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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 research aimed at 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 difference 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; the main tool of this research. In addition, the researcher constructed the Chatbot content; the e-training program. Having the research design 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 (0.05) on the performance observation checklist`s mean scores of the sample teachers' pre and post application of the Chatbot content in favor 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 proved the validity of the research 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

Nowadays, digital technology plays a vital role in our daily life as its applications integrate in all life fields; it is used in social services, engineering, healthcare, commerce, and even in 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 the future generations(Discover, 2018). This education system was first introduced to pre-primary stage (kindergarten stage) in the aim of preparing those young children for their future life in a world depends on digital technologies. Kindergarten teachers, in this context, play a vital role in the holistic development of children`s social, emotional, and scientific knowledge. (UNESCO, 2019)

Various training programs were developed at the aim of improving kindergarten teachers` abilities. From a critical point of view, those training programs 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, their native language, only, but don`t give any guidance in running classes of teaching English as a Second Language (ESL). This case of neglecting English communication skills, that shapes the language inside students` brains, is widespread among Arab nations.(Elkabsh, 2005)

Teacher communication skills are important for a teacher in delivery of education to students (McCarthy and Carter, 2001), as well as for a student to acquire the four skills of English. 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).

Communication skills, in this context, consists of two main fields; 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, yet little emphasis is laid on English classroom management (Elkabsh, 2005). This implies that kindergarten teachers may feel not adequately prepared to manage their classrooms effectively. They are likely

to have doubts in their ability and competence in maximizing 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 for teachers 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 present English as a foreign language (EFL) teaching environment, oral skills are completely neglected, and more concentration has been given to reading and writing skills". Kindergarten teachers are no exception, as they usually use Arabic translation of vocabulary, don`t encourage students to speak, and don`t make conversations with students.

Communication skills, from this point of view, need more attention and require more training and CPD programs(F.M.Reimers et al,2022،Elkabsh, 2005). Although kindergarten teachers are active learners, some teachers lacked the interest in training and preferred to neglect the new interactive methods in teaching and use the old methods that focused on knowledge-based objectives (Teachers First, 2020).

To find 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 make benefit from these technologies; like Messenger, Chatbot, and Learning Management Systems (LMS). Chatbot, in 2016, started to gain familiarity among users due to its interactive user interface (Wizu, 2018). As a result, the researcher decided to use Chatbot in developing the training content.

In this research, the researcher investigated the effect of using Chatbot as a medium for providing English communication skills training program to kindergarten teachers in Al-Azhar Al-Sharif.

Research question

As a researcher, I started to investigate the teachers` previous experience regarding the English communication skills and found that they didn`t learn suitable ways of running English classes in college, where they received teaching methodologies in Arabic only (Elkabsh,2005). Consequently, teachers run their English classes in Arabic, while they are supposed to run these classes in English 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, not by following the three steps of learning; understanding the meaning, pronouncing the word, and spelling the letters (Galal, 2021).

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

Chatbots have a growing presence in modern society, becoming integral parts of everything from personal assistants on mobile devices to technical support over telephone lines, and even being used for health interventions (Serban et al., 2017). Messenger Chatbots are used to link customers with services` providers. The major advantage of using a Messenger Chatbot is a low barrier to entry for the creator and his target audience. Benefits for the users are using a familiar interface, no need to download and install extra application, 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), IEEEInternational Conference on Engineering, Technology and Education (TALE) (2019) encouraged and supported the integration of Chatbot with the traditional education methods in the educational institutions to promote education.

Having all 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:

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

This main question is subsequently 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 on teachers` retention of the English communication skills?

Importance of the research

This study aimed at using AI (Chatbot) technology in providing a training program 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 researches dealing with them in general.
2. Dealing with Al-Azhar kindergarten teachers as ESL teachers, as there are few researches 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 means for receiving and delivering professional development programs

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, Chatbot is a software application used to conduct an online chat conversation, via text or text-to-speech interaction, providing direct contact with a live human agent. Technically, Chatbot is an artificial intelligence application and a Human-Computer Interaction (HCI) model (Bansal & Khan, 2018). A fundamental objective of HCI is to make systems more usable, more useful, and to provide users with experiences fitting their specific background knowledge and objectives. Designers of human-computer systems write one 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 interaction between human language and machine language. It is a program 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 used languages within them to accurately extract and categorize information, and finally produce suitable responses. Chatbots try to simulate your way of communication, the more you communicate with a Chatbot, the

more it understands your responses and imitates your style of communication (Neff and Nagy, 2016).

The development of Artificial intelligence and Chatbot technologies led to the creation of mobile personal assissstants. By 2014, Microsoft launched its personal assistant Cortana (Cortana, 2019). Cortana is considered as a more advanced digital assistant (Cortana, 2018). In the same year, Amazon launched Alexa (What exactly is Alexa, 2019). Alexa was built into devices for home automation and entertainment. Alexa created what now we call the Internet of Things (IoT). This means that developers can use Alexa Skills Kit (ASK) to create and publish free or paid Alexa skills. Alexa introduces security issues.

Early in 2016, Artificial Intelligence Technology was elevated to a higher level with the development of social media platforms, which changed the way people communicate with manufacturers. Social media platforms allowed 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 uses in fields like Marketing, Supporting Systems, Health Care, Entertainment, Education, and Cultural Heritage (Wizu, 2018). As for education and training, Chatbots nowadays are used at a wide scale, and are believed to increase connectivity, efficiency, and reduce uncertainty in interactions (Ondas et al, 2019). They can easily provide a focused, personalized, and result-oriented online learning environment (Cunningham et al, 2019).

Starting from the possibility of using Chatbot in training teachers, the researcher had to decide upon the suitable Chatbot structure that can 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 responds 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 the predefined path. Many applications can help in developing a flow Chatbot; Dialogflow, ManyChat, Chatfuel, and many other ones. The second type is the Artificially Intelligence Chatbot. Chatbot with artificial intelligence has the ability to update their knowledge and perception from previous conversations and users' experience, letting the users engage more freely. The third type is a Hybrid type. This type of chatbot combines 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).

The researcher concluded 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 using in instructing users

(Llic & Markovic, 2016; Bii, 2018). Users find mobile chatbots safe and easy to chat online (Cameron et al., 2017) with the ability to operate as a 24/7 support service, provide responses to repetitive or frequently asked questions, and give access to learning contents when required (Garcia-Brustenga et al., 2018; Winkler & Söllner,2018). Consequently, the researcher used Many Chat application to develop a Flow Chat that can provide a suitable training Chatbot content.

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

In addition, the researcher used Moodle platform to deliver the Chatbot content. Using Learning Management System (LMS) in delivering Chatbot content provides several tools that can control the training process. Moodle keeps records of trainees` data, and information about their development. It, also, helps the trainer in presenting the training content in an interesting way, that keeps trainees willing to finish the training till the last moment. Additionally, Moodle provides different ways of assessing trainees` development; through providing quizzes, questionnaires, and tests. It, also, provides the trainer with detailed results of 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 benefit in:

- 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.
- Quick Access: Chatbot promotes 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: Chatbot can maximize student learning abilities, and achievement (Clarizia et al., 2018, pp. 291–302; Murad et al., 2019).
- Motivation and Engagement: Nowadays, 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: Chatbot 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 academics 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, responding to emails (Molnar & Szuts, 2018; Murad et al., 2019).
- Adaptive responses: Chatbot 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 a great importance as they help teachers and instructors to improve their lessons, and help increasing 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 need.

As for the English language communication skills, the researcher referred back to several previous 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 which the teacher adopts in 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 understandable manner. Communication is a dynamic process that requires courage and mind to face the other.

It is important that the communication process be carried out in a clear and understandable manner. Effective communication must convey and accept the uttered massage 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 & 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 are 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. It is also the teacher's responsibility to act as a role model for the students to achieve further well-behaved characters (Honby, 2006).

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

Methods

This research used a descriptive analysis to describe the current case of teaching English in Al-Azhar kindergarten institutes. 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 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 prepared by the researcher to determine the most needed English communication skills for kindergarten teachers to run their classes as English as a Second Language (ESL) teachers.
2. A detailed list of ESL skills required for kindergarten teachers that was prepared by the researcher as a pre-step towards creating the main tool of the study; the performance observation checklist .
3. The performance observation checklist that was developed by the researcher. It was used three times, the first use 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 happened after finishing the Chatbot content, and the third time was using it as a follow-up tool.
4. The training program based on Chatbot content, was developed by the researcher to be applied with the teachers. A Moodle cloud site was built to host the Chatbot content, to finally be available to teachers to review and interact with.

Having prepared the research instruments, the researcher started to apply the tools on 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 AlMaadi Azhari Directorate, during the second term of the school year 2022-2023.

The first step towards applying the research tools on the selected teachers` sample was applying the questionnaire. This pilot study aimed at determining 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 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.

This questionnaire presented some of the teacher`s roles inside a classroom, and the teachers` beliefs about these roles. Calculating the

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

Having decided upon the skills needed more to improve the teaching ways of kindergarten teachers in classes, the researcher developed a list of these needed skills. The list was divided into two main fields; classroom management and classroom language. Each main field, subsequently, 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, that was used to measure the development happened in the teachers` performance after applying the digital interference of Chatbot. The checklist was used three times; before the application of the Chatbot to find out the skills of the teachers, the second time was after applying the Chatbot to measure the development happened in their practices, and the final time was 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 ver.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 of the differences between the degrees of the pre and post applications for the members 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 of the differences between the scores of the post and follow-up applications for the members of the research group to determine the amount of difference 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

Results of this research are divided into two parts; 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 of this question ran into 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 reference, the researcher summarized the English communication skills needed for kindergarten teachers into two main fields, classroom management, and classroom language. These two main fields were divided into nine (9) main skills. Each skill 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 the 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; the performance observation checklist that was directly derived from the English communication skills` list. This checklist, as a result, consisted from thirty-three sub-skills, with four levels of evaluation to 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 have learnt all through the experiment. The checklist was reviewed by several experts, and checked to prove its validity, and stability. Having checked the availability of psychometric conditions (validity–stability), the researcher used it to observe and record teachers` performance, and used its results to prove the hypotheses of the research.

- **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 researches that compare between different types of Chatbot applications. Finally, the researcher used a low-code Messenger Chatbot; Many Chat, to design the content. Many Chat made it easier for the researcher to: develop the content, contact bigger 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 to each video to make them more clear to the users. In addition, the researcher used ADDIE model as an instructional design model that was used to design the final form of the Chatbot through connecting the Chatbot to a Moodle site in order to create an environment that increased availability of usage for the Chatbot. The researcher embedded more videos and description 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; quizzes, questionnaires, tests, and even social forums, that helped the teachers to make full benefit out of the Chatbot content provided all through 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/post applications, to prove the improvement in the teachers` performance after applying the Chatbot content. The answer of this question is proved thoroughly through proving the validity of the third hypothesis of the research.

- **Findings related to Question (4):**

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

To answer the fourth question, the researcher used the performance observation checklist to follow-up teachers` performance after three weeks from the experiment`s end-date; that was done by mid-April. Although it was time for the end-year final revisions and assessment of the students, the

teachers helped the researcher through brainstorming sessions that were done in their classrooms during the researcher`s visits as their supervisor.

In addition to answering the questions of the research, the researcher examined the research hypotheses to: prove the validity of the hypotheses, interpreting, and discussing these results in the 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 ver.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 favor 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 for the 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), and in the post-application the average raised 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 pre and post applications of the field Class management in the performance observation checklist in favor of the post application.

This result can be expressed in the following figure :

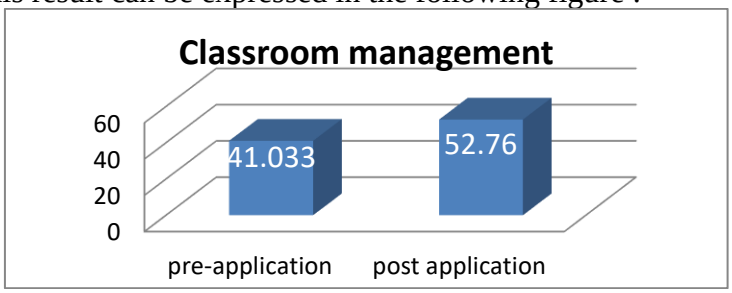

Figure (1). Arithmetic mean for the pre and post applications of Chatbot in the field Class management

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 favor 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 for the 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. As the parameters in the pre-application obtained an average of (38.18) with a standard deviation of (7.342), and in the post-application 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 (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), which 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 in the field class language in favor of the post-application. 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.

This result can be expressed in the following figure :

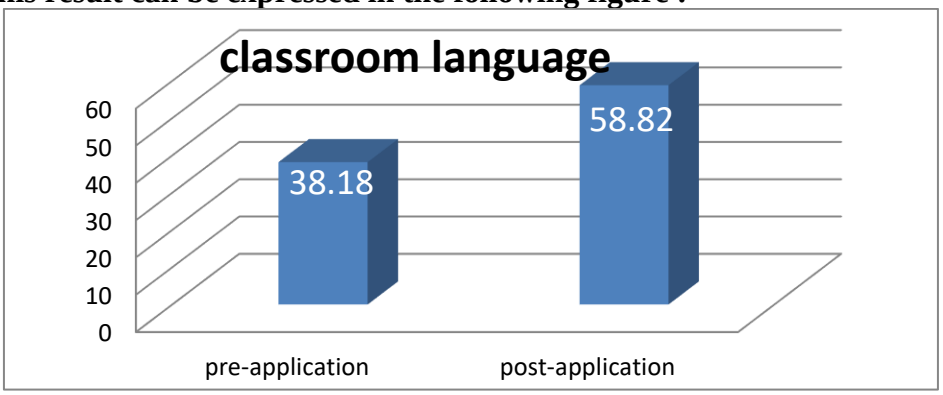

Figure (2). Arithmetic mean for the pre and post applications of Chatbot in the field Class management

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 checklist at the level of (0.05) regarding the two fields of communication skills, as a whole, of teaching English in favor 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 for the 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 following table:

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), and in the post-application the average raised 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 amounted to (13.916), 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 pre and post applications of the performance observation checklist in favor 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 :

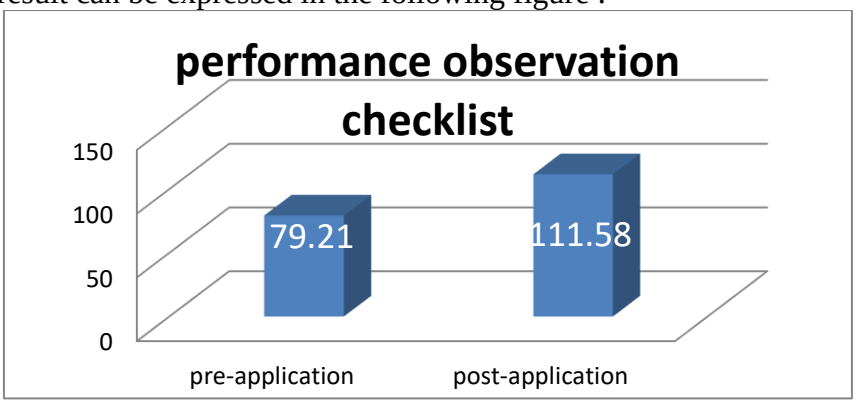

Figure (3). Arithmetic mean for the pre and post applications of the checklist

Verifying the validity of the fourth hypothesis:

- There is no statistically 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 for the 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 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 (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.

- **This result can be expressed in the following figure :**

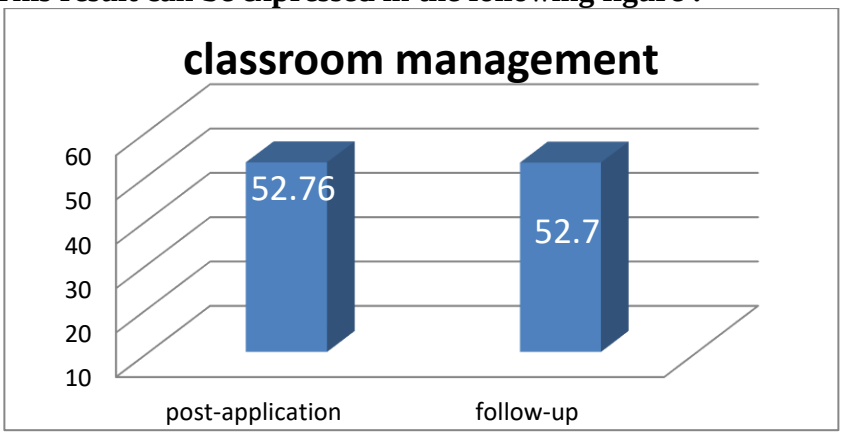

Figure (4). Arithmetic mean for the post application and follow-up of the classroom management field

Verifying the validity of the fifth hypothesis:

- There is no statistically 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 for the 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 (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.

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

This result can be expressed in the following figure :

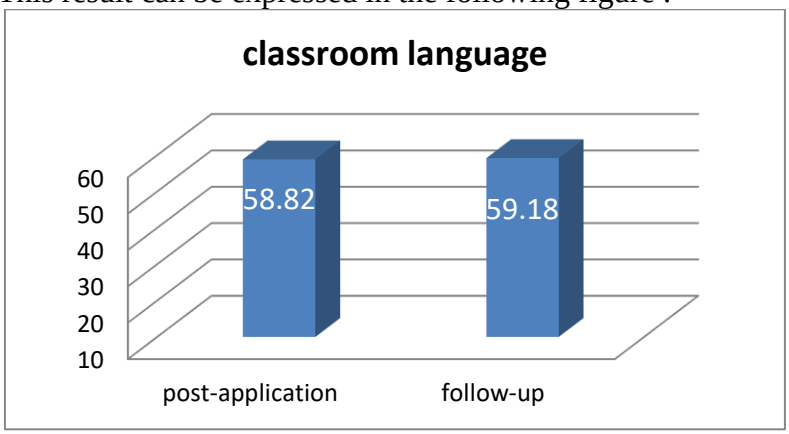

Figure (5). Arithmetic mean for the post application and follow-up of the classroom language field

Verifying the validity of the sixth hypothesis:

- There is no statistically difference at the level (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 (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 :

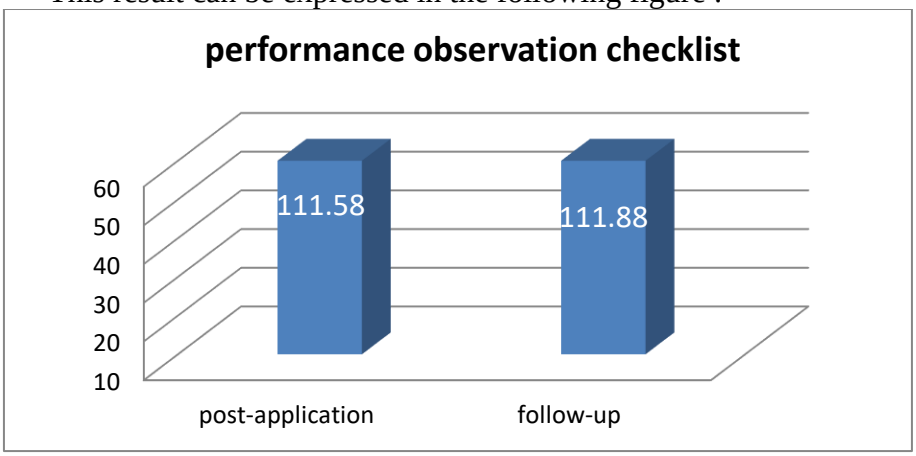

Figure (6). Arithmetic mean for the post application and follow-up of the checklist

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 institutes need to improve the English communication skills required for suitable classroom management and classroom language. Reviewing several previous literature proved that English language teachers, in general, need to master the skills related to classroom management and classroom language (McCarthy and 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 the 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. The researcher, finally, decided upon the skills and sub-skills that are used to build the final list of the English communication skills. After proving the validity of the list,the researcher used it in building the performance observation checklist which was used to evaluate the kindergarten teachers` performance inside classes.

- Second: Choosing the most suitable Chatbot design that could be used to deliver the training content for the teachers.

The researcher reviewed several educational design models to finally use ADDIE in developing the Chatbot training program 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 many researches; Llic & Markovic, 2016; Bii, 2013, Cameron et al., 2017, Garcia-Brustenga et al., 2018; Winkler & Söllner,2018, Elnagar, and, Habib,2020. Consequently, the researcher designed the Chatbot content to be available to trainers on any device, anytime, and anywhere.

- Third: Deciding upon the suitable content for the Chatbot that can improve the teachers` performance.

Having decided the suitable design of Chatbot, the researcher started to add the content to the Chatbot. The researcher chose some free accessed videos and educational resources which 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 all through the experiment. Adding different ways of evaluation into Moodle is highly recommended in many researches; Al-Ajlan & Zedan, 2008, Elnagar, and, 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 new acquired English communication skills, the researcher performed a follow-up procedure that started on the 15th of April,2023, and continued for two weeks. The results of 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 prove that teachers has retained the English communication skils that were provided through the Chatbot training program. The importance of applying a follow-up procedure in measuring retention of acquired skills is highlighted in the following researches: Seveen,2011,Galal,2021, Parupalli , 2019 , Lee & VanPatten, 2003, Nation & Newton ,2009

- Fifth: Using statistical methods that helped the researcher in proving the validity of the results.

In order to obtain the final results of the experiment, it was necessary to use statistical methods that helped in validating results. The researcher used the statistical package for the social sciences SPSS ver.25. In addition, the researcher used some statistical methods that were discussed earlier.

Conclusion

In conclusion, the results of this research are proved 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 institutes. This result is similar to many researches 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.

References:

1. Adamopoulou, Eleni,& Lefteris Moussiades,2020. Chatbots: History, technology, and applications, Machine Learning with Applications, Volume 2,2020
2. Akcora, D. E., Belli, A., Berardi, M., Casola, S., Di Blas, N., Falletta, S., Faraotti, A., Lodi, L., Diaz, D. N., Paolini, P., et al. (2018). Conversational support for education. International conference on artificial intelligence in education. Springer.
3. Al-Ajlan, Ajlan, & Zedan, Hussein, 2008. Why Moodle? 12th IEEE International Workshop on Future Trends of Distributed Computing Systems Conference. Pages 58-64
4. Alias, S., Sainin, M. S., Fun, T. S., & Daut, N. (2019). Identification of conversational intent pattern using a pattern-growth technique for the academic chatbot. International conference on multi-disciplinary trends in artificial intel- ligence. Springer. Applications in Healthcare. Ecoforum Journal, 5(1), 1-8
5. Bansal, H., & Khan, R. (2018). A review paper on human-computer interaction. International Journal of Advanced Research in Computer Science and Software Engineering, 8(53), http://dx.doi.org/10.23956/ijarcsse.v8i4.630.
6. Barcelona: eLearn Center. Universitat Oberta de Catalunya. https://doi.org/10.7238/elc.chatbots.2018
7. Bii P. K , J. K. Too , C. W. Mukwa (2018). Teacher Attitude towards Use of Chatbots in Routine Teaching. Universal Journal of Educational Research.6 . 1586 - 1597. doi:10.13189/ujer.2018.060719.
8. Cameron, G., Cameron, D., Megaw, G., Bond, R., Mulvenna, M., O'Neil, S., … McTear, M. (2017). Towards a
9. chatbot for digital counselling. Proceedings of the 31st British Computer Society Human Computer
10. Chen CY. (2020). Smartphone addiction: psychological and social factors predict the use and abuse of a social mobile application. Inf Commun Soc 23(3):454–467.Retrieved from: https://www.tandfonline.com/doi/abs/10.1080/1369118X.2018.1518469?journalCode=rics20 on 15/10/2020.

11. Ciupe, A., Mititica, D. F., Meza, S., & Orza, B. (2019). Learning agile with intelligent conversational agents. In 2019 IEEE global engineering education conference (EDUCON), pages 1100–1107. IEEE.
12. Clarizia, F., Colace, F., Lombardi, M., Pascale, F., & Santaniello, D. (2018). Chatbot: An education support system for student. International symposium on cyberspace safety and security. Springer.
13. com/ar/. Accessed 23rd January 2023.
14. Cortana security flaw means your pc may be compromised. (2018). Panda Security Media center website: https://www.pandasecurity.com/mediacenter/mobile-news/ Cortana-security-flaw/. (Retrieved 27 August 2020).
15. Cunningham-Nelson, W. Boles, L. Trouton, E. Margerison, A review of chatbots in education: Practical steps forward,30th annual conference for the Australasian association for engineering education (AAEE 2019): Educators becoming agents of change: Innovate, Integrate, Engineers Australia, Motivate (2019)https://www.sciencedirect.com/science/article/pii/S2666920X21000278#bbib18S
16. D. J., & Markovic, B. (2016). Possibilties, Limitations and Economic Aspects of Artificial Intelligence
17. Discover,2018. Kindergartenn1, Discover teacher`s guide 1st term.Ministry of Education. Egypt
18. Durall, E., & Kapros, E. (2020). Co-design for a competency self-assessment chatbot and survey in science education. International conference on human-computer interaction. Springer.
19. Ehindero, OJ, Ajibade YA (2000). What our student say about how we teach. Ife J. Educ. Studies. 7(1), 1-9.
20. F. M. Reimers, Alysha Banerji, Uche Amaechi, Margaret Wang, 2022. (eds.), Education to Build Back Better. Springer imprint. Pp. 51-74.https://doi.org/10.1007/978-3-030-93951-9_1 Accessed 23rd January 2023.
21. Fischer, G. (1999) "User Modeling: The Long and Winding Road." In J. Kay (Ed.) Proceedings of UM99: User Modelling Conference (Banff, Canada), Springer Verlag, Wien New York, pp. 349-355.
22. Garcia-Brustenga, G., Fuertes-Alpiste, M., & Molas-Castells, N. (2018). Briefing paper: Chatbots in education.
23. Graesser, A. C. (2016). Conversations with the autotutor help students learn. Ternational Journal of Artificial Intelligence in Education, 26(1), 124–132

24. Haristiani,Nuria 2019Artificial Intelligence (AI) Chatbot as Language Learning Medium: An inquiry. J. Phys.: Conf. Ser. 1387 012020
25. Hien, H. T., Cuong, P.-N., Nam, L. N. H., Nhung, H. L. T. K., & Thang, L. D. (2018). Intelligent assistants in higher-education environments: The fit-ebot, a chatbot for administrative and learning support. Proceedings of the ninth international symposium on information and communication technology.