The Effectiveness of a Program in Activities for Early Students to Develop Some of the Basic Skills Needed for the Age of Artificial Intelligence

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Abstract
The study aimed to build a program in activities for early childhood students to develop some of the basic skills necessary for the age of artificial intelligence, to achieve the objectives of the study , the researcher used the experimental design, and the research sample consisted of 37 early childhood students. The study used the following tools: Experimental treatment subject: the proposed program in the activities, Measurement and evaluation tool: testing the basic skills needed for the age of artificial intelligence. The study concluded several results: There is a statistically significant difference ($\alpha \leq 0.05$) between the average grades of the early childhood students in the research group in the tribal and remote measurements to test the basic skills necessary for the age of artificial intelligence in favor of the students grades in the dimensional measurements. Practical application of the study through benefiting from the proposed program of activities prepared in the current study in planning and implementing activities to develop the basic skills necessary for the age of artificial intelligence among early childhood students.

keywords
A program in activities, basic skills, Early students, Artificial intelligence.

Introduction

The early childhood stage is the basic foundation for preparing the child to learn and acquire various skills, given that the early years of a child's life open up his talents and are capable of influence, direction and formation. Therefore, attention must be paid to this stage and work to provide the child from an early age with the skills that enable him to deal with modern technological developments.

Looking at the general features and development trends in the field of education, we find that there are many applications and ideas that have imposed themselves on the educational arena, including the applications of artificial intelligence; Therefore, early childhood curricula in Saudi Arabia must benefit from the applications of artificial intelligence, and focus on providing children with skills that help develop their thinking, conscience and attitudes, and give them the ability to deal with, extract and organize information . This is because is an integral part of our daily lives; So students need to learn AI in order to create a great opportunity for them to understand how everyday products work. Artificial intelligence is not only the future; It is also important and necessary for the present.

Artificial intelligence is called the acronym (AI), and it is one of the sciences that resulted from the contemporary technological revolution, which officially began in 1956 at Dartmouth College in Hanover, USA, and artificial intelligence initially aimed to simulate each of the various abilities of intelligence by machines, And that is by understanding the complex mental processes that the human mind performs during its practice of thinking and how it processes information, and then these mental processes are translated into equivalent computing operations that increase the ability of the computer to solve complex problems. For this reason, artificial intelligence was initially defined as: One of the fields of computers concerned with programming them to perform tasks that are accomplished by humans and that require a kind of intelligence. (Madkour,2020,144)

Research problem

The problem of the current research is the possibility of opening artificial intelligence to new horizons in curricula, teaching strategies and teaching techniques, and this provides the opportunity for educators to seize the advantages of multiple applications of artificial intelligence and use them successfully in the educational process. Despite the positives of artificial intelligence that can return With the benefit of providing students with the basic skills necessary to deal with this age, however, there are many negative views about the application of this type of education within educational institutions; Therefore, it was necessary to think about the best ways in which artificial intelligence applications can be used in the service of the educational process through a program in educational activities, which is what this research seeks.

Based on the foregoing, the research attempted to answer the following main question: **What is the**

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effectiveness of a program in activities for early childhood students to develop some of the basic skills needed for the age of artificial intelligence? The following sub-questions are derived from it:

1- What are the basic skills needed for the age of artificial intelligence that early childhood students should acquire?

2- What is the proposed scenario for a program in activities to develop some of the basic skills necessary for the age of artificial intelligence among early childhood students?

3- What is the effectiveness of the proposed program in developing some of the basic skills necessary for the age of artificial intelligence among early childhood students?

Research Aims:

1- Building a program of activities aimed at developing some of the basic skills necessary for the age of artificial intelligence.

2- Knowing the effectiveness of the proposed activities program in developing some of the basic skills necessary for the age of artificial intelligence among early childhood students.

Research Importance:

The importance of the current research was:

1- This research comes in line with recent trends that call for benefiting from the applications of artificial intelligence in the educational process.

2- Provide a list of the basic skills necessary for the age of artificial intelligence that early childhood students must acquire.

3- Presenting a proposed program of activities aimed at developing some of the basic skills necessary for the age of artificial intelligence among early childhood students.

4- Providing a tool to measure the basic skills necessary for the age of artificial intelligence among early childhood students.

Research Delimitation :

The current search was limited to:

- A group of early childhood students, numbering 37, in the Kingdom of Saudi Arabia.
- The research was limited to some of the following artificial intelligence skills (searching the Internet - basic skills for using computers in learning - using some social networks in learning - using some e-learning resources - critical thinking d making judgments and decision-making - problem solving - communication - imagination innovation - leadership).

Research Hypotheses :-

- There is a statistically significant difference at the level of significance ($\alpha \leq 0.05$) between the average scores of the early childhood students in the research group in the tribal and remote measurements "to test the basic skills necessary for the age of artificial intelligence" in favor of the students' scores in the post-measurement.

Research Theoretical Framework :-

Whereas the current research aims to develop some of the basic skills necessary for the age of artificial intelligence among early childhood students through a proposed program of activities; Therefore, the theoretical framework of this research will address the clarification of the following points:

First: Educational Activities:

The activities focus on the development of the students' personality by helping them to adapt to the different situations they face in life. It is also an integral part of the school's program. Through the practice of educational activities, the student can express his emotions, satisfy his needs, and modify his behaviors and ideas. And acquiring different skills that will help him in his future life, and school activity is one of the most important means that provide students with opportunities to practice and experience and turn it into a practical reality in which students integrate with different learning sources.

The school activity from the point of view of modern education is one of the most important things that the school curriculum should focus on as a means and not as an end the information .

This activity helps in building the psychological, social, value, aesthetic and kinetic aspect of students through their active and positive participation in the educational situation and their self-reliance in obtaining information.

Starting from the focus of active learning on the positivity and participation of the learner during the educational situation, the role of the learner in the active learning situation can be defined as follows : (Saeid,2013,13-14)

- Participation in the design of learning and its environment.

- Taking responsibility for learning, and willingness to carry out activities with desire and longing.
- Working independently or in cooperating groups so that it communicates, interacts and supports (mutual support).
- Practicing thinking, analysis, and providing smart solutions to the problems facing it.
- Reflectively reflecting on the method of learning and the quality and quality of this learning.
- Choosing the appropriate medium for presenting his work.
- Searching for sources of knowledge, accessing them, and communicating with them efficiently and effectively.
- Initiative, discussion and asking smart and critical questions that develop learning.
- The production and development of knowledge through the practice of thinking.

Second, artificial intelligence

The concept of artificial intelligence:

The world is currently moving to employ the fifth generation of the Internet 5g, or the so-called "internet of things", which is the computerization of all the things that surround us by linking everything we can recognize on the Internet through known Internet protocols, and this development has led to the emergence of a new term Known as artificial intelligence. (Vermesan,et.al,2009)

And artificial intelligence is one of the most important modern sciences that resulted from the convergence between the technical revolution in the field of systems science, computer and automatic control on the one hand, and logic, mathematics, languages and psychology on the other, and it aims to understand the nature of human intelligence through the work of computer programs. With these programs that enable him to solve a problem or make a decision in a situation, and accordingly, machine intelligence is the computer programs to find a way that allows solving the issue or communicating to the appropriate decision by referring to many of the various substitution processes that fed the program and uses artificial intelligence because of its high speed In giving inferences that are beyond human capacity. (Hassan,2020,220-221)

He defined(Southgate,et al,2019,17) it as: a machine or a computer program that uses human intelligence to complete a task, through planning, teaching, understanding, justifying, and solving problems.

Kaplan and Heinleen (2019,17) defined it as the system's ability to correctly interpret external data, learn from these data, and use those lessons to achieve specific goals and tasks through flexible adaptation.

Types of artificial intelligence:

Artificial intelligence has many types that can be divided in general into three categories:(Al Mutairi,2022,152) :

- The first of these is narrow artificial intelligence(weak ,Narrow A I): its examples are many in Google search, such as self-driving cars, or even speech or image recognition programs, or chess on smart devices, and it uses narrow artificial intelligence and deep learning on a large scale, and it is full of various exciting developments.
- The second is artificial general intelligence(General A I), about which research is still underway, which will intelligently create machines at the human level that can perform any task, and the artificial neural network method is one of its methods, if it means to produce a system of neural networks for the machine similar to those contained in the human body.
- The third is intelligence(Super AI), which may exceed the level of human intelligence, and can perform super artificial tasks better than a specialized and knowledgeable human being, It has the ability to learn, plan, communicate automatically, and make judgments even if it is a hypothetical concept that does not exist in our time.

The importance of artificial intelligence in the educational process:

We can define the importance of artificial intelligence in education in the following :(Karsenti,2019,109-110);(Koutou,2018,26-27)

Increasing interaction between learners and academic content. An example is Chabot, which is the offspring of the original smart speakers such as Google Home ,Amazon Echo ,HomePOD:

- Providing smart learning platforms for distance learning.
- Introducing new ways to interact with information, for example, Google adjusts search results according to our geographical location or previous searches without our knowledge in general.
- Pedagogical feedback eg UTIFEN draws personalized texts for students as they follow the learning path, feedback is not only customized, it is faster and more frequent it allows automated grading, provides support and recommendations.

  Personal learning, for example, the UTIFEN project.-

- Modified teaching, such as digital bookshelves published by McGrawHill and Pearson.
- Teachers can modify their courses somewhat eg courser tells teachers when too many students answer a question incorrectly or do inappropriate work.
- Artificial intelligence can radically enhance people's intelligence.
- Enable human-like vision, AI can
- Computer systems know how to see, process, and understand visual images such as photos and videos.
- Improving decision-making, AI can use data as input to make fact-based decisions that reduce bias, properly consider and weigh all facts.

Advantages of learning intelligence artificial pupil:

The advantages of learning artificial intelligence for students can be identified as follows:(du Boulay ,2016,79)

1- Helping students and raising their efficiency.

2- Distinguished and unique learning.

3- Access to all students.

4- Enhancing cognitive skills.

5- Enhancing imagination and innovation.

6- Enhancing communication skills.

7- Develop critical thinking and logical thinking.

8- Improving problem-solving skills.

9- Helping to excel in academic and extracurricular activities.

Artificial intelligence applications that support student learning:

A set of artificial intelligence applications and programs that support students can be identified:(Tera,2021,17-18)

-Dragon Speech Recognition : helps pupils to reach their full potential For pupils with writing problems, it allows them to express themselves simply by speaking, which reduces their writing and spelling worries, helps the teacher prepare lessons faster, and is a more communication tool Effectiveness between teachers, students and administrators through e-mail, and also helps to search on Google by voice away from writing, and provides more detailed feedback when evaluating students.

-Knewton : is an integrated learning curriculum and includes everything a student needs including textual and instructional instructions, videos, and adaptive learning content. Knewton can quickly identify and reinforce knowledge gaps as you complete tasks to get where you want to go.

- Cognii : Cognii manufactures AI-based products for 12th grade and higher education institutions, as well as training organizations. Its virtual learning assistant uses conversation technology to guide students in open-form responses that improve critical thinking skills, the assistant also provides real-time feedback, one-to-one tutoring, customized to each student's needs, reduces the grading burden on the teacher, and improves student engagement and retention. It has results and results, as we measure the number of students, the cost, and the improvement of preparation for the future.

- Querium : Querium uses artificial intelligence to deliver customizable STEM lessons to high school and college students. By analyzing the answers and how long it takes to complete teaching sessions, AI in Querium gives teachers insights into a student's learning habits and identifies areas where a student can improve.

CenturyTech : Century Tech uses cognitive neuroscience and data analysis to create personalized learning plans and reduce workloads for educators. An AI system tracks student progress, identifies knowledge gaps and provides personalized study recommendations and feedback. Century also gives educators access to resources and reduces time spent on planning and grading. homework management.

Through the theoretical framework, the researcher came up with **a list of the basic skills necessary for the age of artificial intelligence that early childhood students must acquire, which are as follows:**

1- Internet search skills.

2- Basic skills for using the computer in learning.

3- The use of some social networks in learning.

4- Using some e-learning resources (websites, applications, digital libraries...)

5- Critical thinking skills.

6- Judgment and decision-making skills.

7- Problem solving skills.

8- Communication and communication skills.

9 - skills of imagination and innovation.

10- Leadership skills.

Research Methodology:

In light of the nature of the research, and its assumptions, the current research relied on the use of:

1- The descriptive analytical method.

2- The experimental method.

Research Variables:

Future variable: the proposed program of activities.

Dependent variable: some basic skills needed for the age of artificial intelligence.

The research sample :

A sample of early childhood students in the Kingdom of Saudi Arabia, numbering (37) female students, to facilitate the application procedures.

Research Tools :

First: Building the proposed program:

The main objective of the proposed program of activities is to develop some of the basic skills necessary for the age of artificial intelligence among early childhood students.

Determining the content of the program: The content of the program was determined in the light of the following:

1- Basic skills needed for the age of artificial intelligence.

2- Developmental characteristics of early childhood stage pupils.

3- The nature and philosophy of active learning.

Evaluation methods in the proposed program:

Whereas the main objective is to develop some of the basic skills necessary for the age of artificial intelligence in early childhood students; Therefore, it was taken into account that the calendar should include the following:

- Interim (constructive) evaluation stage: The evaluation process included oral questions that follow each activity - parking cards.

-The final evaluation stage: This was done by applying the artificial intelligence skills test to the students after completing the study of the proposed program.

Secondly, build the test:

- **Objective of the test**: The main objective of the test is to measure the extent to which early childhood students acquire some of the basic skills necessary for the age of artificial intelligence included in the program.

- Determining the dimensions of the test: The researcher identified the dimensions of choice in the light of the theoretical framework of the research, as well as the list of basic skills necessary for the age of artificial intelligence that must be acquired for early childhood students. - Using some social networks in learning - Using some e-learning resources - Critical thinking - Making judgments and decision-making - Problem solving - Communication - Imagination and innovation - Leadership).

- Formulation of test phrases and distribution of scores: The test vocabulary has been formulated in the form of objective questions distributed over (30) questions according to the basic skills necessary for the age of artificial intelligence to be measured, so that the student who answers a correct answer is given one point for each question, and a smaller number for the wrong answer, and since the choice includes (30) questions; So, the test had a maximum score of (30), and a minimum score of zero.

-Validity of the test: To ensure the validity of the initial test, it was presented to a group of arbitrators, in order to ensure its validity.

- The exploratory experiment of the test: the test was applied to a survey sample from outside the main study sample, and the answers were corrected, scores were monitored, and arithmetic operations were performed with the aim of:

* Calculation of test stability: The test reliability was calculated using Cronbach's alpha coefficient, whose value was (0.71), which indicates that the test has a high degree of stability.

*Calculation of the test time: The time required to answer the test questions was calculated, by calculating the average time for students to answer the test questions, and they found the time required for the test to be 60 minutes.

Research Results:

To verify the validity of the research hypothesis, it was stipulated: There is a statistically significant difference at the level of significance ($\alpha \leq 0.05$) between the average grades of early childhood students, the research group in the pre and post measurements, to test the basic skills necessary for the age of artificial intelligence in favor of students' grades in the post measurement.

The mean scores of the students in the research group, the standard deviations of these scores, and the "t" value of the differences between the mean scores were used through the use of a t-test for two related samples T-pairs Test, and the results came as in the following table:

Table (1): T-test results to compare the average scores of the research group students in the two applications, pre and post, to test the basic skills needed for the age of artificial intelligence

Testing the basic skills needed for the age of artificial intelligence	Execution	N	avera ge	standard deviation	"T" value	Degrees of freedom	Indicationon level	effect size square eta

It is evident from Table (1) that there is a statistically significant difference between the mean scores of the students in the research group, the two applications, the pre and post applications to test the artificial intelligence skills in favor of the post application degrees, where the level of statistical significance for the value of the T-test reached the total score of the test (0.000), which is a value smaller than the significance level. (0.05), as it is clear that the size of the impact of the proposed program is of a large type in the acquisition of the research group's students with artificial intelligence skills.

Discuss and Interpret the Rresults:

The results proved the effectiveness of the proposed program of activities in developing the basic skills of the age of artificial intelligence among early childhood students through higher average scores in the post application of skills testing than their average score in the pre application. This is due to the availability of a learning environment based on the activity and positivity of students during the educational situation, availability of educational resources for pupils online at any time; And in any place or asynchronously, using interactive education and information and communication technology tools, and the intensity of the means used in teaching by artificial intelligence, and activating the role of students in the educational situation and giving them the opportunity to practice many activities, which contributed to taking into account the individual differences between students and increasing their motivation And giving them the opportunity to acquire many of the basic skills necessary for the age of artificial intelligence, such as problem solving, decision-making, critical and analytical thinking and other skills.

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