

The Effectiveness of Using Electronic and Sensory Educational Games in Developing Some Scientific Concepts for Kindergarten Children

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Abstract

The current study aims to identify the effectiveness of the program. The program aims to determine the effectiveness of using electronic and sensory educational games in developing some scientific concepts for kindergarten children. The quasi-experimental approach was used, with two experimental groups before and after implementing the program. The study was applied to (60) kindergarten children. Their ages range between (5-6) years, and the program was applied to the two experimental groups. The first group (30 children) used electronic educational games, and the second group (30 children) used sensory educational games to develop some scientific concepts for kindergarten children. The study used the following materials and tools: A program based on the use of electronic and sensory educational games to develop some scientific concepts for kindergarten children. In addition, a test of illustrated scientific concepts for kindergarten children (living organisms - floating and diving - space - seasons of the year) prepared by the two researchers. The study reached the following results: There are statistically significant differences between the average scores of the children of the first experimental group, "Using electronic educational games" in the application. Pre and post on the dimensions of the illustrated scientific concepts test for kindergarten children in favor of the post application. "There are statistically significant differences between the scores of the children of the second experimental group." "Using sensory educational games" in the pre- and post-application on the dimensions of the illustrated scientific concepts test for kindergarten children in favor of the post-application. There are statistically significant differences between the average scores of the children of the first experimental group, "Using electronic educational games," and the average scores of the children of the second experimental group, "Using "Sensory educational games" in the post-application on the dimensions of the illustrated scientific concepts test for kindergarten children for the benefit of the children of the second experimental group. In light of the results of the study, the researcher presented several recommendations for developing scientific concepts among kindergarten children, namely: Raising awareness of kindergarten teachers. To use electronic educational games as a supportive means to develop scientific concepts in kindergarten children because of their strong impact on children. Directing kindergarten curriculum developers that the curriculum include a combination of sensory and electronic educational games to develop scientific concepts in kindergarten children. Conduct more research that combines sensory and electronic educational games to develop concepts to develop scientific concepts for kindergarten children.

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Introduction

The kindergarten stage is one of the important stages that must be taken into consideration while preparing young people because of its important roles in building and forming personalities capable of acquiring knowledge, skills, and forming attitudes. It is considered the first building block in building a good citizen who is aware of his rights and performs his duties. To form a child properly, he must pay attention to all aspects of his personality and conforming to his inclinations and desires in a way that does not disturb the order of society, in addition to taking into account individual differences among children and including sound behavioral values and principles within the educational content provided to them.

The past few years have witnessed "quantitative and qualitative developments in the field of software. The word electronic computer has become one of the terms commonly used in the modern era. The computer is an automatic device that works according to an electronic system that carries out mathematical operations, analyzes parameters, and performs many tasks in accordance with the commands issued to it, then reduces the results and displays them in formulas and methods." Different, when children practice entertaining and educational play activities using the computer or educational activities using different educational software to teach letters, numbers or colours, they learn how to deal with the computer and through their use of educational and entertaining software that includes knowledge, games, puzzles, stories, competitions, drawing and colouring. Computer games are distinguished by a unique characteristic from other games, which is its ability to interact with the person playing, in addition to the clarity of the image displayed on the computer screen. The computer can be used to represent educational situations by displaying appropriate phenomena or experiences that are close to reality while making changes in a simulation way. This style generates enthusiasm. The intense and strong desire of children to learn, and contributes to creating an atmosphere of joy and joy of learning among children." (Al-Khafaf, 2010) Electronic games have become more present in the lives of children and adults alike, so it was necessary for these games to be employed in education and adapted to educational goals.

Computer skills have become among the skills that a child must acquire in the kindergarten stage so that he can keep pace with current technological developments, which the child often has a desire to acquire and master. Many studies have indicated the importance of the child using and mastering computer skills, such as the study by Sakes et al (2011), and the study (2010) Bollard et al and the study "Leslie (2014), all of which emphasized the importance of the child acquiring computer skills and etiquette for dealing with it. Educational scientists have developed modern methods in teaching various subjects, and one of these methods is the method of educational computer games.

Al-Kharaz's study (2012), which aimed to measure the impact of using electronic educational games in developing social studies concepts among kindergarten children in the State of Kuwait, also confirmed the improvement in the level of kindergarten children because of their learning using electronic educational games in learning and the strong positive impact of those games. Ahmed's study (2011), which aimed to verify the effectiveness of using electronic educational games in developing mathematics concepts among kindergarten children, concluded that the positive and effective role of electronic educational game programs in developing concepts and increasing the achievement of kindergarten children in mathematics.

Playing electronic games is a fruitful activity, as it produces positive emotions, strong social relationships, a sense of accomplishment, and an opportunity to develop the ability to build

a sense of doing useful and fruitful work. (McGoniga, 2011), as it stimulates contemplation and thinking, enables creative solutions and adaptation or adaptation. It enables the application of important opinions and ideas in real life facts and events. (Allen, 2010) Many positive aspects, including, also characterize electronic games: recreation in times of Emptiness. Play also expands the player's thinking and imagination, as some games contain puzzles that help develop the mind and intuition. Another positive aspect of it is that it is the subject of competition between friends by playing multiplayer games. It may also expose players to new ideas and up-to-date information. (Al-Anbari, 2010) It also develops memory and speed of thinking, and develops the sense of initiative, planning, and logic. This type of game contributes to familiarization with new technologies, so that children become proficient in operating the steering wheel, using the joystick, and dealing with these machines professionally. It also teaches them to carry out tasks. Defense and attack at the same time. These games stimulate concentration and attention, and activate intelligence, because they are based on solving puzzles or creating worlds created by the imagination. Not only that, but they also help to participate. (Al-Jaroudi, 2011). Reliance on the computer has become almost total in the lives of many countries, groups and individuals, and interest began to increase with the increase in health problems created by human contact with the computer and sitting in front of its screen for long hours. Which prompted researchers and those interested in this field to conduct studies to find out the negatives and positives. Al-Hudhali's study (2014) aimed to measure the impact of educational games. Electronic educational games in developing some scientific concepts among kindergarten children, and it was found that there were statistically significant differences at the 0.05 level of significance between the average scores of the control group that used the normal method and the experimental group that dealt with using electronic educational games in developing some scientific concepts among kindergarten children. Mustafa's study (2010), which aimed to prove the effectiveness of electronic games in developing strategic thinking skills among kindergarten children, also concluded that training in strategic thinking skills enables children to master the skill of organization, and after going through the training program, children are able to master strategic thinking skills.

Abdel Hamid's (2010) study concluded. Which aimed to design an integrated educational program to prepare kindergarten children to deal with electronic learning resources and measure its effectiveness, pointing out the importance of teaching the computer at that stage because of its great effectiveness in increasing the knowledge and skills of children dealing with electronic learning resources. The study also recommended the necessity of using electronic learning resources. Such as electronic games in the educational environment in kindergartens, along with various educational activities, as a complement and not a substitute for educational activities and methods, that have an effective impact in raising the child, such as art, drama, sand, and water. Despite the importance of electronic games for children, they have some drawbacks, including that frequent playing of electronic games in the first years of a child's life leads to some disturbances in the child's ability to focus on other tasks such as studying and achieving. As confirmed by a study (Al-Anbari, 2010). It creates an anti-social child. The child who spends long hours playing electronic games without communicating with others makes him an anti-social child who is withdrawn into himself, in contrast to popular games that are characterized by communication. In addition, the child's excessive dealing with the worlds of symbols can isolate him from dealing with the world of reality, so he lacks the social skill in establishing friendships and dealing with others, and the child becomes shy and unable to speak and express himself. A large percentage of electronic games depend on entertainment and enjoyment of killing others, destroying their property, and assaulting them unlawfully. They teach children and adolescents the methods, arts, and tricks of committing crimes, and develop in their minds the capabilities and skills of violence and aggression that ultimately lead them to commit crimes.

Play is a dynamic process that expresses the child's need for enjoyment and pleasure and satisfies his innate inclination for activity and recreation. It is a biological necessity; it helps in building the child's integrated personality, as play is the child's job, work, and primary concern. It is one of the most important educational components of the pre-school period. It is also an effective educational mediator in raising a child and shaping his personality. Piaget believed that play is a means of learning, and it has multiple physical, mental, social and psychological benefits in addition to its benefits in psychological treatment (Al-Qahtani, 2011, 60). Play is considered one of the behavioral patterns that a person practices in order to obtain pleasure and entertainment. Through it, he may obtain a lot of knowledge and information, and he may acquire many desirable social skills, or positive attitudes. Play also works to develop and develop the child's personality in its various aspects. Its physical, psychological, social, mental and cognitive fields are among the goals that the individual seeks to achieve through playing: helping the child understand the points of view of others through his performance of their roles, and it qualifies him to play these roles in the future. The child acquires the skill of planning, distributing roles, and solving problems. Developing creative thinking in children. Through it, the child learns skills related to the development of scientific thinking. Developing the learner's linguistic and reading skills. The child acquires some social values, such as cooperation, assistance, sharing, waiting in turn, and patience." (Ali, 2011). Play is a "motor activity" necessary in a child's life because it develops muscles, strengthens the body, and expels the child's excess energy. Some scholars believe that a decline in the level of physical fitness, wasting of the body, and deformities are some of the results of restricting movement in children. Play also contributes to "forming the moral and ethical system of the child's personality. Through play, the child learns from adults moral standards of behavior: such as justice, honesty, honesty, self-control, and patience. The ability to feel the feelings of others grows and develops through the social relationships that the child is exposed to in the first years of his life." (Powered by vBulletin, 2000 - 2013). It is also an active behavior in which children discover, experiment, use and focus on people, things and events" (Al-Qahtani, 2011). It also "provides the child with a unique opportunity to be liberated from a reality full of obligations, restrictions, frustration, rules, orders and prohibitions. In order to live through events that he wanted to happen but they did not happen, or to change events that happened to him in a certain way and that he wanted to happen to him in another way. It is a starting point by which the child resolves, even if temporarily, the contradiction that exists between him and the adults and those around him. Not only that, but it is also a starting point for freedom from the restrictions of natural laws that may prevent him from experimenting and using means without the necessity of linking them to goals or results. It is an opportunity for the child to act freely without being bound by the laws of material and social reality." (Al-Khafaf, 2010) "The behavior of a psychologically disturbed child varies as he practices and simple behavioral problems and some of them may be treated automatically, and during the diagnosis process, that is, diagnosis at this level takes a therapeutic, educational and guidance character, treating the child through play and through what he discovers of these problems." (Sawalha, 2011).

Learning scientific concepts and improving them among children requires extensive and organized efforts. In addition, the scientific concepts that we want to teach children must be related to the child's life so that he accepts and assimilates them. They must help him solve the problems of his life and answer his inquiries about what surrounds him in his environment, and through them, he can understand that everything has a reason and purpose. Many studies have focused on the factors that can affect the learning and acquisition of concepts, and these factors include the type of examples used in learning the concept. The ease of distinguishing between positive and negative examples, the number of characteristics belonging to and not belonging to the concept, the way questions are presented, the nature and type of the concept, pronunciation, and feedback. Chronological age, intelligence, anxiety.

Scientific concepts are the core of the educational process, upon which the learning of the rest of knowledge is built. Scientific concepts are one of the basic components of the cognitive structure of science, on which the rest of the levels of this structure are built, including principles, generalizations, laws, and theories. They are the basic axes around which curricula revolve and represent the building blocks of science and the foundations of its construction. As Jong, T., Linn, M., Zacharia, C (2013) study indicated, Shawn M. Glynn, 2012 indicates the development of scientific concepts for kindergarten children. Reinders pointed out the importance of introducing basic concepts in science in general, as he explained that the daily life of children provides countless opportunities to interact with a variety of objects, and to observe their properties and the changes they undergo. Thus, each child develops some intuition about matter. Concepts represent the meaning of science and fulfill its function of observing, controlling, and predicting natural phenomena. They help transmit the impact of learning and organize the process into a structural framework that facilitates the learning process. All of these things are among the needs of children in this situation that must be satisfied.

The individual's scientific concept consists of meaning and understanding associated with specific words, phrases, or processes. It is merely the organization of the world of things, events, and various natural and human phenomena into a number of groups and categories. The scientific concept is also defined as what the individual has of meaning and understanding associated with the word (term). Or it is a specific process, such as (mammals) with breasts whose body is covered with hair.

The goals of developing scientific concepts for kindergarten children are to develop the cognitive side, which includes facts, principles, and theories, the emotional side, which includes inclinations, trends, and values, and the psychomotor side, which includes skills of various types (Boutros, 2011, 143).

Learning and improving scientific concepts in children requires extensive and organized efforts. Also, the scientific concepts that we want to teach children must be related to the child's life so that he accepts and assimilates them. They must help him solve the problems of his life and answer his inquiries about what surrounds him in his environment, and through them he can understand that everything has a reason and purpose.

The importance of learning scientific concepts. Children's knowledge of the importance of scientific concepts in daily life. Developing and training the child's different senses, training children to notice things and dealing with them to learn about them, training children to experiment in the simple sense that is appropriate to their abilities and perceptions, helping children to acquire some scientific trends and inclinations, developing children's ability to explain some scientific phenomena. (Brick, 2020)

It also helps them understand and explain many of the things that attract their attention in the environment around them and that they can learn, and it reduces the complexity of the environment as it classifies the things or situations that exist in the environment, and reduces the need to relearn when facing any new situation. It also helps to Directing, forecasting and planning any activity, in addition to allowing the organization and linking of groups of events. Qatami mentions the following types of concepts Hammad (2010):

1. Sensory concepts: These are concepts that are perceived through the senses, such as the distinction between solid and liquid.
2. Abstract concepts, which are non-sensory and cannot be understood except by defining them through terms, words, symbols, or mathematical formulas such as the concepts of size and length.
3. Symbolic concepts: The concept represents something. The car is the concept of something easy that we ride to reach a specific place. It is something that indicates luxury and wealth or innovation and wonder.

4. External concepts are those concepts that are imposed on us, such as the systems used in libraries.
5. Internal concepts are the concepts we create for ourselves to help us deal with the complexity of our own experiences

Methods and strategies for developing scientific concepts for kindergarten children

There are many different methods and strategies for developing scientific concepts for kindergarten children depending on the field of study. The following is a presentation of some of these studies: Hassanein's study (2011): Motor expression as another approach to developing some scientific concepts for kindergarten children. In the field of computers, the study of students (2014) designed a computer games program to develop some scientific concepts among kindergarten children with developmental learning difficulties. Hawari's study (2014) relied on the mind mapping strategy in light of some principles of TRIZ theory to develop scientific concepts for kindergarten children, and Lamloum's study (2015) aimed to design an interactive program to develop some scientific concepts among kindergarten children. Using electronic concept maps. Longbottom's (2019) study also confirmed that a child could acquire biological concepts through contact with everyday objects and responses to daily biological events such as the death of a pet or the birth of a sibling. Of particular importance on which the study was based is understanding natural processes such as birth, death, inheritance, and environmental relationships. Boutros (2011) explained that concepts have several characteristics:

- Concepts are generalizations that arise through the abstraction of certain sensory events.
- The concepts in their formation depend on the previous experience that the child acquires through the family and educational assignments.
- Symbolic concepts of the individual.
- Concepts are organized into horizontal or vertical organizations. The horizontal organization indicates the presence of some common characteristics, but due to their differences in some characteristics, here comes the vertical organization.
- Children do not have the same concept because each child is different from the other in terms of mental abilities and educational experiences.
- Concepts change from simple to complex and from concrete to abstract.
- In order for a child to learn a general concept, he must learn some special concepts that make up the general concept.
- Concepts are used in at least two ways: exoteric in general and intrinsic in particular.
- Every concept has an emotional charge, which is the subjective concepts.
- Concepts affect the child's personal and social adjustment.
- Many concepts are formed without awareness, and in the same way, values are formed.
- Some concepts may be unreasonable and superstitious.

Amin (2017) explained the characteristics of the concepts as follows:

- The scientific concept consists of two parts: the name or term, such as acid cell density... and the verbal meaning of the concept.
- The scientific concept includes design, like the concept of matter, which is everything that occupies space, has weight, and can be perceived by the senses.

– - Every scientific concept has a set of distinctive characteristics that are shared by all members of the concept category and distinguish it from other concepts. Scientific concepts consist of three distinctions, organization (classification), and evaluation.

– The processes of forming and growing scientific concepts are a continuous process that increases in difficulty from one grade to the next, and from one educational stage to another, as a result of the growth of scientific knowledge itself and the maturity of the individual.

Abdel Rahman (2019) has confirmed that it is possible to benefit from the characteristics of concepts in the progression from the simple to the more difficult, and from the concrete to the abstract, taking into account individual differences among children. Diversifying learning strategies such as role-playing, learning by playing - dialogue and discussion) which helps to pay attention and gives a kind of Suspense. From the above, the two researchers believe that it is possible to benefit from the characteristics of concepts that they are generalizations that arise through the abstraction of some sensory events and that they change from simple. To the complex, and from the tangible to the abstract, we begin by presenting scientific concepts to the child in a tangible form so that the child understands them. There are some difficulties in learning and teaching scientific concepts, including what Boutros (2014) mentioned:

– The nature of the scientific concept in terms of the child understands of abstract or complex scientific concepts.

– Confusion in the meaning of the concept or the verbal significance of some scientific concepts. The ignorance of mothers and adults surrounding the child in conveying the meaning of new concepts with many synonyms and the field of non-scientific languages, which causes him to acquire wrong perceptions that may not change as he grows, but rather.

– It is getting more complicated. Lack of the child's appropriate scientific background necessary to learn new scientific concepts.

– Teaching strategies used to learn the concept.

– The teachers themselves, in terms of their teaching methods, their competencies, and the extent of their understanding of scientific concepts. Internal factors among children, namely their readiness, motivation to learn, interest, and inclinations

– For the scientific field, as well as the environment in which they live.

– Ease of obtaining information through television, which in turn leads to mental relaxation that keeps the child away from concentration, questioning, or interactive dialogue.

– Inadequate scientific curricula.

The study (2020) by Doran Aydin & Eager confirmed that it aimed to use an enrichment program based on STEM activities to develop school readiness and concept acquisition. The program continued for nine weeks. The study concluded that school readiness and concept acquisition increased for the benefit of the experimental group. In it, the barriers between science, mathematics, technology, and engineering disappear. Both Al-Muhaisen and Khaja (2015) pointed out that the design of curricula and activities based on integrated STEM education should be in an innovative scientific manner. That helps to understand and grasp the concepts of different sciences in an easy way, in an interactive manner, open to the environment and in the context of the learner's current knowledge and skills so that the learner develops specific skills whose impact extends to his life activities. Christine (2016) believes that raising children according to STEM curricula will enable them to

acquire the skills they need in the future, including problem-solving skills, life skills, and the ability to think critically, cooperate, and communicate. With others and investigation

Active learning is one of the most important modern methods for focusing learners' attention and moving them from the role of receiving to the role of participating and interacting, and educational games are among the most prominent educational means that achieve this positive role for the learner, including good educational materials and purposeful educational activities. Sensory educational games share this feature: wooden puzzle games, cards, scientific experiments, etc., as well as electronic educational games with different devices and programs, which has led to an increasing spread of educational computer programs in the recent era, which has led to a race between companies specialized in manufacturing and distributing educational software. The computer as an educational aid has multiple patterns that serve the teaching and learning process according to the nature of its software, to serve and because the computer has become one of the most important pillars and pillars, on which the educational system depends as an auxiliary educational tool. In addition, with the rapid development and spread of educational programs for the computer in recent years, the idea emerged. This study aimed to identify the effectiveness of using electronic and sensory educational games to develop some scientific concepts for kindergarten children. The current study confirms that computer games have great appeal for children. It must be exploited positively to benefit from it in achieving the comprehensive and integrated development of the child. Parents and teachers must direct children to use useful games such as games that teach the child mathematical, linguistic and scientific concepts and intelligence games that develop the child's thinking and innovation as a means of support with sensory educational games.

Research problem

Due to the technological progress that the world is witnessing in the field of electronic educational programs, most kindergartens have turned to learning through electronic educational programs, through a survey study on some kindergartens in the city of Najran to identify the learning method used in kindergartens. The researcher concluded that most kindergartens have reduced the use of sensory educational games. Because it is expensive and requires time and effort in designing it, it focused on the use of electronic educational games, which affected children's understanding of some scientific concepts because some scientific concepts are difficult to develop through electronic educational games. And based on some studies, one of the studies that aimed to identify the effectiveness of an electronic educational program was recommended in developing some of the reading readiness skills of pre-school children, the computer becomes a means of assistance in developing some of the concepts and skills of the kindergarten child." (Al-Aluni et al., 2011). One study that aimed to identify "the effect of an educational games program in Developing innovative thinking and an attitude towards science in children, with the necessity of using educational games to develop scientific concepts in the pre-school stage. There were statistically significant differences between the average scores of the experimental group that studied with the educational games approach in attitude toward science in both the pre- and post-application in favor of the post-application. It also recommended the necessity of using educational games in developing scientific concepts in the pre-school stage (Afifi, D. T. The study of Abdel Hamid (2010), which aimed to design an integrated educational program to prepare kindergarten children to deal with electronic learning resources and measure its effectiveness, also emphasized the importance of teaching computers at that stage because of its great effectiveness in increasing children's knowledge and interaction skills. With electronic learning resources, the study also recommended the necessity of using electronic learning resources, such as electronic games, in the educational environment in kindergartens, along with sensory educational activities. As they are considered a complement and not a substitute for educational activities and methods that have an effective impact in raising the child, such as art, drama, sand, and water.

Dependence on the computer has become almost total in the lives of many countries, groups and individuals, and interest has begun to increase with the increase in health problems created by human contact with the computer and sitting in front of its screen for long hours. Which has prompted researchers and those interested in this field to conduct studies in Japan, Germany and the United States on groups. Of the individuals who deal with the computer on an ongoing basis, the results of these studies showed that dealing with the computer leads to psychological exhaustion, irregular blood circulation and heart rate, and also affects the mood, emotional and cultural state. In addition to the negative or negative patterns that imported games can carry, they have a direct or indirect negative effect. In children's personalities, which calls for more scientific, cultural, and educational oversight when selecting toys." (Sawalha, 2011, 117) through the exploratory study carried out by the researcher and the results and recommendations of previous studies as presented. The problem of the study emerged, which aimed to identify the effectiveness of using electronic and sensory educational games to develop some scientific concepts for kindergarten children.

Study assignments

In light of the above, the study hypotheses can be formulated as follows:

- 1- There are statistically significant differences between the average scores of the children of the first experimental group, "Using electronic educational games", in the pre- and post-application on the dimensions of the illustrated scientific concepts test for kindergarten children in favor of the post-application.
- 2- There are statistically significant differences between the scores of the children of the second experimental group, "Using Sensory Educational Games", in the pre- and post-application on the dimensions of the illustrated scientific concepts test for kindergarten children, in favor of the post-application.
- 3- There are statistically significant differences between the average scores of the children of the first experimental group, "Using electronic educational games", and the average scores of the children of the second experimental group. "Using sensory educational games", in the post-application on the dimensions of the illustrated scientific concepts test for kindergarten children, in favor of the children of the second experimental group.

Objectives of the study

The current study aims to identify:

- The effectiveness of using electronic educational games in developing some scientific concepts for kindergarten children
- The effectiveness of using sensory educational games in developing some scientific concepts for kindergarten children.

The importance of studying

- Directing the attention of kindergarten teachers to focusing on using sensory educational games more than electronic educational games to develop some concepts for the kindergarten child.
- Directing the interest of kindergarten teachers in using electronic educational games as a means of supporting the educational process.
- Directing the interest of kindergarten curriculum developers to include electronic educational games in kindergarten curricula to develop scientific concepts among kindergarten children.

- Guiding parents to use electronic educational games as a support for the educational process.
- It benefits the child himself in using various methods (sensory - electronic) to develop some concepts and skills related to the stage.

The limits of the study

- Spatial boundaries: The study was applied to children in the early childhood stage (5-6) in one of the government kindergartens affiliated with the Department of Early Childhood Education in the city of Najran.
- Human limits: Children aged 5-6 years in one of the government kindergartens affiliated with the Department of Early Childhood Education in the city of Najran.
- Time limits: The study was applied to the study sample in the third semester 1444.
- Objective limits: The study dealt with electronic games, sensory games, and some scientific concepts (living organisms - floating and diving - space - seasons of the year).

Search terms

The concept of electronic educational games

Electronic games are defined as “a device designated for television games that uses CDs loaded with various programs, where each disc is dedicated to one game in one or several stages” (Abu El-Enein, 2010). Electronic educational games are defined procedurally as “a type of game that a child practices to reach previously determined goals using a computer and has a set of laws that govern it”.

Concept of sensory educational games

The operational definition of sensory educational games: includes all games that are presented to the child in a tangible way and have a goal that he seeks to achieve.

Scientific concepts

Mustafa (2014) defined it as an abstract mental concept in the form of a symbol, word, or sentence used to indicate a specific scientific thing, topic, or phenomenon. The concept is formed as a result of linking scientific facts to each other and establishing existing relationships between them. As Suleiman (2015) defined it, it is a mental conclusion that the child reaches about a particular phenomenon by extracting the common characteristics of the facts related to that phenomenon, and it results from a set of terms and names that express that phenomenon, the kindergarten child. It is defined procedurally as “those concepts that study natural phenomena and explain the occurrence of some phenomena or events and the relationship between things in a scientific manner”. The score the child obtains on the test prepared for that purpose measure it.

Kindergarten child

Bahadur (2011) defined it as a child in the age stage extending from the end of the third year until the end of the fifth year or the beginning of the sixth year, and some have called this stage.

Early childhood

It is technically defined as the stage in which children join kindergarten from the age of 5-6 years.

Methodology

The quasi-experimental method is defined as the method through which the researcher can know the effect of the cause (the independent variable) on the result, the dependent variable

(Al-Mubooth, 2012, p. 6). Descriptive approach: To collect, present and analyze scientific material that answers the study's questions. The effectiveness of using electronic and sensory educational games in developing some scientific concepts for kindergarten children. Experimental approach: It has two experimental groups before and after applying the program. The program was applied to the two experimental groups, the first group using electronic educational games and the second group using sensory educational games to know the effect of using electronic educational games and sensory games in developing some scientific concepts for kindergarten children.

Study population

The study population consists of children registered in government kindergartens affiliated with the Department of Early Childhood Education in the city of Najran, aged (5-6) years, numbering 300 male and female children.

Study sample

The sample of the exploratory study consisted of 30 male and female children, and the primary sample consisted of 60 male and female children aged (5-6) enrolled in government kindergartens in the city of Najran. The sample was divided into two groups (30 male and female boys) a first experimental group (using electronic educational games) and (30 male and female males) an experimental group. Secondly, sensory educational games are used to develop some scientific concepts for kindergarten children.

Study tools and materials

Study tools

Illustrated scientific concepts test (living organisms - floating and diving - space - seasons of the year) for kindergarten children before and after implementing the program:

First: Illustrated scientific concepts test for kindergarten children (prepared by the two researchers)

The illustrated scientific concepts test for kindergarten children was constructed according to the following steps:

- Determine the purpose of the test: This test was built to identify the effectiveness of using electronic and sensory games to develop scientific concepts for kindergarten children.
- Sources for constructing the test: The researchers relied on the following sources to construct the test:
 - Research and studies that dealt with the early childhood stage and its philosophies, and the characteristics of child development, as well as studies that dealt with scientific concepts and electronic and sensory games used in this stage.
 - Research and studies that dealt with how to build and design pictorial tests for children in early childhood:

Preparing test questions:

The pictorial test consists of four main axes. The first axis is about the concept of living organisms and consists of (39) questions. The second axis is about the concept of space and consists of (7) questions. The third axis is about the concept of the seasons of the year and consists of (16) questions. The third axis is about the concept of floating and diving, and it consists of (5) questions. The total number of phrases in the five axes is 67 phrases from (multiple choice), in which the child is asked a question and presented with some illustrated alternatives. Accordingly, the child circles the correct alternative that represents the answer to the question from his point of view, and given that The test questions depend on the

pictures. It was taken into account that the pictures should be clear, distinct, and appropriate in terms of size, shape, and colors.

Correction method:

In order to obtain equal weights for the pictorial test, the test is of the multiple choice type (A - B - C - D). The child circles the correct answer and the test consists of 67 statements. If the child chooses the correct answer, he receives one point. The total score for the test is 67.

Formulating selection instructions:

The instructions are one of the most important aspects of building the scale, and they aim to explain the idea of the test in the simplest possible way, the way to answer its questions, how to proceed with it, how to deal with the child, observe his behavior and estimate his score. In addition, direct him to how to answer the questions; the instructions are divided into two main sections: instructions for the teacher, and instructions for the children to whom the choice is applied. Selection instructions were placed on the first page and included the following:

- A brief explanation of the purpose of the selection.
- A statement of the number of selection questions.
- Indicate that the answer will be on the test paper by circling the correct answer
- The researcher questions the child and shows him the pictures.
- Give an example to the child explaining how to answer the questions.
- Children should not begin answering the test questions until they are given permission to do so, and after they fully understand the test instructions.
- It is necessary to answer all test questions and not leave any question unanswered.
- The answer expresses the child's opinion without the intervention of the researchers.

Ensure the validity of the initial test image:

The researcher verified the validity of the initial form of the test by calculating the psychometric properties of the test and its vocabulary, through calculating the validity and reliability of the study tool (testing scientific concepts for kindergarten children):

A- Apparent honesty (honesty of arbitrators):

The two researchers confirmed the apparent validity of the illustrated scientific concepts test for kindergarten children, by presenting it to a group of arbitrators with expertise and experience in the field of study, the number of whom was (11) arbitrators. This is to judge the test after reviewing the title of the study, its questions, and its objectives. The arbitrators were asked to express their opinions and comments on the suitability of the test vocabulary to the subject of the study, in terms of the suitability of the activity to the age of the child, the suitability of the pictures to the activity, and the accuracy of the linguistic formulation of the phrases. The wording of some phrases was modified accordingly. On the opinions of the arbitrators

B- Internal consistency validity:

The researcher calculated the internal consistency of the test through the score of each dimension and the total score of the Illustrated Scientific Concepts Test for kindergarten children. The correlation coefficients were as shown in the following table.

Table 1. Correlation coefficients between the score of each dimension of the illustrated scientific concepts test for kindergarten children (n= 40)

N	The dimension	Correlation coefficient
1	The concept of living organisms	00.83**
2	Space concept	0.66**
3	The concept of the seasons of the year	0.73**
4	The concept of floating and diving	0.50**

** Significant at the 0.01 level

It is clear from the previous table that the correlation coefficients between the test dimensions and the total score are significant at the level of (0.01), which confirms that the scale is characterized by a high degree of validity.

Reliability:

The reliability of the test was verified using the Alpha Cronbach reliability coefficient, as shown in the following table:

Table 2. Shows the reliability coefficient values for the dimensions of the scientific concepts test for kindergarten children (n= 40)

N	Dimensions	Cronbach's alpha coefficient
1	The concept of living organisms	0.61**
2	Space concept	0.76**
3	The concept of the seasons of the year	0.71**
4	The concept of floating and diving	0.78**
5	Total marks	0.75**

** Significant at the 0.01 level

It is clear from the previous table that all reliability coefficients are statistically significant at the level of (0.01), which indicates the stability of the scale.

Study materials

Second: A program based on the use of electronic and sensory educational games

The experimental group is divided into two groups: the first group (uses electronic educational games) to develop some scientific concepts, and the second group (uses sensory educational games) to develop some scientific concepts among children in early childhood.

Objectives of the program:

The program aims to determine the effectiveness of using electronic and sensory educational games in developing some scientific concepts for kindergarten children.

Sources for building the program: The researcher relied on the following sources to build the program:

- Research and studies that dealt with the kindergarten stage and its philosophies, and the characteristics of child development, as well as electronic educational games that dealt with scientific concepts for kindergarten children.

- Research and studies that dealt with how to prepare a program for kindergarten children using electronic and sensory educational games.

Program philosophy:

In designing the program, the two researchers relied on play theories, Vygotsky's theory, and the constructivist theory of learning in preparing the program's sessions, which were mentioned by Mahmoud Ali Musa (2019). The use of appropriate language suggests that ideas become targets for refinement, discussion, and understanding, based on the developmental approximation area that Vygotsky assumed, providing diverse social contexts for the child. It is linked to his environment and helps in the acquisition of concepts, especially if the concepts are linked to the social context in which the teacher works. Providing models, shapes, and pictures that enable the child to become familiar with the ideas and concepts presented to him and help him acquire and assimilate those concepts and understand their function. Benefiting from the electronic and sensory educational activities and games provided to children and the attractiveness they provide. It excites the child with the principle of Vygotsky's higher psychological functions, which helps him discover the internal structure of the concept along with its external functions. The study dealt with electronic and sensory educational games to develop scientific concepts for kindergarten children.

Target group: 60 male and female children, ages 5-6, registered in kindergartens affiliated with the Department of Early Childhood Education in the city of Najran.

Program duration:

The duration of the program ranges from 8 weeks, with three days of each week and each day offering two different activities using electronic and sensory educational games 9/11/1444 until 11/19/1444.

Place of application of the program: Applied in kindergartens affiliated with the Department of Early Childhood Education in Najran City. Activities were implemented in the activity rooms inside the kindergarten

Program content:

The content of the program consists of a set of electronic and sensory educational activities to develop scientific concepts. The two researchers prepared the program to include (48) various sensory activities consisting of (scientific experiments - story activities - linguistic activities using some figures - chant), and (48) A diverse electronic activity consisting of watching (electronic scientific experiments - electronic story activities - linguistic activities by displaying some pictures - a song related to the concept) to develop scientific concepts in the kindergarten child.

Some of the principles on which the program was based can be summarized as follows:

- The existence of a relationship of familiarity between the researcher and the research sample
- Gradually move from simple to complex concepts.
- Diversification in the reinforcement methods used.
- The program's activities depend on group activities in addition to individual work.
- Adapting the program content to the characteristics and needs of children
- The program should contain activities and events that arouse the interest of children.
- The principle of integration must be taken into account in the activities provided.

– To contribute effectively to the development of scientific concepts among kindergarten children.

Techniques and methods used in the program:

– Indoctrination: refers to providing assistance of all kinds, especially verbal and indicative.

– Task analysis, where complex tasks are broken down into small parts that can be implemented.

– Modeling: Make a model in front of the children by directing the mobile camera on some pictures related to the program's activities

– Role playing: in which the teacher asks the child to repeat the activity that was presented

– Reinforcement: where the child is provided with verbal and physical reinforcement after the correct response.

– Feedback provides correction and clarification of information that was not established by the child.

– - Individualizing education: This means individual treatment of each child according to goals that suit his abilities.

– Directing attention: refers to trying to win the child's attention continuously through the activities provided, whether electronic or sensory

– Brainstorming: - It is an educational method that can be used with children, where the learner unleashes thinking completely freely on an issue or problem in search of the largest number of possible solutions, so the ideas flow abundantly, quickly and without inhibition, and then the study is done from among the total ideas that are generated. Find out the best idea without the need to criticize or make the rest of the ideas wrong.

– Discussion and dialogue: It is a teaching method in which the teacher and the children are in a positive position, where some pictures are presented or a picture story, picture book, or topic is presented, after which different opinions are exchanged, dialogue and discussion between the children with each other and with the teacher. Then the teacher follows up on what is correct and what is incorrect, and crystallizes all of that into points about the topic under discussion.

– Problem solving: where the teacher poses a problem to the children and asks them to find a sound solution to this problem, and then they discuss the proposed solutions with each other to reach the appropriate solution.

Steps to apply the program

– Preparation: The teacher stimulates the children's thinking at the beginning of the activity by using some pictures and using the brainstorming method. She talks with the children about the scientific concepts addressed in the research.

– Model: The teacher presents models of scientific experiments or story activities, or shows them models, pictures, or a song to develop scientific concepts in the kindergarten child.

– Guided practice: in which the teacher asks the child to repeat the activity with her or immediately after her.

– Independent practice: The teacher asks the child to perform the activity alone so that he can perform it well.

- Application: During this procedure, the child can apply the concepts he has acquired in new situations.
- Evaluation: The teacher uses various evaluation activities (linguistic - dramatic - behavioral - artistic - motor) to ensure that the program objectives are achieved.

Evaluation methods used in the program:

Evaluation is an ongoing process. Evaluation includes:

The pre-evaluation that is carried out before implementing the program through the scale prepared by the two researchers to identify the children's knowledge background about some scientific concepts (space - living organisms - floating and diving - seasons of the year). The formative evaluation that takes place during the application of the program and is applied to every activity. The final evaluation that takes place after the program is completed, the pictorial test is applied to the children to determine the effectiveness of the program and its impact on the study sample.

Implementation of the study experiment:

Program validity:

It was presented to a group of (11) arbitrators in the field of specialization, to get their opinions on the program's activities, their suitability for the age group, and their suitability to the goal. Based on the arbitrators' opinions, the required amendments were made. Thus, the program became in its final form and suitable for application to the study sample.

Practical procedures for implementing the study experiment included the following:

After completing the pre-application of the study tool, the two researchers applied the program from 9/11/1444 to 11/19/1444 for a period of 8 weeks by implementing the activities of the program subject of the study on the two experimental groups. The first experimental group applied the program based on electronic educational games to them. To develop some scientific concepts. The second experimental group applied the program based on sensory educational games to develop scientific concepts

At a rate of (3 hours) per week for each group, the study tool (illustrated scientific concepts test) was applied after completing the application of the program on Thursday 11/19/1444 to the two experimental groups on Sunday and Monday 11/22/23 1444.

Study procedure steps:

- Review previous studies related to the subject of the study; To prepare the theoretical framework, previous studies, and study tools.
- The study tool, represented by the pictorial test, was prepared to measure some scientific concepts for the kindergarten child after presenting it to the specialists and the linguistic auditor. To ensure that the test is appropriate and formulated correctly, and to ensure its validity and reliability
- Then address the Department of Early Childhood Learning, to facilitate the task of the two researchers in applying study tools and materials to children
- A survey sample, consisting of 30 male and female children, was selected to apply the pictorial news to ensure its truthfulness and reliability.
- The pictorial test was applied to the primary sample (60 male and female children) of kindergarten children in the city of Najran. Their ages range from (5-6) years. (30 male and female children) as a first experimental group, and electronic educational games are applied to them to develop scientific concepts. And (30 male and female children) a second experimental group, to whom sensory educational games were applied to develop scientific concepts

- The pre-test was applied to the children of the two experimental groups (study sample).
- The appropriate activities and means of implementing the activities were identified for each concept
- The program was applied to the children of the two experimental groups (study sample) for a period of two months, starting from 9/11/1444 until 11/19/1444.
- After completing the application of the program on the study sample, the illustrated scientific concepts test was applied to measure some of the kindergarten children to verify the effectiveness of the program
- Tabulating and coding data in the statistical analysis program (SPSS): in preparation for analysis.
- Analyze data statistically: to answer the study questions. This is done by comparing
 - o Average grades of the first experimental group before and after implementing the program
 - o Average grades of the second experimental group before and after implementing the program
 - o Grades of the first and second experimental group after applying the program
- Interpreting and discussing the results, and writing recommendations and proposals.

Fourth: Presentation, discussion and interpretation of the study results:

Study results and discussion:

Results of the first hypothesis:

The first hypothesis states, “There are statistically significant differences between the average scores of the children of the first experimental group, “Using educational electronic games,” in the pre- and post-application on the dimensions of the illustrated scientific concepts test (living organisms - floating and diving - space - seasons of the year) for the kindergarten child. In favor of post-application. To verify the validity of this hypothesis, a t-test was used to indicate the differences between the average scores of the children of the first experimental group, “Using electronic educational games,” in the pre- and post-application on the dimensions of the illustrated scientific concepts test (living organisms - floating and diving - space - seasons of the year) for a child. Kindergarten and the analysis resulted in the following table data:

Table 1. The significance of the differences between the average scores of the children of the first experimental group, “Using electronic educational games,” in the pre- and post-application on the dimensions of the scientific concepts test for kindergarten children. N (30)

Dimensions of the illustrated scientific concepts test for kindergarten children	Before applying the program		After applying the program		T value
	M	A	M	A	
The concept of living organisms	13.30	3.45	24.73	2.63	**13.29
Space concept	1.53	0.68	4.50	0.82	**18.25

The concept of the seasons of the year	4.10	0.99	10.26	1.68	**20.66
The concept of floating and diving	1.23	0.62	3.30	0.70	**12.74
Total marks	20.16	3.73	42.80	2.65	**28.86

** Significant at the 0.01 level

It is clear from the previous table that there are statistically significant differences between the average scores of the children of the first experimental group. “Using electronic educational games”, in the pre- and post-application on the dimensions of the Illustrated Scientific Concepts Test for kindergarten children in favor of the post-application, as the “T” value for the four dimensions of the test and for the total score of all of them. Statistically significant at (0.01), which indicates the effectiveness of the method used “using electronic games” to develop some scientific concepts for kindergarten children, and this verifies the validity of the first hypothesis of the study.

The success of this method, “using electronic educational games to develop some scientific concepts for kindergarten children”, may be attributed to the information and concepts that this method contains that were imparted to kindergarten children through electronic educational games. This is consistent with the study of Al-Kharaz (2012), which aimed to Measuring the impact of the use of electronic educational games in developing some social studies concepts among kindergarten children. The results of the study found that the use of these games had a positive impact on children, which led to an improvement in the level of kindergarten children because of their learning using electronic educational games, and Ahmed (2011). Which aimed to Verifying the effectiveness of the use of electronic educational games in developing some mathematics concepts among kindergarten children. The results of the study found that the use of these games had a positive impact on increasing the achievement of kindergarten children because of their learning using electronic educational games. In addition, Mustafa (2010), which aimed to prove the effectiveness of the games. “Electronic thinking in developing strategic thinking skills for kindergarten children, and I concluded that training in strategic thinking skills enables children to have the skill of organization, and after going through the training program, children are able to master strategic thinking skills.” Moreover, a study (Mikelic, 2016) at the University of Zegrab in Croatia, which aimed to identify the effect of digital stories in developing scientific concepts among pre-school children. The results showed that there was statistical significance for the post-test of scientific concepts, and the results showed the effectiveness of comic books and cartoon pens in developing scientific concepts in children. Preschool children. In addition, a study (Abbas, 2016). Which confirmed that audio holograms provided sensory experiences, bringing abstract ideas closer to children, simplifying them for them, and depicting concepts in an attractive and enjoyable way. The mental stimulation and attention grabbing that the program achieves made the child receive the information with passion and interest

The researchers attribute the presence of differences between the post-measurement and the pre-measurement of the experimental group in favor of the post-measurement to:

- The diversity of electronic educational activities in the program, including (electronic stories - electronic scientific experiments - video songs - electronic pictures) accompanied by audio-visual and kinetic effects that work to excite and excite the child for the educational process and increase his motivation to learn new concepts.
- Organizing and simplifying program activities to suit the level of development of children’s abilities.
- Diversity in evaluation methods used to ensure the achievement of desired goals

Results of the second hypothesis:

The second hypothesis states, “There are statistically significant differences between the scores of the children of the second experimental group in the pre- and post-application on the illustrated scientific concepts test for kindergarten children in favor of the post-application”.

To verify the validity of this hypothesis, a t-test was used to indicate the differences between the average scores of the children of the second experimental group, “Sensory Learning Games,” in the pre- and post-application on the dimensions of the test measuring scientific concepts for kindergarten children. The analysis resulted in the following table data:

Table 2. The significance of the differences between the average scores of the children of the second experimental group, “Sensory Games,” in the pre- and post-application on the dimensions of the scientific concepts test for kindergarten children. N (30)

Dimensions of the illustrated scientific concepts test for kindergarten children	Before applying the program		After applying the program		T value
	M	A	M	A	
The concept of living organisms	13.33	3.19	32.40	3.94	**20.06
Space concept	1.50	0.77	5.86	0.68	**26.87
The concept of the seasons of the year	4.23	1.22	13.23	1.45	**26.81
The concept of floating and diving	1.33	0.60	4.16	0.74	**17.75
Total marks	20.40	3.69	55.66	4.57	**34.60

** Significant at the 0.01 level

It is clear from the previous table that there are statistically significant differences between the average scores of the children of the second experimental group. “Sensory Educational Games,” in the pre- and post-application on the dimensions of the Illustrated Scientific Concepts Test for kindergarten children in favor of the post-application, as the “T” value for the four dimensions of the test and for the total score of the test are all significant. Statistically at (0.01), which indicates the effectiveness of the method used “sensory educational games” to develop some scientific concepts for kindergarten children, and this verifies the validity of the second hypothesis of the study. This is consistent with the study of both. As for the study of Zainab Sobhi Ibrahim (2013), which aimed to build a program based on the use of disposables and employ them in developing some scientific and environmental concepts for kindergarten children, the results found that there were statistically significant differences between the average scores of the experimental group in favor of the post-measurement. Which confirms the effectiveness of the program in developing some scientific and environmental concepts for kindergarten children, and the study of Hassan Omar Hassan (2014), which aimed to identify the effectiveness of using educational scientific games in light of national standards in acquiring scientific concepts and developing some basic science process skills among kindergarten children. The results showed that there were differences. There is a statistical significance between the average scores of the experimental group in favor of the post-measurement, which confirms the effectiveness of using educational scientific games in developing scientific concepts and developing some basic science process skills among kindergarten children. Al-Hudhali (2014), which aimed to measure the impact of electronic educational games in developing some scientific concepts among kindergarten children. Concluded that there are statistically significant differences at the significance level of 0.05 between the average scores of the

control group that used the normal method and the experimental group that dealt with using electronic educational games in developing some scientific concepts among kindergarten children.

And the study of Abdul Rahman (2019), which emphasized the benefit of the characteristics of concepts in the progression from simple to difficult, and from tangible to abstract, taking into account individual differences among children, and diversifying learning strategies such as role-playing, learning by playing - dialogue and discussion) which helps attention and gives a kind of Suspense. The success of this method, “sensory educational games” to develop some scientific concepts for kindergarten children, may be attributed to the information and concepts this method contains that were imparted to kindergarten children through sensory games. In addition, the importance that the senses represent in providing the kindergarten child with many educational concepts and skills, and then it is important to stimulate the child and accustom him to using his five senses in the process of learning, discovery, and acquiring scientific concepts. The researchers attribute the presence of differences between the post-measurement and the pre-measurement of the experimental group in favor of the post-measurement to:

- The program offers a variety of sensory educational activities (stories - songs - linguistic activities) accompanied by tangible means that work to excite and excite the child about the educational process and increase his motivation to learn new concepts.
- Children participate in conducting scientific experiments and deducing results
- Organizing and simplifying program activities to suit the level of development of children’s abilities.
- Diversity in evaluation methods used to ensure the achievement of desired goals.

Results of the third hypothesis:

The third hypothesis states that, “There are statistically significant differences between the average scores of the children of the first experimental group. “Using electronic educational games” and the average scores of the children of the second experimental group, “Sensory educational games,” in the post-application on the dimensions of the Illustrated Scientific Concepts Test for kindergarten children, for the benefit of kindergarten children. The second experimental group.

To verify the validity of this hypothesis, a t-test was used to indicate the differences between the average scores of each of the children of the first experimental group, “Using electronic educational games,” and the children of the second experimental group, “Sensory educational games,” in the post-application on the dimensions of the test measuring scientific concepts for kindergarten children. The analysis resulted in the following table data: -

Table 3. The significance of the differences between the average scores of each of the children of the first experimental group and the children of the second experimental group in the post-application on the dimensions of the test measuring scientific concepts for kindergarten children

Dimensions of the illustrated scientific concepts test for kindergarten children	Before applying the program		After applying the program		T value
	M	A	M	A	
The concept of living organisms	24.73	2.63	32.40	3.94	**8.84
Space concept	4.50	0.82	5.86	0.68	**7.02

The concept of the seasons of the year	10.26	1.68	13.23	1.45	**7.31
The concept of floating and diving	3.30	0.70	4.16	0.74	**4.63
Total marks	42.80	2.65	55.66	4.57	**13.43

** Significant at the 0.01 level

It is clear from the previous table that there are statistically significant differences between the average scores of each of the children of the first experimental group. “Using electronic educational games and the children of the second experimental group, “Sensory educational games,” in the post-application on the dimensions of the illustrated scientific concepts test for kindergarten children, in favor of the application for the children of the second experimental group. “Sensory educational games”, as the “T” value for the four dimensions of the test and the total score of the test are all statistically significant at (0.01), which indicates that the method of “sensory educational games” for developing some scientific concepts for kindergarten children is more effective than the method of “using electronic educational games.” This validates the third hypothesis of the study.

The effectiveness of the “sensory educational games” method for developing some scientific concepts for the kindergarten child may be attributed more than the “using electronic educational games” method to the tangible things this method includes that the child holds in his hand and deals with. Therefore, they have a greater impact on the children, and this is consistent with the nature of the stage. It is consistent with the study of Abdel Hamid (2010), which aimed to design an integrated educational program to prepare kindergarten children to deal with electronic learning resources and measure its effectiveness. The results of the study revealed the importance of teaching the computer at that stage because of its great effectiveness in increasing children’s knowledge and skills in dealing with educational resources E-learning. The study also recommended the necessity of using e-learning resources such as electronic games in the educational environment in kindergartens with various educational activities as a complement and not a substitute for the activities and educational methods that have an effective impact on raising the child, such as art, drama, sand, and water. And the study of Al-Aluni et al. (2011): Which aimed to identify the effectiveness of an electronic educational program in developing some of the reading readiness skills of pre-school children. In addition, concluded that electronic games had an impact in developing the reading readiness skills of pre-school children, and recommended that the computer become a means of assistance in developing some Concepts and skills of the kindergarten child. The researchers attribute the presence of differences between the post-measurement and the pre-measurement of the first experimental group (use of electronic educational games) and the second (sensory educational games) in favor of the post-measurement of the second experimental group to:

- The child's nature is sensual; he responds more to tangible toys and is influenced by them
- Children participate in conducting scientific experiments and drawing results
- The diversity of sensory educational activities in the program, including (stories - songs - linguistic activities) accompanied by tangible means. That work to excite and excite the child about the educational process and increase his motivation to learn new concepts.
- Organizing and simplifying program activities to suit the level of development of children’s abilities.
- Diversity in evaluation methods used to ensure the achievement of desired goals.

Results

- 1- There are statistically significant differences between the average scores of the children of the first experimental group, “Using electronic educational games”, in the pre- and post-application on the dimensions of the illustrated scientific concepts test for kindergarten children in favor of the post-application.
- 2- There are statistically significant differences between the scores of the children of the second experimental group, “Using Sensory Educational Games,” in the pre- and post-application on the dimensions of the illustrated scientific concepts test for kindergarten children, in favor of the post-application.
- 3- There are statistically significant differences between the average scores of the children of the first experimental group. “Using electronic educational games” and the average scores of the children of the second experimental group, “Using sensory educational games,” in the post-application on the dimensions of the illustrated scientific concepts test for kindergarten children, in favor of the children of the second experimental group.

Recommendations

- Educating kindergarten teachers to increase the use of sensory educational games in developing all scientific concepts for kindergarten children, because this is consistent with the nature of children in the pre-school stage who understand tangible things more than abstract things.
- Educating kindergarten teachers to use electronic educational games as a supportive or specific means to develop scientific concepts in kindergarten children because of their strong impact on children.
- Educating kindergarten teachers that we do not rely entirely on electronic educational games, but rather consider them a supportive means with sensory educational games to develop scientific concepts for kindergarten children.
- Directing kindergarten curriculum developers to include the curriculum combining sensory and electronic educational games to develop scientific concepts for kindergarten children.
- Conducting more research that combines sensory and electronic educational games to develop concepts to develop scientific concepts for kindergarten children.

Proposals

The researcher can benefit from the current study in conducting the following proposed research and studies:

- Conducting a study on the effectiveness of a program based on the use of sensory and electronic educational games in consolidating mathematical concepts among kindergarten children.
- Conducting a study on the effectiveness of a program based on the use of sensory and electronic educational games in consolidating linguistic concepts among kindergarten children.
- Conducting a study on the effectiveness of a program based on the use of sensory and electronic educational games in developing the national identity of kindergarten children.
- Conducting a study on the effectiveness of a program based on the use of sensory and electronic educational games in developing the life skills of kindergarten children.

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References

- Ibrahim, Zainab Sobhi. (2013). A program based on the use of disposables and their employment in developing some scientific and environmental concepts for kindergarten children. [Unpublished master's thesis]. Faculty of Kindergarten, Cairo University.
- Ahmed, Marwa Suleiman (2011). The effectiveness of using electronic educational games in developing mathematics among kindergarten children [Unpublished master's thesis]. Faculty of Education, Ain Shams University.
- Amin, Abeer Siddiq (2017). Developing scientific and mathematical concepts for kindergarten children. Riyadh. International Publishing House.
- Brik, Fatima Muhammad Ahmed. (2020). the effectiveness of using the differentiated education strategy in developing scientific concepts among kindergarten children in the Jazan region, *Journal of Scientific Research in Education*, 15 (21), 449-488.
- Boutros, Hafez Boutros (2011). Developing scientific concepts and skills for pre-school children. Dar Al Maysara for Publishing, Distribution and Printing.
- Boutros, Hafez Boutros (2014). Developing scientific concepts and skills for pre-school children (7). Dar Al Masirah, Amman.
- Bahadur, Saadia Muhammad Ali. (2011). Preschool education programs. Dar Al Masirah, Amman.
- Hassan, Omar Hassan (2014). The effectiveness of a program based on the use of educational scientific games in light of national standards in acquiring scientific concepts and developing some basic science process skills and innovative thinking among kindergarten children [Doctoral dissertation]. Faculty of Education, Minya University.
- Hassanein, Hanan Abdel Khaleq Muhammad (2011). The effectiveness of using motor expression in developing some scientific concepts for kindergarten children [Unpublished master's thesis]. Faculty of Kindergarten, Cairo University.
- Hammad, Ahmed (2010). The effect of voiceover variables on computer science education programs for kindergarten children [Unpublished master's thesis]. Department of Educational Technology, Helwan, Egypt.
- Al-Kharaz, Hanadi Badr (2012). The effect of using electronic educational games on developing social studies concepts among kindergarten children in the State of Kuwait [Unpublished master's thesis]. Faculty of Education, Ain Shams University.
- Al-Khafaf, Iman Abbas. (2010). Playing modern learning strategies. Dar Al-Manhaj for Publishing and Distribution.
- Suleiman, Tahani Muhammad (2015). A proposed activity program based on scientific stations to provide kindergarten children with some scientific concepts and science processes, *Egyptian Journal of Scientific Education*, 18 (2), 1-45.
- Sawalha, Muhammad Ahmed (2011). Psychology of play. Dar Al Masirah for Publishing and Distribution.
- Tolba, Shaima Hamed. (2014). A computer game program to develop some scientific concepts among kindergarten children. Nuclei of developmental educational difficulties. [Unpublished master's thesis] Faculty of Kindergarten, Cairo University.
- Abbas, Zain Al-Abidin Ali. (2016). The effect of using educational films on developing some scientific concepts among kindergarten children aged 5-6 years in Lattakia Governorate [Master's thesis]. Faculty of Education, Tishreen University.

- Abdel Hamid, Wael Ramadan (2010). The effectiveness of designing an integrated educational program to prepare the kindergarten child to deal with electronic learning resources and measuring its effectiveness [Unpublished doctoral dissertation]. Faculty of Education, Helwan University, Cairo.
- Abdel Rahman, Hanaa Fouad Ali. (2018). The effectiveness of music and the art of automation in raising the level of attention of kindergarten children. *Journal of Childhood Research and Studies*, Faculty of Early Childhood Education, Fayoum University.
- Abdel Aty, Amira Omar (2014). A program based on the mind mapping strategy in light of some principles of TRIZ theory for developing scientific concepts for kindergarten children [Unpublished doctoral dissertation]. Faculty of Kindergarten, Cairo University.
- Al-Alouni, Aziza et al. (2011). The effectiveness of an electronic educational program in developing some of the reading readiness skills of kindergarten children. <http://www.minshawi.com/node/2241>
- Ali, Muhammad Al-Noubi Muhammad (2011). Play and developing phonological awareness among children with mental disabilities. Dar Al-Safaa for Publishing and Distribution.
- Ali, Mahmoud (2019). The psychology of teaching and learning for the twenty-first century learner. Obeikan Electronic Publishing Library.
- Al-Qahtani, Hanan Mubarak (2011) A guidance program using play to develop some social and emotional skills for hearing-impaired children [PhD dissertation]. Faculty of Kindergarten, Cairo University.
- Lamloum, Marwa Muhammad (2015). An interactive program to develop some scientific concepts among kindergarten children using electronic concept maps [Master's thesis]. Faculty of Kindergarten, Cairo University.
- Al-Mubooth, Muhammad (2012). Experimental method (preliminary - ideal - quasi-experimental). Kingdom of Saudi Arabia.
- Al-Muhaisen Ibrahim Abdullah Khaja, Barea Bahjat (2015). Professional development for science teachers in light of the STEM integration trend. The First Conference on Excellence in Teaching and Learning Science and Mathematics, STEM Orientation, King Saud University, Riyadh. During the period 16-18 Rajab 1436 AH.
- Mustafa, Asma Ibrahim Muhammad (2010). The effectiveness of electronic games in developing strategic thinking skills among kindergarten children [Master's thesis]. Faculty of Education, Tanta University.
- Mansour, Mustafa. (2014). the importance of scientific concepts in teaching science and the difficulties of learning it. *Journal of Social Studies and Research*, South Valley University, (80), 88-108.
- Hagras, Howaida (2015). The effectiveness of a program based on animation films and creative imagination among kindergarten children [Unpublished master's thesis]. Department of Media, Mansoura University, Egypt.
- Al-Hudhali, Ahlam Mayouf Jabour (2014). The effect of electronic educational games on developing scientific concepts among kindergarten children. College of Education, Umm Al-Qura University, Mecca.
- Allen S. Weiss (2010). How video games are changing our lives. Retrieved on 05.04.2012 [http://www.naplesnews.com/news/2010/dec/06/health-advice-by-dr-weiss-how-video-games-are chan](http://www.naplesnews.com/news/2010/dec/06/health-advice-by-dr-weiss-how-video-games-are-chan)
- Bullard, J., et al., (2010). *Creating Environments for Learning: Birth to Age Eight*, Bacon Prentice Hal .
- Elfeky, A. I. M., & Elbyaly, M. Y. H. (2023). THE IMPACT OF VIRTUAL CLASSROOMS ON THE DEVELOPMENT OF DIGITAL APPLICATION SKILLS AMONG TEACHERS OF DIGITAL SKILLS IN NAJRAN REGION. *Ann. For. Res*, 66(1), 2044-2056.

- Elfeky, A. I. M., & Elbyaly, M. Y. H. (2023). EXAMINING THE EFFECTS OF VIRTUAL CLASSROOM USE INSIDE LEARNING MANAGEMENT SYSTEMS ON ENHANCING STUDENT SATISFACTION. *Ann. For. Res*, 66(1), 1980-1990.
- Elbyaly, M. Y. H., & Elfeky, A. I. M. (2023). THE IMPACT OF BLENDED LEARNING IN ENHANCING THE SKILL PERFORMANCE OF PRODUCING DIGITAL CONTENT AMONG STUDENTS OF OPTIMAL INVESTMENT. *Ann. For. Res*, 66(1), 2031-2043.
- Elfeky, A. I. M., & Elbyaly, M. Y. H. (2017). The use of CSCL environment to promote students' achievement and skills in handmade embroidery. *European Journal of Training and Development Studies*, 4(2), 19-32.
- Elfeky, A. I. M., & Elbyaly, M. Y. H. (2023). The effectiveness of virtual classrooms in developing academic motivation across gender groups. *Ann. For. Res*, 66(1), 2005-2020.
- Elfeky, A. (2017). Social Networks Impact factor on Students' Achievements and Attitudes towards the "Computer in Teaching" Course at the College of Education. *International journal on E-learning*, 16(3), 231-244.
- Elfeky, A. I. M., & Elbyaly, M. Y. H. (2016). The impact of learning object repository (lor) in the development of pattern making skills of home economics students. *British Journal of Education*, 4(2), 87-99.
- Elbourhamy, D. M., Najmi, A. H., & Elfeky, A. I. M. (2023). Students' performance in interactive environments: an intelligent model. *PeerJ Computer Science*, 9, e1348.
- Elfeky, A. I. M., & Elbyaly, M. Y. H. MANAGING DRILL AND PRACTICE PROGRAMS WITH A MOTIVATIONAL DESIGN AND THEIR EFFECTS ON IMPROVING STUDENTS' ATTITUDES TOWARD INFORMATION AND COMMUNICATION TECHNOLOGY COURSES.
- Christie, A. (2016). *Enhancing STEM Learning in your Classroom*, Bureau of Education Research, Retrieved from: <https://www.ber.org/seminars/CourseInfo.cfm>.&
- Doran, M., Aydın, E., & Etgüer, D. (2020). Investigating the effects of STEM enriched implementations. on school readiness and concept acquisition of children. *Elementary Education Online*, 19(1), 299-309
- Leslie (2014). *Computer Lab Tips and Skills for Kindergarten*. Retrieved from: [Http://www.kindergartenworks.com/kindergarten-teaching-ideas/10-computer-lab-tips-skills-ukindergarten/](http://www.kindergartenworks.com/kindergarten-teaching-ideas/10-computer-lab-tips-skills-ukindergarten/) On: 28/2/2014
- Longbottom, S. (2019). Does living on farms influence the acquisition of biological concepts in childhood? An examination of the effects of environment, experiences, and parent communication on children's biological concepts -
- McGo Jane (2011). *Reality is Broken: Why Games Make Us Better and How They Can Change the World*. Penguin Group (USA) Incorporated.nigalM
- Mikelic, N. G. (2016). *Introduction of Digital Storytelling in Preschool Education*. University of Zagreb, Croatia
- Ornit S., Levy, Y & Samira M, (2013). Science and Scientific Curiosity in Pre-school-The teacher's point of view *International Journal of Since Education*. Volume 35. Issue 13 pp2226-2253
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- M. Saçkes et al (2011). Young Children's Computer Skills Development from Kindergarten to Third Grade. *Computer and Education Journal*. 57(2). 1698-1704
- Shawn M. Glynn (2012). *Learning Science in the Schools Research Reforming Practice*. Reinders Duit.