AI Training Program and its Impact on Improving Digital Stories Production Skills

Nashwa A. Younis[1], Mohamed SaadEldin Mohamed Ahmed[2*], Ibrahim K. Alali[3], Rehab Tharwat Abd El Ghani Abo Bakr[4]

[1]Basic Sciences Department, College of Education for Early Childhood, Alexandria University, Egypt.
[2]Associate Professor of Instructional Technology, Faculty of Education, New Valley University, drmmsaad@edu.nvu.edu.eg
[3]Assistant Professor of Instructional Technology, College of Education, Jouf University, Saudi Arabia.
[4]Assistant Professor of Instructional Technology, College of Arts, Imam Abdulrahman Bin Faisal University, Dammam, Saudi Arabia

Abstract

The current research aims at improving the skills of producing digital stories using the tools of generative artificial intelligence Chat GPT and Google Bard, which are necessary for female student teachers' specialization: Kindergarten. The current research has used the descriptive approach and the experimental approach with a quasi-experimental design through a design based on one group and comparing the differences between the pre and post-evaluation. The study sample was randomly selected from female students teachers specializing in kindergarten, and their number reached (25) students. A list of producing digital stories standards was prepared and controlled, and a graded performance rating scale was prepared to evaluate the skills of producing digital stories among female student teachers specializing in kindergarten. The results indicate the effectiveness of using the generative AI tools in improving digital stories production skills according to the criteria that were built in the current research.

Keywords: production of digital educational programs, AI applications, Chat GPT, Google Bard.

1. Introduction

The world is currently witnessing great interest in AI revolution and its applications at the local and international levels, in what has been called a turning point in human history. In the context of teaching and learning, AI offers new opportunities and effective learning experiences that allow students and teachers alike to achieve additional research and educational value, and greater interaction with educational content.

Generative artificial intelligence tools are techniques that are used to produce creative content or generate new ideas. Generative artificial intelligence is linked to models capable of generating unique or new content instead of analyzing only pre-existing data. These tools vary in their applications and fields of their use, including text generators, machine writing, and interaction with the linguistic model, image generators, music, sound, translation, and graphic analysis tools. These techniques are advancing and developing at an enormous speed, and their capabilities, abilities, and accuracy are increasing day after day [1].Generative AI applications are also characterized by their ability to continuously learn from new experiences and infer contexts based on previous experiences that come in the form of data, as the system learns how to perform specific tasks based on the knowledge it has acquired from this input data. Generative Artificial Intelligence is a type of machine learning technology that is characterized by the ability to create new data, such as images, texts, and audio clips, based on prior human training for these technologies [2].

Artificial linguistic models that are based on generating and editing texts are considered one of the most widespread tools of generative artificial intelligence, and these models have sparked a major revolution in the world since the pioneering linguistic model Chat GPT was released in November 2022, as well as Google Bard, which was released in February 2023 [3]. Although the primary goal of usual chatbots is to simulate human interaction, but Chat GPT and Bard are characterized by flexibility of versatile uses in the educational field. They are not limited to traditional conversation, but rather have diverse capabilities that expand to writing stories, poetry, music, plays, and articles, answering questions, helping in assignments, designing programming codes, and more. [4] Chat GPT stands out as one of the prominent generative AI applications developed by Open Al, an AI research organization, and serves as an interactive chatbot model that can benefit from machine learning, deep learning, and understanding language inputs. By virtue of its pre-training on a wide range of textual data, Chat GPT excels at answering questions, closely simulating human conversations, and providing solutions of problems based on deep scientific knowledge [5]

Google Bard also stands out as a collaborative tool developed by Google Al and trained on a huge dataset of texts and instructions. It can create text, translate languages, write different types of creative content, answer questions, and more [6].These models considered multiple and exciting opportunities for students and teachers, including opportunities to add personal comments, increasing accessibility to information, interactive conversations, lesson preparation and assessment, and new ways of teaching complex concepts. [7]. The results of the study indicates that generative AI tools enhance personalized and interactive learning, creating formative assessment activities that provide continuous comments to improve the teaching and learning process.It is also noted that these artificial language models that are based on text generation, such as Chat GPT and Bard, are distinguished by their ability to expand on linguistic narratives in a unique way and produce rich linguistic texts. Although writing tools with generative artificial intelligence do not completely replace the human writer or author, they are characterized by the ability to mix the inputs of the human writer, and then generate exceptional story ideas that can be used in producing educational programs and narrating lessons, which saves effort and time, and makes them an environment that can be effectively invested in generating appropriate stories for children in early childhood. Producing digital stories requires

preparing the teacher professionally through training programs that enable him/ her to develop and master production skills using educational design models and authoring and publishing tools, following scientific, educational, and artistic standards. There are many programs (tools) of writing and publishing digital educational materials, including (Articulate storyline, Authorwar, and, Lectora Inspire). [8]

Statethat digital education affects the teacher's teaching practices, as well as the use of digital media, as it has led to the emergence of new forms of technology that help in the processes of supporting teaching and learning .The teacher needs factors that help him/ her rofessional adaptation and self-development according to his/ her abilities and capabilities, and his/ her possession of basic skills such as planning, use of educational methods, tests, and reinforcement. This will lead to a change for the better by finding a good school climate that contributes in raising the educational achievement at students. [9].

2. Aware of the Research Problem

Female students at the Faculty of Early Childhood face difficulties in producing digital stories. An interview was conducted with a number of female student teachers, where some inquiring questions were asked about the extent of their desire to use some generative AI tools such as Chat GPT and Google Bard in order to produce digital educational programs, and the answers are as follows: (80%) have a desire to use generative artificial intelligence tools to produce educational programs that serve educational situations with students, but (90%) of them do not have experience about standards of generating, editing, and review data entry , which is what the current research handles.

Muhammad's (2012) study showed that there is difficulty in finding appropriate stories that satisfy children's desire to learn and meet all their interests, especially since children's literature is one of the fields that has not received much attention in the Arab region so far. As for the study of Muhammad and Ali (2021), it indicated that there are challenges that kindergarten teachers face in choosing children's stories that develop moral behaviors of a special nature, such as altruistic behavior. In another context, Al-Ruqi's study (2021) showed that there is a large set of educational standards in choosing appropriate children's stories, which poses a challenge for the family and student teachers in choosing the type of stories presented to the children. [10]

On the other hand, generative artificial intelligence tools, especially linguistic models, have contributed to overcome the challenges associated with producing and generating texts appropriate to educational situations in light of special specifications and instructions that are controlled through input and generation standards [11]. These tools can in the kindergarten stage fill the gap that student teachers feel about finding appropriate stories for children that are rich, diverse and appropriate to educational situations. Rather, these tools allow the female teacher to generate the story that suits the educational situation and suits the children's interest by controlling the inputs that both the teacher and the children desire. This is like transforming the female teacher and the children into authors of stories in light of their inclinations and orientations and at the same time in a way that suits the educational situation, in addition to the great flexibility, unlimited production and pluralism of options provided by generative artificial

intelligence tools when producing and editing stories, provided that this story generation is in light of clear input, production, editing, and evaluation controls.

On the other hand, there is a limited number of Arab studies that have dealt with generative artificial intelligence tools in the educational field, especially in the kindergarten stage, and researchers have not found, within the limits of their knowledge, a previous study that handled the use of generative artificial intelligence tools in the production of digital educational programs, and this indicates that this field is new and still open to researchers, which supports current research procedures.

3. Research Problem

In light of the above, the research problem represented in the need of female students of the Faculty of Education for Early Childhood at Alexandria University to acquire and improve the skills of producing digital stories via the use of generative artificial intelligence tools.

The main question of the research is:

-What are the criteria of using generative artificial intelligence tools to improve children's story production skills in early childhood? The following research questions branched out from it:

* What are the standards of producing children's stories using generative artificial intelligence tools necessary for female student teachers at the Faculty of Education for Early Childhood

* What is the form of the training content based on standards of producing children's stories using generative artificial intelligence tools?

* What is the effectiveness of using generative artificial intelligence tools to improve children's story production skills in early childhood?

4. Research Objectives:

The research aimed at determining the standards and skills of producing children's stories using the generative artificial intelligence tools Chat GPT and Google Bard necessary for female student teachers at the Faculty of Education for Early Childhood in question, in order to improve the skills of entering, analyzing, reviewing, editing, and regenerating their children's stories. This goal required preparing training content. For female student teachers, it is based on standards for producing children's stories using generative artificial intelligence tools, and verifying the effectiveness of using generative artificial intelligence tools to improve children's story production skills in early childhood.

5. Research Importance:

Theoretical importance: The current research handles one of the modern topics in the field of education and learning at early childhood via investing the tools of generative artificial

intelligence Chat GPT and Google Bard in the production, development, and evaluation of children's stories by female student teachers, which is something that has not been addressed by an Arab study within the limits of researchers' knowledge, which expands the field latterly in front of this type of studies, which could be based on the uses of generative artificial intelligence, whether at the language level or at the image and video level.

Practical importance: The current research specifies, in a procedural manner, a set of standards and skills of producing children's stories using the tools of generative artificial intelligence necessary for female student teachers at the Faculty of Education for Early Childhood. These standards benefit the female student teachers in using the tools of generative artificial intelligence effectively in order to obtain the best outcomes and processed, edited and evaluated them. The research may also benefit early childhood curricula designers by including activities and training of female student teachers and children on the uses of generative artificial intelligence tools. The results of the current research may also contribute to the development of children's literature models produced by kindergarten female teachers.

6. Research determinants:

Objective determinants: linguistic generative artificial intelligence tools: Chat GPT, Google Bard, standards and skills of producing children's stories in the kindergarten stage.

Human determinants: (25) female students from the third and fourth year of the special education program.

Spatial determinants: Faculty of Education for Early Childhood, Alexandria University.

Time determinants: First semester - academic year 2023-2024 AD

7. Research Terms:

Generative AI: is a subset of artificial intelligence focuses on creating or crafting new content, such as texts, images, music, and more. It involves training models to learn patterns from existing data, then using them to produce new and original content that fits the same pattern or distribution. Generative AI techniques include machine learning methods such as neural networks that can capture complex patterns and relationships in data [2].

Chat GPT: is a linguistic model of generative artificial intelligence that was developed by the Open Al Foundation and falls within the category of language generation models. It is distinguished by the ability to understand and produce texts in an intelligent and advanced manner, as it was previously trained using a huge set of data that contains various types of texts and information, which enables it to deduce patterns and contexts in language, such as synthesizing texts, answering queries, solving problems, proposing ideas, translating texts from one language to another, and more. [2].

Google Bard: is an artificial intelligence application created by Google Al, which undergoes training on a large-scale dataset consisting of diverse text sources, ranging from books and

articles to conversations and computer codes. By utilizing this data, Google Bard can generate new text content, facilitate linguistic translations, and provide useful answers to questions [12].

Generative artificial intelligence tools are known procedurally as: linguistic generative models, Chat GPT and Google Bard, which can be used in the educational process at the kindergarten stage, in order to produce, generate, review, edit, and re-generate children's stories by kindergarten female teachers according to the standards of use and training session procedures specified in the current researc.

Children's story production skills: They are defined procedurally as the skills used by the kindergarten female teacher in question in producing and generating children's stories using linguistic generative artificial intelligence tools: Chat GPT and Google Bard. They are represented in the skills of: adjusting the inputs of generating children's stories, analyzing and reviewing the generation outcomes, editing the generation outcomes, regenerating and production. It measured in the current research by a Rubric graded performance rating scale of female student teachers in children's story production skills using generative artificial intelligence tools.

8. Theoretical Framework of the Research

8.1- Artificial Intelligence concept

Artificial intelligence applications have contributed in beginning a new era, as they have been utilized in a wide range of sectors which represented in creating data to train the machine learning models, creating high-quality images and videos, and creating ad texts and awareness campaigns, also they contributed to the creation of virtual help scripts for chat and interaction service.

Artificial Intelligence: It is a field in computer science that aims at designing systems and programs capable of carrying out tasks that require thinking, learning, and conclusion similar to those carried out by humans. Artificial intelligence is based on a wide range of techniques and tools that allow computer systems to process and analyze data, extract patterns, and take decisions based on available data. Artificial intelligence can be classified into narrow artificial intelligence and strong artificial intelligence as follows (SCU, 2023):

* ANI refers to specialized AI systems, capable of performing specific tasks, often outperforming humans at these tasks. However, its capabilities are limited to the specific field for which it was designed.

* AGI refers to AI systems that have human-like cognitive capabilities and have the ability to understand, learn, and apply knowledge across a wide range of tasks similar to human intelligence; where they can think and solve problems. [2]

8.2- Concept of generative Al:

Generative AI represents a form of artificial intelligence technology capable of creating diverse content such as text, images, sound, and artificial data. Generative AI applications enable the rapid creation of high-quality texts, graphics and videos. Generative AI includes deep learning

models that are proficient in producing high-quality text, images, and various types of content based on the knowledge previously provided to these models by humans [8].

Generative artificial intelligence techniques are used in a wide range of applications, including [11] , [5], [13]

- Linguistic Texts Production: Generative AI techniques are used to create various texts including composing articles, writing messages, and even engaging in natural conversations, generating reports, narrating stories, answering queries, and assisting in assignments
- Images and graphs: Artificial intelligence techniques specialized in images can create images and graphs based on the textual description that is entered for them, and images can also be transformed into a specific artistic style.
- Automatic programming: By providing assistance in writing programming codes by providing directions or inputs related to programming.
- Sound and Music: Artificial intelligence techniques are used to create a natural human voice or even create artificially generated music pieces.
- Video and animations: Generative artificial intelligence tools are also used to generate video clips or animation using a pre-provided textual description.
- Virtual environments: Artificial intelligence is also used to design complex and interactive virtual environments, such as in video games, etc.

8.3- Examples of generative artificial intelligence applications:

Chat GPT: Chat GPT represents a linguistic model designed by the Open Al Foundation that uses machine learning algorithms to process and analyze large amounts of data to create responses to user inquiries. It is designed to participate in human-like text interactions, and this model is distinguished by its efficiency in understanding and generating coherent responses across a variety set of topics, which showing the ability to accurately understand and generate language. Chat GPT was created based on an extensive data set that includes a large number of diverse linguistic patterns, and benefits from deep neural network architectures to facilitate its abilities to generate language, which allows the creation of text outputs related to context and coherent in context [14].

From an academic standpoint, GPT chat combines the intersection of linguistics, cognitive science, and computer science, and with its great importance in producing linguistic texts, the discussions within academia scrutinizing the ethical considerations, potential biases, and societal impact of such a linguistic model. And there are doubts about the accuracy of the texts generated from it, which making a review and edit what is generated from Chat GPT is necessary [3].

Google Bard: It is a chat service powered by artificial intelligence that was developed by Google Al and, in addition to provide high-quality responses, it can provide explanations and solutions to multiple situations. Bard supposedly works similarly to Chat GPT, with the biggest difference being that Google's service is based on the web for its data. By this way, Bard can be used as a

personal AI assistant to help in a number of tasks, such as answering emails, writing marketing content, translating documents, summarizing meeting notes, and much more [15].

8.4- Justifications of using generative artificial intelligence applications in producing children's stories in early childhood: The importance of children's stories lies in that they start from the reality that the child lives, and gradually bring him closer to the world of adults. The story has a major role in the child's integrated development in the aspects of his physical, linguistic, mental, emotional, and social personality. Some of the advantages of the story can be summarized in that it is the least expensive educational means and accessible to all children, and an easy educational mean that provides the child with various scientific, social, movement and other concepts in an easy and interesting way. The story helps the child to deepen his awareness of his history and his religious, national and moral heritage, and the story, with the moral or social content, guides children indirectly, and helps him bring abstract concepts closer to his mind.

The justification of using generative artificial intelligence applications in producing children's stories in early childhood represented through the ability of female student teachers to generate inspiring and exciting stories for children, and can control in its elements through inputs that determine the story's topic, purpose, events, time, place, characters, narrative language, and its suitability for children, which helps to enhance their imagination and unleash their creative abilities, which is shown in detail in the following justifications:

Customizing stories: The inputs of generative artificial intelligence tools can be controlled in order to generate stories with goals and topics intended by female student teachers, according to the interests of the children or even based on their personal data and information, which makes the stories more close and personal for each individual.

Enhancing language skills: Using generative AI applications to produce stories can help children to enhance their language skills, whether it is by expanding their vocabulary or enhance their linguistic skills.

Integration of learning and entertainment: Generative artificial intelligence applications can be used to create stories that combine learning and entertainment, as stories can handle educational topics in an interesting way, which contributes to enhance understanding and assimilating concepts in an enjoyable way.

Guiding values and morals: Generative AI models can help in creating stories that provide positive values and important lessons for children. Stories can be an effective mean to guide behavior and promote positive social interaction [16], [10].

Intelligent Interaction: By virtue of the ability of linguistic generation models to understand language and context, they can provide intelligent and appropriate interactions in stories, making the experience embedded in stories more attractive and interactive for children.

8.5- Criteria for inputs for generating stories from generative artificial intelligence tools in early childhood: Among the basic of choosing a good story is that the story be appropriate for the understanding of children and their ages, in a sequence of events, be widespread movement, life, and surprises that excite children's activity, easy in style and clear in meanings, take into account the diversity of purposes in choosing stories, have an educational purpose, and have an aesthetic

impact on children's feelings and perceptions. The teacher must exclude stories that include negative values. When dealing with stories generated from generative artificial intelligence tools, there are standards and skills that a kindergarten female teacher must possess in order to control the purpose of the story, its topic, objectives, time, place, characters, complexity, and its conflict, if any, as well as the nature of the linguistic style appropriate for the child.

Therefore, the current research aimed at determining a list of standards for producing children's stories using the tools of generative artificial intelligence necessary for female student teachers. These main standards represented in the standard of controlling inputs for generating children's stories, the standard of analyzing and reviewing generation outcomes, the standard of editing generation outcomes, and the standard of regeneration and production. Underneath is a set of sub-skills necessary for kindergarten female teachers in this field, which will be explained in the research procedures part [16].

9. Methodology and Procedures:

9.1- Research Methodology

The experimental approach with a quasi-experimental design is used in the current research through the pre- and post-applications on the research sample of female students of early childhood, and measuring the differences between the two applications.

9.2- Research sample: The research sample was selected from third and fourth year female students of the special education program at the Faculty of Education for Early Childhood - Alexandria University.

9.3- Preparing search tools

9.3.1- List of standards of producing children's stories using generative artificial intelligence tools necessary for female student teachers:

This list was prepared with the aim of determining the standards and sub-skills of producing children's stories using the necessary generative artificial intelligence tools for female student teachers. The sources for its preparation were based on previous studies and literatures on generative artificial intelligence tools, such as: [7], [1] , [8] ,[5], [11].

Some studies that dealt with children's stories in the early childhood stage, such as: [16], [17] , [8] ,[18], [19].

The list is in its initial form:

The list of standards of producing children's stories using generative artificial intelligence tools necessary for female student teachers, in its initial form, consists of (4) main standards under which (40) sub-skills were included. The list was presented to (9) arbitrators at the specialization of educational technology and kindergarten, this is in order to adjust its content in light of the suitability of the main standards and sub-skills.

The list is in its final form

The arbitrators' amendments to the wording of the sub-skills of the list were taken into account, and some skills were added. In light of the arbitrators' opinion, the degree of importance of each sub-skill on the list was determined in light of the alternatives: (very important skill - important skill - somewhat important skill). In light of that, it was decided to delete he sub-skills whose relative weight did not reach agreement (80%) of the arbitrators, and in light of the control of the list, it became in its final form consisting of (4) main standards, under which (34) sub-skills fall, as shown in Table (1).

Table 1. The List of standards of producing children's stories using the necessary generative artificial intelligence tools for the female student teacher and their relative weights in their final form

Standards	Sub-skills of using generative AI tools in producing stories	Extent of Sub-skill importance			Max. Value	Relative Weight
		Very Important	Important	Fairly Important		
Standard	Determining the goal of generating stories from generative AI tools	5	1	1	18	85.7%
Standards	Sub-skills of using generative artificial intelligence tools in producing stories	Extent of Sub-skill importance			Max. Value	Relative Weight
		Very Important	Important	Fairly Important		
Control generation inputs	Directing generative intelligence tools towards the goal and purpose of the story accurately	7	0	0	21	100%
	Employing inputs to ensure there is good organization of the story and an appropriate sequence of events	7	0	0	21	100%
	Using inputs that consider diversity in characters, events, times, and places	6	1	0	20	95.2%
	Directing generative inputs towards the desired educational values in the stories	7	0	0	21	100%
	Using inputs to produce stories that combine entertainment and learning	7	0	0	21	100%
	Employing input that uses clear, specific language	7	0	0	21	100%
	Providing directions to the generative intelligence model on producing stories that consider the linguistic level of children (simplicity and ease of understanding(	7	0	0	21	100%
	Providing guidance on producing stories that consider the cognitive level of children	7	0	0	21	100%
	Providing directions on producing stories that consider the psychological level of children	7	0	0	21	100%

	Providing directions on producing stories that consider the social-environmental level of children	5	2	0	19	100%
	Encouraging the model to generate story content that encourages interaction and creativity by children	7	0	0	21	100%
	Encouraging the model to generate narrative content that makes the story more fun and attractive to children	6	1	0	20	95.2%
	Verifying the accuracy of the data contained in the generated stories	7	0	0	21	100%
	Checking whether the generated story is appropriate for the age group	5	2	0	19	90.4%
	Reviewing the language and narrative style and verifying its ease	5	2	0	19	90.4%
	Reviewing the elements of the story in terms of characters, time, place, and events	7	0	0	21	100%
Standard of analyzing and reviewing the generation outputs	Verifying the suitability of the story to the child's background and social values	6	1	0	20	95.2%
	Evaluating the generated story period to stimulate interaction and active participation by children	7	0	0	21	100%
	Reviewing the extent to which there are educational and cultural elements that support children's skills knowledge in the generated story	6	1	0	20	95.2%

Standards	Sub-skills of using generative AI tools in producing stories	Extent of Sub-skill importance			Max. Value	Relative Weight
		Very Important	Important	Fairly Important		
	Evaluating the extent to which the generated story is included among the topics that attract children's attention	7	0	0	21	100%
	Verifying that the generated story works to develop children's imagination and creativity	5	2	0	19	90.4%
	Modifying the title of the story to more accurately suit its content	7	0	0	21	100%
	Correcting any error or incorrect content in the story	7	0	0	21	100%
Standard of Generation	Directing the story content to suit the age group of children	7	0	0	21	100%

Outputs Editing	Modifying some characters and events to suit the child's interests and inclinations	6	1	0	20	95.2%
	Adding interactive elements to the story that satisfy children's imaginations	7	0	0	21	100%
	Incorporating additional educational and entertainment values into the generated story	5	2	0	19	90.4%
	Modifying the language of the story to be more accessible and understandable to children	7	0	0	21	100%
	Re-editing to improve the quality of the story and make it more attractive to children	5	2	0	19	100%
	Regenerating the story by performing different generative intelligence	7	0	0	21	100%
	Modifying some inputs to produce a better generated story	7	0	0	21	100%
	Combining two stories on the same topic generated from different generative intelligence tools	6	1	1	20	95.2%

9.3.2- Content of training sessions based on the use of generative artificial intelligence tools to improve the skills of producing children's stories in early childhood among female student teachers:

In preparing the content of the training sessions provided to female teachers, the researchers relied on a list of producing children's stories standards using the generative artificial intelligence tools that necessary for female student teachers, which were set for the purposes of the current research. They also relied on previous literature and studies that dealt with generative artificial intelligence tools and producing children's stories skills, such as [7], [1] , [8] ,[5], [11]. and some studies that dealt with children's stories in early childhood, such as: [20], [17] , [10] ,[18], [21] , [19].

In light of determining the following:

General goal of the session's content: Improving the skills of female student teachers under current research related to the production of children's stories in early childhood.

Detailed objectives of the sessions: Determining a set of detailed objectives for the content \ and presenting at the beginning of each content session in proportion to its academic content.

Building session content, which included:

- A theoretical introduction that presented a detailed explanation of the theoretical and applied frameworks for the two generative artificial intelligence tools that were used in the training content, namely: Chat GPT and Google Bard, as well as the main and subsidiary skills of producing and generating children's stories in early childhood in light of the use of artificial intelligence tools. Proposals of interactive means and activities that employed in light of using generative artificial intelligence tools.

- Proposed training methods and techniques in light of the remote application on the 'MICROSOFT TEAMS' platform, which represented in electronic brainstorming, electronic collaborative learning via the web, discussion and dialogue, and presentation.

- Determining the proposed roles of female teachers during the implementation of the sessions.

- Determining the proposed evaluation methods during the implementation of the sessions.

- The academic content of the training sessions, which was divided into (3) training days that included (6) practical sessions. Each content session included the following:

- Session title.
- Training duration.
- Detailed session objectives.
- Distance training methods.
- Proposed training activities in light of generative artificial intelligence tools.
- Distance training means.
- Method of evaluating the training session.

In light of the previous elements, the content of the training sessions and their implementation timetable are as shown in Table (2):

Table 2. The List of Training Content Sessions Summary

Training Day	Session	Training Subject	Proposed Time of Application
1st	The First	Introduction to generative artificial intelligence tools and their uses in early childhood	
	The Second	Applications in generative artificial intelligence: Chat GPT-Google Bard	5 Training Hours
2nd	The First	Standards and controls of production and generation of children's stories inputs using artificial intelligence tools	5 Training Hours
	The Second	Standards and controls of analyzing and reviewing the generating children's stories outputs using artificial intelligence tools	
3rd	The First	Standards and controls of editing children's story products using artificial intelligence tools	5 Training Hours
	The Second	Standards and controls of reproducing and generating children's stories using artificial intelligence tools	

Setting- up the Training Sessions:

The content of the training sessions was presented to (9) arbitrators in the specialization of education technology and kindergarten, this is in order to adjust its content in light of the appropriateness of the general objective, detailed objectives, and content of the sessions, as well as the distance training activities, and to express their opinion by deleting and adding to the

content of the sessions. An evaluation card was prepared and attached to the content of the sessions so that the arbitrator could express his opinion on it, while providing the opportunity to make free comments on the content of the sessions. What was indicated by the arbitrators, which revolved around amending some training activities to the sessions to suit distance learning through the MICROSOFT TEAMS platform, was added, while the arbitrators did not recommend deleting any training session, and thus the sessions became in their final form and numbered (6). It is distributed over (3) training days, with (5) hours for each training day, including a rest period for the female students.

Preparing the Trainer's Guide:

In light of the content of the sessions, a training guideline was prepared. It included the general objective and detailed objectives of the content, the target group of the training, the duration of the training in light of the proposed timetable, as well as the proposed distance training methods through the Microsoft TEAMS platform, the means and techniques necessary for training, and the role of female trainer and teacher during the implementation of the sessions and the appropriate logistical equipment's for distance training.

9.3.3- Rubric scale of children's stories producing skills using generative artificial intelligence tools:

The objective of Preparing Rubric Scale:

The aim of preparing the Rubric scale is to verify the level of the female student teachers skills, the research sample, in producing children's stories using generative artificial intelligence tools, in light of graduated performance levels.

Description of the Rubric Scale:

The Rubric scale was designed to monitor the grades of female student teachers that reflect their skills in producing children's stories using traditional artificial intelligence tools under search (Chat GPT - Google Bard), according to the sub-skills and axes that were determined in the current research. The grades of the scale ranged between five graduated levels as follows: outstanding performance (5) - good performance (4) - satisfactory performance (3) - poor performance (2) - unsatisfactory performance (1), so that each of the targeted skills in the scale has five graduated levels of performance in front of it, ranging from the most skilled to the least skilled. Based on the teacher's level of skills in the task assigned to her, the appropriate grade is set. Table (3) shows an example of this:

Table 3. A Model of a Graduated Performance Scale on One of the Skills under Research

The task of the Teacher	Producing story to the kindergarten children about the topic of accepting the differences				
Example of skill	Evaluation Levels				
	Excellent Performance (5)	Good Performance (4)	Satisfactory Performance (3)	Difficult Performance (2)	Unsatisfactory Performance (1)
Directing generative intelligence tools towards	Using inputs that accurately clarify to the	Using inputs that clarify to the tool more	Using inputs that clarify to the tool an unclear goal or	Using inputs that direct the tool toward a goal or goals far	Using inputs that direct the tool towards producing

the goal and purpose of the story accurately	tool a specific goal of the story	than one goal for the story	goals for the story	from the content of the story	a story without a goal or purpose

The scale consists of four axes, each of which included a set of sub-skills necessary for the female teachers under search in order to produce children's stories using generative artificial intelligence tools, as follows:

- Skills of controlling generation inputs, this axis included (9) performance skills.
- Skills of editing generation outcomes, this axis included (7) performance skills.
- Skills of regeneration and production skills, this axis included (4) performance skills.
- Skills of analyzing and reviewing generation outcomes, this axis included (8) performance skills.

Thus, the graduated scale included (28) sub-skills, its grades are monitored at the female student teachers in light of a five-point rating, therefor, the total score for the scale is (140) and the minimum score is (28). Through the scale, each teacher individually is required to produce (4) stories in various fields using the two generative artificial intelligence tools under current research: Google Bard – Chat GPT, and the skills of the female student teachers are evaluated individually according to the graduated rating scale during the phase of producing and editing stories.

Arbitrating the Rubric Scale:

The Rubric scale was presented to (9) of the arbitrators to verify the validity of the evaluation levels to measure the sub-skills that were designed to measure them, and to modify what they saw, as well as taking their opinions on the number of skills included under each axis. According to the arbitrators' opinion, no sub-skills were deleted, and their opinions and modifications regarding the graduated rating scale were taken into account in preparation of piloting it and calculating its stability and its application time.

Exploratory piloting of the graduated rating scale:

The researchers applied the graduated rating scale individually to (5) female students who were not included in the primary research sample. A separate session was arranged for each student to apply the graduated scale exploratively during the student teachers' use of the two generative artificial intelligence tools identified in the current research Chat GPT - Google Bard. During the exploratory application of the graduated scale, each student was given the task of producing three stories for children in light of some pre-determined criteria. The researchers monitored the grades according to the responses of the female student teachers on using the two tools Chat GPT and Google Bard to produce the three determined stories. In light of monitoring the grades, the reliability of the scale was calculated using Cronbach's alpha coefficient, and the overall reliability coefficient for the graduated scale reached (0.79), which is a statistically significant percentage, and indicates the validity of the graduated scale of application on the main research group. The time of applying the scale was determined by recording the total time spent by all the

female student teachers participating in the exploratory application in producing stories, and dividing the total time by the number of female student teachers. Accordingly, the time of applying the scale was determined at about (45 minutes) for each teacher. The graduated scale is applied individually to each teacher in order to ensure that response scores on children's story production tasks using generative artificial intelligence tools are accurately monitored.

10. Procedures of Conducting the Research:

Before starting to implement the training sessions with the female student teachers participating in the research, an introductory meeting was held with them on the Microsoft Teams platform remotely for an hour and a half, in order to clarify the requirements of applying the sessions and presenting their basic data and training objectives. During the introductory meeting, all trainees were provided with a copy of the content of the sessions.

The research sample of female student teachers underwent (6) training sessions, distributed over (3) training days through the (Microsoft Teams) platform, with (5) hours for each training day, interspersed with a rest period for the teachers. The applying of the sessions continued in the evening from 4:00 pm till 9:00 pm for three days, from 7 to 9 November, 2023. Separate meetings were allocated to apply the Rubric graduated performance rating scale for female student teachers through coordination with female student teachers on the WhatsApp group that created for the purpose of implementing training.

After completing the sessions with the trainees, and applying the Rubric graduated rating scale, the results were monitored and processed statistically using the SPSS program, and results, recommendations, and research proposals were reached, as shown in the next part of the research.

11. Research Results and Discussion:

11-1- Answering the first and second research questions:

Through previous research procedures and the preparation of educational tools and materials, the first and second research questions were answered, which stipulate: (What are the standards of producing children’s stories using generative artificial intelligence tools necessary for female student teachers? And what is the form of the training content based on the standards of producing children’s stories using Generative Artificial Intelligence tools?), by preparing and controlling a list of standards of producing children’s stories using the necessary generative artificial intelligence tools for female student teachers, which included (4) main standards: the standard of controlling generation inputs, the standard of analyzing and reviewing generation outcomes, the standard of editing generation outcomes, the standard of editing generation outcomes includes (34) sub-skills. As well as preparing the content of training sessions based on the use of generative artificial intelligence tools to improve the skills of producing children’s stories in early childhood at female student teachers, which consist of (6) sessions distributed over (3) training days with (5) hours for each training day.

11-2- Answering the third research question:

To answer the third research question, which states, "What is the effectiveness of using generative artificial intelligence tools to improve children's story production skills in early childhood?" The T-test for linked samples was used to indicate the significance of the differences between the means of the pre- and post-measurements for the trainees of the research sample on the Rubric graduated performance rating scale. This is as shown in Table (4).

Table 4. T-test for the significance of the differences between the average scores of the research sample of female student teachers on the Rubric graduated performance rating scale for female student teachers. Number of members of the basic sample: N = (25)

Axes	Measure	Average	Standard Deviation	Degree of Freedom	T Value	Significance on Level	Differences Trend
Skills of control generation inputs	Pre	18.72	3.43	24	T=27.839	*0.01	Post Measurement
	Post	41.67	1.94				
Skills of analyzing and reviewing generation outputs	Pre	19.67	3.76		T=22.177	*0.01	Post Measurement
	Post	37.32	1.44				
Skills of editing generation outputs	Pre	16.20	1.73		T=34.144	*0.01	Post Measurement
	Post	32.96	1.67				
Regeneration and production skills	Pre	9.72	1.46		T=27.136	*0.01	Post Measurement
	Post	18.72	0.94				
Total marks	Pre	64.40	5.11		T=39.524	*0.01	Post Measurement
	Post	130.76	6.87				

The significance level is at (0.01`a).

The results in Table (4) show that there are statistically significant differences at the level of (0.01) between the average scores of the research sample of female student teachers on the Rubric graduated performance rating scale for female student teachers in children's story production skills. The differences are in favor of the post-measurement on the sub-axes of the scale and on the total score for the scale, where the total value of (T) is (39.52), which indicates the improvement of the producing children's stories skills in early childhood among the teachers in the research sample after passed the training content based on the standards of using the generative artificial intelligence tools under research. These results are consistent with what was stated in the studies of [7], [1] , [8] ,[5], [11] , [23] which indicated the effectiveness of employing generative artificial intelligence tools in the educational process. While the current research differs from those studies in its use of specific criteria of using generative artificial intelligence tools Chat GPT and Google Bard in order to produce, edit and reproduce children's stories. Ensuring the effectiveness of using generative artificial intelligence tools to improve children's story production skills in early childhood by calculating the Blake modified gain ratio, where there is effectiveness according to the Blake equation if the modified gain ratio ranges between (2-0) and if the value is greater than (1.2), so the effectiveness is high [22]. Table (5) shows the modified gain percentage.

Table 5. Modified Gain Ratio

Measurement Performance	Measurement	Average	Maximum Performance Change Measurement	Gain Ratio
Graduated performance rating scale for female student teachers (Rubric)	Pre	64.40	140	1.351
	Post	1		

Table (5) shows that the modified gain ratio reached (1.35), and by comparing this value with the level specified by Blake 1, which is (1.2), the effectiveness is high (Al-Khalili, 2012), which indicates high effectiveness of the independent variable on the dependent variable.

In light of the results reached, which show the effectiveness of using generative artificial intelligence tools in improving the skills of producing children's stories in early childhood among female student teachers, the results can be attributed and discussed in light of the following:

• The program sessions relied on an organized, gradual, and comprehensive list of standards for using generative artificial intelligence tools in producing stories. This is the list that was identified and controlled for the purposes of the current research, as it included standards for controlling story generation inputs from Chat GPT and Google Bard, as well as standards for analyzing stories. Reviewing generation outcomes, editing generation outcomes, regeneration and production in light of editing and evaluation of stories. These standards, which were determined by procedural skills, were reflected in the training content in the form of practical activities and applications presented to teachers, which made student teachers use generative artificial intelligence tools in a more professional manner, and in a manner based on specific standards, skills, and requirements, far from random, aimless use in producing stories. This is confirmed by studies that generation inputs are the most important step in controlling accurate outputs and outputs. Therefore, the training content provided to teachers was keen to include practical training activities based on comprehensive standards in the processes of data entry, generating stories, reviewing them, and analyzing them.

• Also, the activities and training that the student teachers went through during the training were not limited to generating and producing stories using artificial intelligence tools Chat GPT and Google Bard, but activities were designed called follow-up and tracking activities, and they included verifying the accuracy of the data contained in the generated stories, and also making amendments. And editing them in a way that suits the cognitive, moral, and linguistic level of the children, which required the trainees to exercise their minds and participate in evaluation activities for the generated stories, which contributed to improving their skills in producing and editing the generated stories using generative artificial intelligence tools.

• The great flexibility that the student teachers found in Chat GPT and Google Bard when producing stories contributed to diversifying the produced stories according to change inputs, the matter that achieved an interactive environment during the training, by improving the ability of the student teachers to delete, add, replace and edit of the produced stories, with all flexibility, especially with the student teachers feeling that they are active partners in producing and developing the stories that will be presented to children, and not relying on stereotypical stories that may not serve every educational situation. This flexibility in dealing with generative artificial intelligence tools has contributed to improve the skills of the student teachers to adapt

the generated stories according to the needs of the educational situation suggested through the inputs, which attracted the interest of the student teachers and made them more keen to make the most beneficiary of these tools, and the desire to learn and acquire more skills.

• The training sessions also relied on providing effective means and methods during the training, through discussions, collaborative work teams, and brainstorming on all questions that arise during the training about interaction with generative artificial intelligence tools, which allowed the female teachers to exchange experiences on the training topic, especially in the stages of editing and resetting the outputs of the generated stories, which is what the student teachers discussed during the training, which contributed to improve their skills in this aspect.

• The training sessions also relied on comprehensive, graduated topics, starting with an introduction to the tools of generative artificial intelligence and its uses in the early childhood stage, and recognizing the applications in the generative artificial intelligence under research Chat GPT - Google Bard, and then training on the standards and controls of inputs of producing, generating, reviewing, editing, and regenerating children's stories using artificial intelligence tools, which made the sessions take a logical order in presentation, which contributed to the student teachers' mastery of the skills targeted in the current research.

12. Recommendations:

The following recommendations can be presented in light of the following results:

- Preparing and developing sustainable training programs for teachers, focusing on a deep understanding of artificial intelligence tools and the method of using them effectively in improving the skills of producing the stories appropriate to the age stage of children.
- Relying on the list of producing children's stories standards using generative artificial intelligence tools, prepared in the current research, to train female student teachers to use these tools optimally
- Including the curricula at the stage of preparing the kindergarten teachers the applied educational activities on effectively using generative artificial intelligence tools in designing educational activities for children.
- Calling the officials of planning educational programs in kindergarten to design training programs for teachers on the optimal use of generative artificial intelligence tools with early childhood children.
- Experimenting the training content prepared for the purpose of the current research in other environments, educational stages, and different samples.

Proposals for future research:

- The effectiveness of combining the use of generative artificial intelligence tools in improving the skills of kindergarten teachers in producing children's literature appropriate for them.

- Using generative artificial intelligence tools to enrich literary writing at primary stage children and improve their attitudes toward it.
- The impact of training kindergarten teachers on using artificial intelligence tools in developing inspiring educational stories for children.
- The effectiveness of using generative artificial intelligence tools in improving the skills of female student teachers in preparing the language activities necessary for kindergarten children.

ACKNOWLEDGEMENTS:

Authors thank all academic institutions that cooperated with them in implementing and applying this research, and they thank the female student teachers.

WORKS CITED

Al-Qaisi, S. S. "The role of Artificial Intelligence applications in developing pedagogical and teaching skills in the Arab world and its repercussions on the traditional education system" , A field study. Al-Farahidi Journal of Arts, 15(52). 325-351,2023.

The guideline of artificial intelligence useing controls in higher education and scientific research. Supreme Council of Universities (SCu), is available at: https://scu.eg/download/guidance-guide-to- controls-the-use-of-artificial-intelligence-in-higher-education-and-scientific,2023.

Wu, T., He, S., Liu, J., Sun, S., Liu, K., Han, Q. L., & Tang, Y. "A brief overview of Chat GPT: The history, status quo and potential future development. IEEE/CAA Journal of Automatica Sinica, 10(5), 1122-1136, 2023.

Whalen, J.,& Mouza, C. ,"Chat GPT: Challenges, opportunities, and implications for teacher education" . Contemporary Issues in Technology and Teacher Education, 23(1),2023.

Rospigliosi, P. A. "Artificial intelligence in teaching and learning: what questions should we ask of Chat GPT?". Interactive Learning Environments, 31(1), 1- 3,2023.

Rudolph, J., Tan, S., & Tan, S ." War of the chat bots: Bard, Bing Chat, Chat GPT, Ernie and beyond. The new Al gold rush and its impact on higher education" . Journal of Applied Learning and Teaching, 6(1),47-53.2023.

Abu Asr, Reda Massad " Applications of Artificial Intelligence models "Chat GPT" in curricula and teaching methods, available opportunities and potential threats". Journal of Mathematics Education, 26(4), 10-23,2023.

Baidoo-Anu, D., & Ansah, L.O. "Education in the era of generative artificial intelligence (Al): Understanding the potential benefits of Chat GPT in promoting teaching and learning". Journal of Al, 7(1), 52-62,2023.

Fawns, T. Postdigital Education in Design and Practice. Postdigit Sci Educ 1, 132–145. https://doi.org/10.1007/s42438-018-0021-8., 2019.

Mohamed, A. A. & Abdel Al.A.R. "The effectiveness of a program based on electronic stories in developing altruistic behavior in kindergarten children". Journal of Childhood and Education, 13(47), 791- 840 ,2021.

Haggag H.M." A program based on chat generative pre-trained text transformer "Chat GPT" for enhancing EFL majors' descriptive paragraph writing skills and their English grammar Use,"College of Education Journal, 9(6), 1-29,2023.

Aydin, O. (2023). Google Bard generated literature review: Metaverse. Journal of Al, 7(1), 1-14.

Al-Hadi, M. M. (2023) Generative Artificial Intelligence and its Future, Computer Net Journal,)32), 32-36. Research Retrieved date: 17/1/2024).,

Center for Excellence in Teaching and Academic Leadership. "Chat GPT: What is it? " Available at: https://uca.edu/cetal/chat-gpt/ (accessed on 01/12/2023).

Ram, B., & Pratima Verma, P.V. “Artificial intelligence AI-based Chat bot study of Chat GPT, Google AI Bard and Baidu AI “. World Journal of Advanced Engineering Technology and Sciences, 8(01), 258-261,2023.

Mohamed, Ahmed Hassan .”The effectiveness of a training program based on the use of acting and discussion through stories in strengthening moral concepts among pre-school children”. Arab Childhood Journal, 13(52), 11-45,2012.

Al-Ruqi, S. R. “ The role of the story in developing citizenship values in the kindergarten children”. A proposed scenario. Shaqra University Journal of Humanities and Administrative Sciences, 16)37), 308-334,2021.

Alanazi R.H. “ The Impact of Storytelling on Children's Reading Comprehension Skills from the Perspective of Early Childhood Teachers in Saudi Arabia” :,Case Study. College of Education Journal, 38(8), 122-123,2022.

Al-Salim, J. F. “ The role of stories in developing economic concepts among kindergarten children” . Arab Journal of Media and Child Culture ,24(18), 467-496,2023.

Hassan, M. A. “ The effectiveness of a training program based on the use of acting and discussing through stories in strengthening moral concepts among kindergarten children” . Arab Childhood Journal, 13(52), 11-45,2012.

Ahmed, obedient. “ The level of kindergarten female students competencies in generating digital children’s stories using artificial intelligence platforms from their point of view “ , a field study on a sample of fourth-year female students in the fucalty of Education at Tishreen University. Tishreen University Journal for Research and Scientific Studies - Arts and Humanities Series. 45(5), 230-297,2023.

Al-Khalili, K. Y. (2012). Basics of educational scientific research. Dubai United Arab Emirates.

]Kim, D. H. (2023). A Study on the Job Replacement Impact of Chat GPT and Education Method. European Journal of Science, Innovation and Technology, 3(4), 105-122.