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The Impact of Providing Chatbot Content on Developing the English Communication Skills Among Al-Azhar Kindergarten Teachers

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Abstract

This paper focuses on investigating the impact of using Chatbot content on improving the English communication skills of Al-Azhar Al-Sharif kindergarten teachers. The researcher used a quasi-experimental design to explain the differences that occurred in the teachers` performance before and after the intervention of the Chatbot content. This design required the researcher to develop a performance observation checklist, which is the main tool of this research. In addition, the researcher constructed the Chatbot content and the e-training programme. After the research design was completed, thirty-three (33) female Azhari kindergarten teachers participated in this experiment. The performance observation checklist was used for evaluating the teachers` performance before and after the intervention of the Chatbot content and for measuring the teachers` retention of the acquired skills. At the end of the research, a statistical analysis of the results was applied. The results showed a statistically significant difference at the level of

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0.05 on the performance observation checklist`s mean scores of the sample teachers' pre-and post-application of the Chatbot content in favour of the post-application. The second statistical analysis of the performance observation checklist showed that there is no significant difference between the sample teachers` mean scores in the post- and follow-up application of the Chatbot content. These results are proof that validate the research`s main assumption that Chatbot content can improve the English communication skills of kindergarten teachers.

Keywords: Chatbot application, training kindergarten teachers, English communication skills, teaching English as ESL teachers, Al-Azhar Al-Sharif teachers

Introduction

Currently, digital technology plays a vital role in our daily lives as its applications integrate into all walks of life. It is used in social services, engineering, healthcare, commerce, and education. Education 2.0, the new education system that was first introduced to some stages in the school year 2018-2019, is based on technology and digital resources in achieving its main objectives of developing students` scientific knowledge, as well as the life skills needed for future generations (Discover, 2018). This education system was first introduced to the pre-primary stage (kindergarten stage) with the aim of preparing those young children for their future lives in a world that depends on digital technologies. In this context, kindergarten teachers play a vital role in the holistic development of children`s social, emotional, and scientific knowledge (UNESCO, 2019).

However, various training programmes were developed with the aim of improving kindergarten teachers` abilities. From a critical point of view, those training programmes were restricted to classroom management, introduction to 21st-century skills, introduction to digital skills, resourceful/innovative teaching pedagogies, and life-long learning skills (Teachers First, 2020) that would help teachers to run a good class in Arabic language only. However, this does not give any guidance in running classes of teaching English as a Second Language (ESL). The case of neglecting English communication skills, which shapes the language inside students` brains, is very common among Arab nations (El-Kabsh, 2005).

Teacher communication skills are important for a teacher in the delivery of education to students (McCarthy & Carter, 2001), as well as for a student to acquire the four skills of English. However, communication skills are usually restricted to listening and speaking skills, but teachers need to master English classroom management as well as good pronunciation and speaking skills (Spratt et al., 2011).

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In this context, communication skills consist of two main fields namely: classroom management and classroom language. Classroom management plays a vital role in running a good English-language class. Although kindergarten teachers receive adequate training in classroom management in Arabic, there is little or no emphasis being made on English classroom management (El-Kabsh, 2005). This implies that kindergarten teachers may feel inadequately prepared to manage their classrooms effectively. Moreover, they are likely to have doubts about their ability and competence to maximize proactive classroom management practices to promote young children's learning (Kadry, 2018).

Classroom language, the second field of communication skills, requires more attention as it plays a vital role in the students` acquisition of language. Speaking is the most important skill required by teachers in order to help their students communicate in English. Without proper pronunciation and conversation skills, students will not be able to speak or communicate in English. Parupalli (2019) admitted that "in the English as a Foreign Language (EFL) teaching environment, oral skills are completely neglected, and more concentration has been given to reading and writing skills". There is no exception among Kindergarten teachers as they usually use Arabic translations of vocabulary, do not encourage students to speak, and do not have conversations with students.

From this point of view, communication skills need more attention and require more training and CPD programmes (Reimers et al., 2022; El-Kabsh, 2005). Although kindergarten teachers are active learners, some teachers lack the interest in training and prefer to neglect the new interactive methods of teaching and use the old methods that focus on knowledge-based objectives (Teachers First, 2020).

In finding another alternative training method that can attract teachers` attention, the researcher referred back to several studies about the usage of Artificial Intelligence (AI) technology in education and found that training teachers can help them benefit from technologies such as: Messenger, Chatbot, and Learning Management Systems (LMS). In 2016, Chatbot started to gain familiarity among users due to its interactive user interface (Wizu, 2018). As a result, the researcher decided to use Chatbot to develop the training content. In this research, the researcher investigated the effect of using Chatbot as a medium for providing an English communication skills training programme to kindergarten teachers in Al-Azhar Al-Sharif.

Research Question

As a researcher, I started to investigate the teachers` previous experience regarding English communication skills and found that they did not learn suitable ways of running English classes in college, where they

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received teaching methodologies in Arabic only (El-Kabsh, 2005). Consequently, teachers run their English classes in Arabic instead of running the classes in English in order to engage their students in the learning of their respective subject matter disciplines (Low et al., 2014). Moreover, they encourage their students to memorize vocabulary by translating instead of following the three steps of learning such as: understanding the meaning, pronouncing the word, and spelling the letters (Galal, 2021).

From this point of view, El-Kabsh (2005) stressed the importance of proper training programmes for kindergarten teachers to help them improve their English communication skills since they are the ones responsible for teaching English inside their classes. The most important decisions teachers has to make is on how to create a positive and supportive classroom environment that is based on a clear and well-organized management plan (Norris, 2003).

Chatbots have a growing presence in modern day society. It has become an integral parts of everything ranging from personal assistants on mobile devices to technical support over telephone lines, and it is even being used for health interventions (Serban et al., 2017). Messenger Chatbots are used to link customers with service providers. The major advantage of using a Messenger Chatbot is the low barrier of entry for the creator and his target audience. The benefits for the users are the use of a familiar interface, no need to download and install extra applications, and 24/7 availability. In addition, many international conferences recommended using Chatbot as a medium for delivering education and training. The recommendations of the fifth Information Technology for Education and Development (ITED) (2022), the Asian Conference on Innovation in Technology (ASIANCON) (2021), and the IEEE International Conference on Engineering Technology, and Education (TALE) (2019) aim to encourage and support the integration of Chatbot with traditional education methods in educational institutions to promote education.

With the needed approvals, the researcher performed a pilot study to determine the skills needed for KG teachers to run their classes as ESL teachers. The researcher designed a questionnaire of ten questions that were offered to teachers to answer. Thirteen teachers were chosen randomly to answer the questionnaire. The findings disclosed that teachers have difficulties dealing with classroom management and classroom language, while the majority showed abilities to write a suitable lesson plan, use different methodologies, and use different ways of evaluation.

As a result, this study can be formulated in the following question as follows:

- What is the impact of providing Chatbot content on developing English communication skills among AlAzhar kindergarten teachers?

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Subsequently, this main question is branched into four questions that can be defined as follows:

1. What are the English communication skills required for kindergarten teachers to run English classes as ESL teachers?
2. What is the proposed design of Chatbot content that can be used to improve the teachers` English communication skills?
3. What is the impact of providing Chatbot content on kindergarten teachers` performance as ESL teachers?
4. How far is providing Chatbot content helpful in teachers` retention of English communication skills?

Importance of the Study

This study aimed at using AI (Chatbot) technology to provide a training programme for kindergarten teachers in Al-Azhar Al-Sharif to improve their classroom communication skills. Therefore this study is significant in:

1. Dealing with kindergarten teachers` skills, as there are a few studies dealing with them in general.
2. Dealing with Al-Azhar kindergarten teachers as ESL teachers, as there are few studies dealing with this subject.
3. Using Chatbot as a medium to provide e-training content to kindergarten teachers.
4. Encouraging kindergarten teachers to use e-content as a means for receiving and delivering professional development programmes.

Relevant Literature

Chatbot is a mobile phone and computer application that attempts to simulate conversations of human beings via text or voice interactions (Rouse, 2017). In other words, a Chatbot is a software application used to conduct an online chat conversation via text or text-to-speech interaction, which provides direct contact with a live human agent. Technically, Chatbot is an artificial intelligence application and a Human-Computer Interaction (HCI) model (Bansal & Khan, 2018). The fundamental objective of HCI is to make systems more usable and useful, and to provide users with experiences that fit their specific background knowledge, and objectives. Designers of human-computer systems write one piece of software for millions of users (at design time) and make it work as if it was designed for each individual user (only known at use time) (Fischer, 1999). As a result, Chatbots use Natural Language Processing (NLP) and sentiment analysis to communicate in human language by text or oral speech with humans or other Chatbots (Khanna et al., 2015). Natural language processing (NLP) gathers linguistics, computer science, and artificial intelligence together to create an interaction between

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human language and machine language. It is a programme that processes and analyzes large amounts of natural language data. The main goal of this process is to create a computer capable of understanding the contexts of languages used within them accurately, and extracting and categorizing information before producing suitable responses. Chatbots try to simulate your way of communicating, and the more you communicate with a Chatbot, the more it understands your responses and imitates your style of communication (Neff & Nagy, 2016).

The development of artificial intelligence and Chatbot technologies has led to the creation of mobile personal assistants. By 2014, Microsoft had launched its personal assistant called "Cortana" (Cortana, 2019). Cortana is considered as a more advanced digital assistant (Cortana, 2018). In the same year, Amazon launched its own personal assistant called "Alexa" (What exactly is Alexa?, 2019). Alexa is built into devices for home automation and entertainment. Alexa created what we now call the Internet of Things (IoT). This means that developers can use the Alexa Skills Kit (ASK) to create and publish free or paid Alexa skills. In addition, Alexa introduces security issues. The elevation of artificial intelligence technology due to the development of social media manufacturers' platforms in 2016 has brought a rapid change in the way people communicate with manufacturers. Social media platforms allow developers to create Chatbots for their brand or service to help customers communicate with vendors within their messaging applications. At the end of 2016, 34,000 Chatbots covered a wide range of users in fields like marketing, supporting systems, health care, entertainment, education, and cultural heritage (Wizu, 2018). As for education and training, Chatbots are now used on a wide scale and are believed to increase connectivity and efficiency and reduce uncertainty in interactions (Ondas et al., 2019). In addition, they can easily provide a focused, personalized, and result-oriented online learning environment (Cunningham et al., 2019).

Starting with the possibility of using Chatbot in training teachers, the researcher had to decide upon the suitable Chatbot structure that could be used to deliver the training content. Based on its structure, Chatbot can be classified into three types. The first is Flow Chatbot, which is a tree-based chatbot. This chatbot has fixed responses set by the developer and only responds to questions that are already in the database. Flow chatbots include buttons, keywords, and catchphrases instead of free writing to drive the client down a predefined path. Many applications can help in developing a flow Chatbot such as; Dialogflow, ManyChat, Chatfuel, and many others. The second type is the artificially intelligent Chatbot. Chatbots with artificial intelligence have the ability to update their knowledge and perceptions from previous conversations and users' experiences, and this helps the users to engage with it more freely. The third type is a hybrid type. This type of Chatbot combines

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the concepts of flow and AI Chatbots. This Chatbot can understand and communicate with users but remains in the pattern determined by the developer (Haristiani, 2019).

Conclusively, the researcher admitted that using flow Chatbot can help in creating the training course as it has a low cost, less time to create, better interaction, creative learning, and improved efficiency when instructing users (Llic & Markovic, 2016; Bii, 2018). However, users find mobile Chatbots to be safe and easy to chat online (Cameron et al., 2017) with the ability to operate as a 24/7 support service. It also provide responses to repetitive or frequently asked questions and it give access to learning contents when required (Garcia-Brustenga et al., 2018; Winkler & Söllner, 2018). Consequently, the researcher used the ManyChat application to develop a flow chat that can provide suitable training Chatbot content.

Facebook Messenger was used by the researcher as the social platform needed for the Chatbot. The researcher used Facebook Messenger as it is more familiar to users and keeps the user`s data and interaction history with the content. Moreover, it increases users` autonomy to finish the training by providing trainees with notifications of what they have done and what they have to finish (Elnagar & Habib, 2020).

In addition, the researcher used the Moodle platform to deliver the Chatbot content. The Learning Management System (LMS) was used to deliver Chatbot content in providing several tools that can control the training process. Moodle keeps records of trainees` data and information about their development. Interestingly, it also helps the trainer by presenting the training content, which keeps trainees willing to finish the training until the last moment. Additionally, Moodle provides different ways of assessing trainees` development by providing quizzes, questionnaires, and tests. It also provides the trainer with detailed results for each trainee (Al-Ajlan & Zedan, 2008).

Several studies have shown that Chatbot can be successfully implemented in an educational context (Durall & Kapros, 2020; pp. 13–24; Hien et al., 2018, pp. 69–76; Ho et al., 2018; Kumar et al., 2016; Mikic-Fonte et al., 2018; Mor et al., 2018, pp. 94–101; Ndukwe et al., 2019, pp. 365–368; Nguyen et al., 2019; Okonkwo & Ade-Ibijola, 2020; Ranoliya et al., 2017; Ureta & Rivera, 2018).

Chatbot can be of benefit in the following ways:

- **Integration of Content:** The use of Chatbot in education facilitates the integration of subject content for easy access to the students anytime and anywhere (Akcora et al., 2018, pp. 14–19; Wu et al., 2020; Yang & Evans, 2019, pp. 79–83). Content integration means that a teacher/trainer can upload any needed digital information to his students/trainees on an online platform to be accessed by authorized students/trainees.

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- **Quick Access:** Chatbots promote quick access to educational information (Ciupe et al., 2019; Murad et al., 2019; Wu et al., 2020).
- **Time-Saving:** Having easy and quick access to required information helps to save time (Ranoliya et al., 2017).
- **Maximize Abilities:** Chatbots can maximize student learning abilities and achievement (Clarizia et al., 2018, pp. 291–302; Murad et al., 2019).
- **Motivation and Engagement:** Currently, students are kept motivated and engaged by interactive systems such as Chatbot, which allow them to study in an exciting and comfortable environment (Chen et al., 2020; Pham et al., 2018; Rooein, 2019; Troussas et al., 2017). Learning with a conversational agent does not bore students but allows them to acquire knowledge more conveniently. As a result, the use of Chatbot in education aids in increasing student engagement (Molnar & Szuts, 2018; Lam et al., 2018, pp. 18–19; Adamopoulou & Moussiades, 2020).
- **Allow Multiple Users:** Chatbots can allow multiple users to access the system at the same time. This implies that many students from different locations can interact with a particular Chatbot without interruptions and obtain the required information. Wu et al. (2020) pointed out that one of the major benefits of using a Chatbot for educational purposes is that it allows multiple users to access it at the same time. Rooein (2019) agreed and stated that a Chatbot can handle multiple questions at the same time, saving the user time to do other tasks.
- **Immediate Assistance:** The usage of Chatbot in education enables academia and students to obtain rapid replies to their queries and activities (Alias et al., 2019, pp. 263–270). A Chatbot can provide instant support during individual classwork. It helps students to automate their activities such as submitting homework and responding to emails (Molnar & Szuts, 2018; Murad et al., 2019).
- **Adaptive Responses:** Chatbots can respond to learners' actions and emotions (Graesser, 2016), as well as find instant answers to their questions (Sreelakshmi et al., 2019).

As a researcher, I find these benefits of great importance, as they help teachers and instructors improve their lessons and help increase engagement in classes. Moreover, these benefits were tested throughout this research. The researcher used Chatbot as a medium for training kindergarten teachers. Using Chatbot in training allowed the trainer to send the training material once, and the trainees had the chance to review, interact, and learn as much as they needed.

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As for the English language communication skills, the researcher referred back to several previous pieces of literature and references to find out the most needed skills for kindergarten teachers. In this context, the researcher concluded that communication skills are a critical component of teaching. If there is any gap between what was intended by the teacher and the conveyed message, all the teacher`s efforts are in vain (Pelly, Tan & Zhang, 2009).
In order to learn, students must understand what is right and what is wrong, and this depends upon the teaching skills that the teacher adopts in the classroom. Good communication minimizes the potential for unkind feelings during the process of teaching. For learning, students must be motivated to learn. Loss (2000) highlighted the importance of communicating with students in a clear and understandable manner. Communication is a dynamic process that requires courage and mind to face each other.

The communication process must be carried out in a clear and understandable manner. Effective communication must convey and accept the uttered message in all kinds of situations and circumstances. Communication is considered to be a powerful tool for efficiency in the classroom (Srivastava, 2011). Numerous studies have demonstrated an important correlation between communication skills and teaching success. According to a study conducted by Ehindero and Ajibade (2000), the key to effective teaching is good communication skills, good classroom management, updating knowledge, and maintaining personality. It is impossible to teach effectively until one has these basic skills.

Moreover, a student's character-building and academic background is totally dependent on the teacher's attitude. When teachers adopt a positive professional attitude towards their students' academic and social accomplishments, students can easily raise their academic level. Educators have the responsibility to prepare students for all types of situations by teaching and preparing them practically. Furthermore, it is also the teacher's responsibility to act as a role model for the students to achieve well-behaved character (Honby, 2006).

Accordingly, the researcher concludes that the needed English communication skills for kindergarten teachers are divided into two main fields namely: classroom management and classroom language. Kindergarten teachers should administer these skills to run their English classes as ESL teachers.

Methods

This research used descriptive analysis to describe the current case of teaching English in Al-Azhar kindergarten institute. The descriptive analysis is used to analyze the studies related to the independent variable of the research, which is using Chatbot in training teachers. It also included a

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literature review and studies conducted on the English communication skills of kindergarten teachers.

The researcher also used a quasi-experimental approach to test the effectiveness of using Chatbot content (the independent variable) on developing the English communication skills (the dependent variable) of Al-Azhar Al-Sharif kindergarten teachers.

Table 1. The Research Design

Pre-Course	**Process**	**Post-Course**	**Follow-Up**
Performance Checklist	Chatbot Content	Performance Checklist	Performance Checklist

In addition, the researcher used the following instruments to achieve the final results:

1. A questionnaire was prepared by the researcher to determine the most English communication skills needed for kindergarten teachers to run their classes in English as Second Language (ESL) teachers.
2. A detailed list of ESL skills required for kindergarten teachers was prepared by the researcher as a pre-step towards creating the main tool of the study and the performance observation checklist.
3. The performance observation checklist that was developed by the researcher was used three times. The first time was before applying the Chatbot content to identify the current communication skills that the teachers possess, the second time was after the Chatbot application to measure the development that happened after finishing the Chatbot content, and the third time was using it as a follow-up tool.
4. The training programme based on Chatbot content was developed by the researcher to be applied by the teachers. A Moodle cloud site was built to host the Chatbot content, which was finally made available for teachers to review and interact with.

Having prepared the research instruments, the researcher started to apply the tools to the research sample of kindergarten teachers who teach English as a Second Language in their classrooms. Thirty-three kindergarten teachers participated in the experiment. This research took place in the Al-Maadi Azhari Directorate, during the second term of the school year 2022-2023.

The first step towards applying the research tools to the selected teachers` sample was applying the questionnaire. The aim of this pilot study is to determine the skills needed for kindergarten teachers to run their classes as ESL teachers. The researcher designed a questionnaire of ten questions that were offered to teachers to answer. Thirteen teachers were chosen randomly to answer the questionnaire. The findings disclosed that teachers have

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difficulties in dealing with classroom management and classroom language, while the majority showed abilities to write a suitable lesson plan, use different methodologies, and use different ways of evaluation.

This questionnaire presented some of the teachers` roles inside a classroom and the teachers` beliefs about these roles. Calculating the percentage of the teachers` attitudes towards classroom management and classroom language showed that teachers feel uncomfortable with these roles. Eight (8) teachers from the sample (62%) felt uncomfortable about managing classes in English and said that they are used to doing this in Arabic, while only five teachers (38%) expressed their abilities to manage their classes in English. As for classroom language, nine teachers (69%) hesitated about using English, saying that it is easier to use Arabic, while only four teachers (31%) showed that they could use classroom language as they participated earlier in a training programme about using classroom language. This remark encouraged the researcher to move on with the scientific experiment.

By deciding the skills needed to improve the teaching methods of kindergarten teachers in classes, the researcher developed a list of these needed skills. The list was divided into two main fields namely: classroom management and classroom language. Subsequently, each main field was divided into main skills and sub-skills. The list was directly used to develop the main tool of the research, the performance observation checklist, which was used to measure the development that happened in the teachers` performance after applying the digital interference of the Chatbot. The checklist was used three times as follows: before the application of the Chatbot to find out the skills of the teachers, the second time after applying the Chatbot to measure the development that happened in their practices, and the final time after three weeks of the experiment end date to measure the teachers` retention of the developed skills.

Statistical Methods

The researcher used the Statistical Package for the Social Sciences, SPSS version 25. In addition, the researcher used some statistical methods as follows:

- Cooper equation to find the percentages of agreement between the arbitrators, as well as to calculate the coefficient of agreement between the observers.
- Cronbach's alpha method for calculating the stability of the observation checklist.
- Pearson Correlation Coefficient: Pearson Machinery Estimation procedure for calculating the internal validity of the checklist.
- T-test for related groups to examine the significance differences between the degrees of the pre-and post-applications for the members

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of the research group to determine the amount of difference in each of the pre-and post-applications on the checklist, and its significance was verified by the value of (t).

- T-test for related groups to examine the significance differences between the scores of the post- and follow-up applications for the members of the research group to determine the amount of differences in each of the post- and follow-up applications on the checklist, and its significance was verified by the value of (t).
- Effect size measure η^2 (Square ETA η^2) to show the strength of the effect of the independent variable on the dependent variables.

Results

The results of this research are divided into two parts namely: answering the research questions and proving the hypotheses of the research. As for the first part, the researcher answered the research questions as follows:

Findings Related to Question 1

Question 1: What are the English communication skills required for kindergarten teachers to run English classes as ESL teachers?

The answer to this question is in two phases. The first phase was deciding upon the English communication skills needed for kindergarten teachers to run their classes as ESL teachers. After revising many references, the researcher summarized the English communication skills needed for kindergarten teachers into two main fields namely: classroom management and classroom language. These two main fields were divided into nine (9) main skills. Each of the nine skills was divided into sub-skills, with a total number of thirty-three (33) sub-skills. The list was reviewed by several experts and modified according to their comments to create the final list. Finally, the researcher had a list of the English communication skills needed for ESL kindergarten teachers ready to be used.

The second phase was building the main tool of the research. This is the performance observation checklist that was directly derived from the English communication skills list. As a result, this checklist consists of thirty-three sub-skills with four levels of evaluation for each sub-skill. This checklist was used as a tool for assessing teachers` performance before and after applying digital intervention (the Chatbot content). It was also used for a third time to assess the teachers` retention of the English communication skills that they had learned through the experiment. The checklist was reviewed by several experts and checked to prove its validity and stability. After checking the availability of psychometric conditions (validity and stability), the researcher used them to observe and record teachers` performance and used their results to prove the hypotheses of the research.

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- **Findings Related to Question 2**

Question 2: What is the proposed design of Chatbot content that can be used to improve the teachers` English communication skills?

In order to answer this question, the researcher referred to studies that compare different types of Chatbot applications. Finally, the researcher used a low-code Messenger Chatbot with Many Chat to design the content. Many Chat made it easier for the researcher to develop the content, contact a larger number of users, connect it to a Facebook page, and connect it to a Moodle site. The researcher used the English communication skills list in creating the content of the Messenger Chatbot. The researcher added videos that describe each sub-skill individually with some written explanation for each video to make them more clear to the users. In addition, the researcher used the ADDIE model as an instructional design model that was used to design the final form of the Chatbot by connecting the Chatbot to a Moodle site in order to create an environment that increased the availability of usage for the Chatbot. The researcher embedded more videos and descriptions in the Moodle site to increase the resources of information presented to the users. Although those videos were downloaded from online educational pages, the explanation provided with them added more information to the users. Moodle also allowed the researcher to add different evaluation methods such as: quizzes, questionnaires, tests, and even social forums that helped the teachers make full use of the Chatbot content provided throughout the scientific experiment.

- **Findings Related to Question 3**

Question 3: What is the impact of providing Chatbot content on kindergarten teachers` performance as ESL teachers?

To answer the third question, which is the main question of this research, the researcher examined the results of the performance observation checklist in the pre- and post-applications to prove the improvement in the teachers` performance after applying the Chatbot content. The answer to this question is proved thoroughly by proving the validity of the third hypothesis of the research.

- **Findings Related to Question 4**

Question 4: How far is providing Chatbot content helpful in teachers` retention of the English communication skills?

To answer the fourth question, the researcher used the performance observation checklist to follow up on teachers` performance three weeks after the experiment`s end date that was done by mid-April. During the end-of-year revisions and assessment of the students, the teachers assisted the researcher through brainstorming sessions in their classrooms during the researcher`s visits as their supervisor.

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In addition to answering the questions of the research, the researcher examined the research hypotheses in order to prove the validity of the hypotheses. This is to further interpret and discuss these results in light of the theoretical framework of the research and previous studies.

- **Hypotheses**

In order to prove the validity of the research`s hypotheses, the researcher used the statistical package for the social sciences, SPSS version 25. This is shown in the following procedures.

Verifying the Validity of the First Hypothesis

- There is a statistically significant difference between the mean scores of the sample teachers' pre- and post-application of the performance observation checklist at the level of 0.05, regarding the main field of classroom management in favour of the post-course application.

In order to verify the validity of this hypothesis, the t-value was calculated for the two related averages of the classroom management field and its significance difference between the mean scores of the teachers in the pre- and post-applications of this field. This is shown in the following table.

Table 2. Comparing the Teachers` Scores in the Classroom Management Field Pre/Post-Applications of Chatbot

application	N	Mean	Average Difference Between the Applications	Deviation	Standard Deviation	Degrees of Freedom	t-Value	Indication	Value $^2\eta$	d. value
pre	33	41.03	11.73	9.163	7.950	32	8.474	(0.000) function at level (0.05)	0.692	1.475
post	33	52.76		5.345						

t-value at level (0.05) and degree of freedom (32) = 2.037

It is clear from the table that the average score of the post-application is higher than the average score of the pre-application for the parameters of the research sample in the field of class management. The parameters in the pre-application obtained an average of 41.03 with a standard deviation of 9.163. In the post-application, the average rose to 52.76 with a standard deviation of 5.345, and the average difference between the pre- and post-applications of the field of class management scored 11.73 degrees. In addition, the t-value calculated to signify the difference between the mean scores of the research group parameters in the pre- and post-applications of the field class management amounted to 8.474, which is statistically significant at the level of 0.05. This means that there is a statistically significant difference between the mean scores of kindergarten teachers in the

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pre- and post-applications of the field class management in the performance observation checklist in favour of the post-application.

Verifying the Validity of the Second Hypothesis

- There is a statistically significant difference between the mean scores of the sample teachers' pre- and post-course performance observation checklist at the level of 0.05, regarding the main field of classroom language in favour of the post-course application.

In order to verify the validity of this hypothesis, the t-value was calculated for the two related averages and its significance difference between the mean scores of the teachers in the pre-and post-applications of the classroom language field. This is shown in the following table.

Table 3. Comparing the Teachers` Scores in the Field of Classroom Language Pre/Post-Application of Chatbot

application	N	Mean	Average Difference Between the Applications	Deviation	Standard Deviation	Degrees of Freedom	t-value	Indication	value $^2\eta$	d. value
pre	33	38.18	20.64	7.342	8.325	32	14.240	(0.000) function at level (0.05)	0.864	2.479
post	33	58.82		4.838						

t-value at level (0.05) and degree of freedom (32) = 2.037

It is clear from the table that the average score of the post-application is higher than the average score of the pre-application for the parameters of the research sample in the field of class language. The parameters in the pre-application obtained an average of 38.18 with a standard deviation of 7.342. In the post-application, it has an average of 58.82 with a standard deviation of 4.838, and the average difference between the pre- and post-applications of the field class language were 20.64 degrees. In addition, the t-value was calculated to indicate the difference between the mean scores of the research group parameters in the pre- and post-applications of the field class language, which amounted to 14.240. This is statistically significant at the level of 0.05, and this means that there is a statistically significant difference between the mean scores of kindergarten teachers in the pre- and post-applications of the field class language in favour of the post-application. Therefore, this indicates that there has been a clear and significant improvement in the field of class language as a result of using Chatbot content in training kindergarten teachers.

Verifying the Validity of the Third Hypothesis

- There is a statistically significant difference between the mean scores of the sample teachers' pre- and post-performance observation

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checklist at the level of 0.05 regarding the two fields of communication skills, as a whole, of teaching English in favour of the post-course application.

In order to verify the validity of this hypothesis, the t-value was calculated for the two related averages and its significance difference between the mean scores of the teachers in the pre- and post-applications of the performance observation checklist as a whole. This is shown in the table below.

Table 4. Comparing the Teachers` Scores in the Performance Observation Checklist Pre/Post-Applications of Chatbot

application	N	Mean	Average Difference Between the applications	Deviation	Standard Deviation	Degrees of Freedom	t-value	Indication	value $^2\eta$	d. value
pre	33	79.21	32.36	13.953	13.360	32	13.916	(0.000) Function at level (0.05)	0.858	2.422
post	33	111.58		9.427						

t-value at level (0.05) and degree of freedom (32) = 2.037

It is clear from the table that the average score of the post-application is higher than the average score of the pre-application for the parameters of the research sample in the performance observation checklist. The parameters in the pre-application obtained an average of 79.21 with a standard deviation of 13.953. In the post-application, the average rose to 111.58 with a standard deviation of 9.427, and the average difference between the pre- and post-applications of the checklist scored 32.36 degrees. In addition, the t-value was calculated to signify the difference between the mean scores of the research group parameters in the pre- and post-applications of the checklist, which amounted to 13.916. This is statistically significant at the level of 0.05. This means that there is a statistically significant difference between the mean scores of kindergarten teachers in the pre- and post-applications of the performance observation checklist in favour of the post-application. This indicates that there has been a clear and significant improvement in the performance observation checklist scores of the English communication skills as a result of using the Chatbot content with kindergarten teachers.

This result can be expressed in the following figure:

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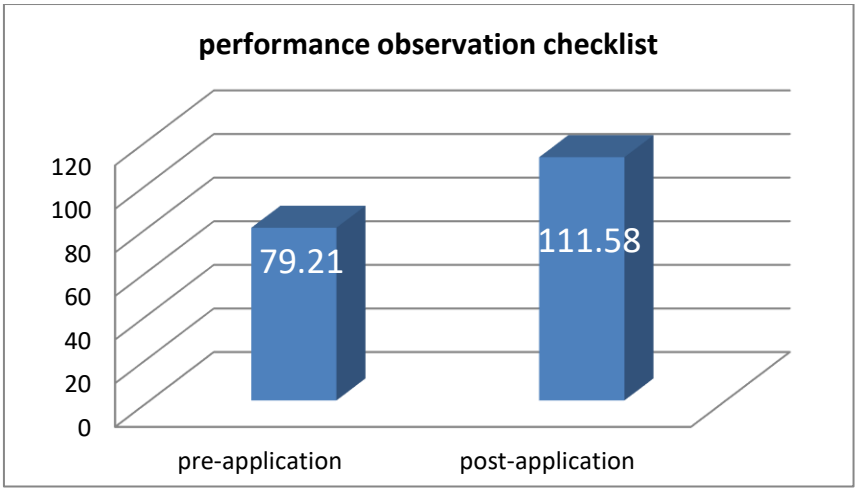

Figure 1. Arithmetic Means for the Pre-and Post-Applications of the Checklist

Verifying the Validity of the Fourth Hypothesis

- There is no statistical difference at the level of 0.05 between the mean scores of the sample teachers` follow-up performance observation checklist`s results and post-course performance observation checklist`s results regarding the classroom management field.

In order to verify the validity of this hypothesis, the t-value was calculated for the two related averages and its significance difference between the mean scores of the teachers` scores in the post- and follow-up applications of the classroom management field in the performance observation checklist. This is shown in the following table.

Table 5. Comparing the Teachers` Scores in the Classroom Management Field Post/Follow-Up Application of Chatbot

Application	N	Mean	Average Difference Between the Applications	Deviation	Standard Deviation	Degrees of Freedom	t-value	Indication
post	33	52.76	0.06	5.345	2.249	32	0.155	(0.898) Function at level (0.05)
Follow-up	33	52.70		5.175				

t-value at level 0.05 and degree of freedom (32) = 2.037

It is clear from the table that the mean scores of the follow-up application and the average scores of the post-application of the research group parameters are close in the field of class management in the performance observation checklist. The parameters in the post-application got an average of 52.76 and in the follow-up application, they got an average of 52.70. The average difference between the two applications is 0.06 degrees, and the t-value calculated to signify the difference between the mean scores of the

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research group parameters in the post- and follow-up applications of the classroom management field reached 0.155, and it is not statistically significant at the level of 0.05. This means that there is no statistically significant difference between the mean scores of kindergarten teachers in the post- and follow-up applications of the classroom management field in the performance observation checklist.

This indicates that the teachers have acquired and retained the classroom management skills due to the intervention of the Chatbot content.

Verifying the Validity of the Fifth Hypothesis

- There is no statistical difference at the level of 0.05 between the mean scores of the sample teachers` follow-up performance observation checklist`s results and post-course performance observation checklist`s results regarding the classroom language field.

In order to verify the validity of this hypothesis, the t-value was calculated for the two related averages and its significance difference between the mean scores of the teachers` scores in the post- and follow-up applications of the classroom language field in the performance observation checklist.
This is shown in the following table:

Table 6. Comparing the Teachers` Scores in the Classroom Language Field Post/Follow-Up Application of Chatbot

Application	N	Mean	Average Difference Between the Applications	Deviation	Standard Deviation	Degrees of Freedom	t-value	Indication
post	33	58.82	0.36	4,838	7,415	32	0.282	(0.780) Function at level (0.05)
Follow-up	33	59.18		4,419				

t-value at level 0.05 and degree of freedom (32) = 2.037

The mean scores of the follow-up application and the average scores of the post-application of the research group parameters are close in the field of class language in the performance observation checklist. The parameters in the post-application got an average of 58.82, and in the follow-up application, they got an average of 59.18. The average difference between the two applications is 0.36 degrees, and the t-value calculated to signify the difference between the mean scores of the research group parameters in the post- and follow-up applications of the classroom language field reached 0.282, and it is not statistically significant at the level of 0.05. This means that there is no statistically significant difference between the mean scores of kindergarten teachers in the post- and follow-up applications of the classroom language field in the performance observation checklist.

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This indicates that the teachers have acquired and retained the classroom language skills due to the intervention of the Chatbot content.

Verifying the Validity of the Sixth Hypothesis

- There is no statistical difference at the level of 0.05 between the mean scores of the sample teachers` follow-up performance observation checklist`s results and post-course performance observation checklist results regarding the two fields of the checklist as a whole.

In order to verify the validity of this hypothesis, the t-value was calculated for the two related averages and its significance for the difference between the mean scores of the teachers` scores in the post- and follow-up applications of the performance observation checklist as a whole. This is shown in the following table:

Table 7. Comparing the Teachers` Scores in Post/Follow-Up Application of the Checklist

Application	N	Mean	Average Difference Between the Applications	Deviation	Standard Deviation	Degrees of Freedom	t-value	Indication
post	**33**	**111.58**	**0.30**	**9,427**	**7,523**	**32**	**0.231**	**(0.818) Function at level (0.05)**
Follow-up	**33**	**111.88**		**5,716**				

t-value at level 0.05 and degree of freedom (32) = 2.037

The mean scores of the follow-up application and the average scores of the post-application of the research group parameters are close in the performance observation checklist. The parameters in the post-application got an average of 11.58, and in the follow-up application, they got an average of 111.88. The average difference between the two applications is 0.30 degrees, and the t-value calculated to signify the difference between the mean scores of the research group parameters in the post-and follow-up applications of the checklist reached 0.231, and it is not statistically significant at the level of 0.05. This means that there is no statistically significant difference between the mean scores of kindergarten teachers in the post- and follow-up applications of the performance observation checklist. This indicates that the teachers have acquired and retained all the skills needed for kindergarten teachers to run their English language classes as ESL teachers.

This result can be expressed in the following figure:

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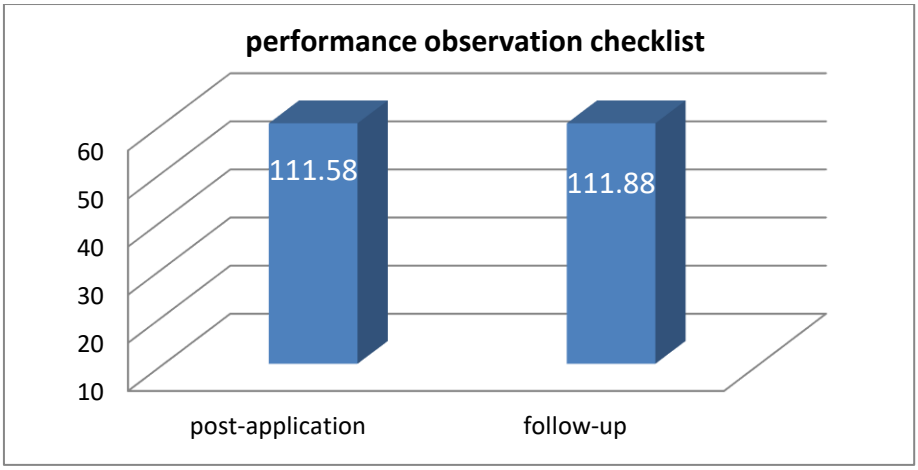

Figure 2. Arithmetic Means for the Post-Application and Follow-Up of the Checklist

Discussion

The final results of the research show that using Chatbot content has a very strong impact on the kindergarten teachers` English communication skills. This effect is a direct result of:

- **First:** Determining the English communication skills that kindergarten teachers need the most to improve their English language teaching skills.

The pilot study conducted by the researcher showed that most of the kindergarten teachers in Almaadi Azhary institute need to improve the English communication skills required for suitable classroom management and classroom language. In general, several reviews from previous studies proved that English language teachers need to master the skills related to classroom management and classroom language (McCarthy & Carter, 2001; Khan & khan, 2017; Savignon, 2007; Farrell, 2009; Kogut & Silver, 2009; Kazi et al., 2012; Briscoe et al., 2009; Srivastava, 2011; Cobbold & Boateng, 2015; Spratt, et al., 2011). In addition, many Arab researchers stressed that there is need to improve kindergarten teachers` performance in these fields (Seveen, 2011; Galal, 2021; Elkarimen & Elkhwalda, 2016; Salama, 2005; Shadefat & Ersheed, 2009; Shehata, 2017; Ghanem, 2019; Hawater, 2017; Guirgius, 2020). Finally, the researcher decided upon the skills and sub-skills that are used to build the final list of English communication skills. After proving the validity of the list, the researcher used it to build the performance observation checklist, which was used to evaluate the kindergarten teachers` performance inside classes.

- **Second:** There is need to choose the most suitable Chatbot design that could be used to deliver the training content for the teachers.

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The researcher reviewed several educational design models to finally use ADDIE in developing the Chatbot training programme which is connected to a social platform (a Facebook page) and connected to an educational learning management system (Moodle) site that added more availability of using, interacting with, and evaluation methods to the content. The importance of choosing the most suitable Chatbot design was proved through much research (Llic & Markovic, 2016; Bii, 2013; Cameron et al., 2017; Garcia-Brustenga et al., 2018; Winkler & Söllner, 2018; Elnagar & Habib, 2020). Consequently, the researcher designed the Chatbot content to be available to trainers on any device, anytime, and anywhere.

- **Third:** There is need in deciding the suitable content for the Chatbot that can improve the teachers` performance.

The researcher decided on a suitable design by adding content to the Chatbot. The researcher chose some free-access videos and educational resources that are available online to embed into the Chatbot and the Moodle site. In addition, the researcher prepared some quizzes, questionnaires, and social forums that were added to Moodle as different ways of evaluating trainees throughout the experiment. In addition, adding different ways of evaluation to Moodle is highly recommended in many researches (Al-Ajlan & Zedan, 2008; Elnagar & Habib, 2020; Laurillard, 2013; Farkash, 2018; Murad et al., 2019). As a result, the research group teachers had the ability to access a variety of digital content, repeat watching or reading it, interact through answering a quiz or a questionnaire, and express their minds in social forums. These features helped the researcher in maximizing the effect of the Chatbot content.

- **Fourth:** Using follow-up to confirm the sustainability of the Chatbot results.

In order to measure the teachers` retention of the newly acquired English communication skills, the researcher performed a follow-up procedure that started on April 15, 2023, and it continued for two weeks. The results of the follow-up of the research group teachers on the performance observation checklist were similar to the results of the post-application of the checklist. This similarity of results proves that teachers have retained the English communication skills that were provided through the Chatbot training programme. The importance of applying a follow-up procedure in measuring the retention of acquired skills is highlighted in the following research (Seveen, 2011; Galal, 2021; Parupalli, 2019; Lee & Van Patten, 2003; Nation & Newton, 2009).

- **Fifth:** Using statistical methods that helped the researcher prove the validity of the results.

In order to obtain the final results of the experiment, it was necessary to use statistical methods that helped validate results. The researcher used the

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statistical package for the social sciences, SPSS version 25. In addition, the researcher used some statistical methods that were discussed earlier.

Conclusion

In conclusion, the results of this research have been proven to be valid and stable. The researcher proved that using Chatbot content helped in improving the English communication skills of kindergarten teachers who teach English as a Second Language (ESL teachers) in Al-Azhar Al-Sharif institute. This result is similar to many research that deal with using Chatbot in training teachers (Guirgius, 2020; Elnagar & Habib, 2020; Al-Ajlan & Zedan, 2008; Laurillard, 2013; Farkash, 2018; Murad et al., 2019; Khan & khan, 2017; Savignon, 2007; Farrell, 2009; Seveen, 2011; Galal, 2021; Elkarimen & Elkhwalda, 2016; Salama, 2005; Shadefat & Ersheed, 2009; Shehata, 2017; Ghanem, 2019; Hawater, 2017).

Conflict of Interest: The authors reported no conflict of interest.

Data Availability: All of the data are included in the content of the paper.

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Declaration for Human Participants: This study was approved by the Egyptian E-Learning University (EELU), and the principles of Helsinki Declaration were followed.

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