found an effect of the method of providing performance support in virtual learning tours to develop the life skills of kindergarten children. In addition, this result also intersects with that of Al-Meligy's (2020) study, which showed that using virtual tours software has great effectiveness in developing archaeological awareness of Egyptian antiquities and strengthening the values of national belonging among kindergarten children. Moreover, this result is consistent with the result of Falih and Harith's (2021) study, which found a relationship between panoramic virtual tours and the development of the concept of color in children from the governmental governorate of Riyadh. Furthermore, Budair and Khamis's (2020) study supports the current result. The results showed statistically significant differences between the averages of the post-test for each of the experimental and control groups in favor of the experimental group in the degree of awareness of kindergarten children in the Kingdom of Saudi Arabia. This result indicates the impact of the museum tours program on tourism development for early childhood children in the Kingdom of Saudi Arabia. Finally, the current result accords with that of Budair's (2021) study, which revealed the effectiveness of the virtual museum in developing historical concepts in early childhood.

Reporting and discussion of the results of the second questions: Are there any statistically significant differences at (0.05) between the mean scores of boys and girls in the historical concepts test pictured in the post-application.

To verify the validity of the second questions, the t-test was used for independent samples to show the significance of the differences between the average scores of males and females in the concepts test in the post-test of the historical concepts test. Table 4 shows the results.

Table 4.

T-test for Independent Samples of the Differences between the Average Scores of Boys and Girls in the Concepts Test in the Post-test of the Historical Concepts Test

Dimensions of the Historical Concepts Test	Gender	No.	Means	Standard deviations	t	df	Sig.
Al-Qarah Mountain	Boys	14	1.93	.267	.095	28	.925
	Girls	16	1.94	.250			
Suq Al-Qaysariyya	Boys	14	1.79	.426	1.209	28	.237
	Girls	16	1.94	.250			
Ibrahim Palace	Boys	14	1.79	.426	1.209	28	.237
	Girls	16	1.94	.250			
Jawatha Mosque	Boys	14	1.86	.363	.317	28	.754
	Girls	16	1.81	.403			
Al-Uqair Port	Boys	14	1.93	.267	.095	28	.925
	Girls	16	1.94	.250			
Al-Amiriya School	Boys	14	1.79	.426	.190	28	.850
	Girls	16	1.75	.577			
Al-Bay'ah House	Boys	14	1.86	.363	.714	28	.481
	Girls	16	1.94	.250			
Al-Asfaar Lake	Boys	14	2.00	.000	.933	28	.359
	Girls	16	1.94	.250			
Total degree	Boys	14	14.93	1.492	.348	28	.731
	Girls	16	15.13	1.586			

Table 4 shows no statistically significant differences at (0.05) between the mean scores of boys and girls in the historical concepts test pictured in the post-test. The level of significance on all dimensions and the total score was greater than (0.05). This result indicates that the effectiveness of virtual tours to the archaeological sites in Al-Ahsa has an effect of the same degree on the development of historical concepts among kindergarten children, both boys and girls.

This result is attributed to the fact that virtual tours have a positive impact on the development of historical concepts among children of both the boys and girls sexes. In addition, both boys and girls children have the same enthusiasm, motivation, and interaction. According to the cognitive theory, the gender factor does not affect the acquisition of knowledge in the kindergarten stage. The child goes through developmental changes that appear as a result of the experiences he is exposed to, whether he is boys or girls as their needs and interests are similar at this age. The result of this study agrees with that of Al-Mounir et al.'s (2019) study, which aimed to develop some historical concepts among kindergarten children using a program based on the systemic approach. The study used the pictured historical concepts test for kindergarten children, and the program was based on the systemic approach. The study showed no statistically significant differences between the mean scores of boys and girls in the concepts test in the post-application.

Conclusion

The study aimed to reveal the effectiveness of virtual tours to the archaeological sites in Al-Ahsa in developing historical concepts among kindergarten children and to identify the differences between boys and girls in acquiring historical concepts. The results showed statistically significant differences between the means of the scores of the experimental group in the pre-and post-applications in the pictured test of historical concepts in favor of the post-application. Also, there was an effect size of virtual tours to archaeological sites on the development of historical concepts among kindergarten children. In addition, the results showed no statistically significant differences between the means of the scores of boys and girls in the historical concepts test pictured in the post application. The study results implicate the importance of developing kindergarten children's historical concepts using virtual tours. Based on the results, the researcher recommends paying attention to the use of virtual tours in the kindergarten stage because of their acceptance and importance in achieving children's acquisition of historical concepts and educational goals and increasing the speed of learning among kindergarten children. Parents of children should also be invited to employ virtual tours during their children's education and to choose from virtual tours that are suitable for their children's ages. In addition, there is a need to train kindergarten teachers through training workshops and educational seminars on the use of virtual tours. Finally, the researcher suggests conducting a study on the use of virtual tours in the development of scientific and social concepts.

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