Enhancing students' subject-verb agreement skill by using CiCi artificial intelligence-based app: Embedded mixed-methods study

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ABSTRACT

In recent years, AI-based language learning apps have found their way into English as a Second Language (ESL) classrooms. This case study employing embedded mixed-method design investigates the effectiveness of the CiCi app for enhancing the subject-verb agreement skills of ESL learners from the Philippines. Through random sampling, 40 Grade 7 students, 20 in each group, participated in this study. The students in the experimental group underwent a 4-week intervention program, spending 100 minutes per week, integrating the CiCi App as a supplemental learning tool, while the students in the control group underwent the traditional instruction method of teaching subject-verb agreement, also with the same number of minutes. Aside from the pretest and posttest data of both groups, one-on-one interviews with the students from the experimental group and their teacher were also conducted to analyze their perceptions of the app. Results show that the app significantly improved students' subject-verb agreement skills in the experimental group, with no significant improvement observed in the control group. The interview data revealed four themes: Offering Free Charge and User-Friendly Features, Making English Learning Fun, Providing Various SV Agreement Exercises, and Encouraging Collaborative Learning. Drawing on the findings, AI-powered educational resources, like CiCi, enable teachers to customize English classroom activities. The study contributes to understanding the role of technology in language learning and provides insights for educators seeking innovative teaching strategies.

1. Introduction

Artificial Intelligence (AI) has become an integral part of daily lives, infiltrating various sectors such as smartphones, cars, social media, and even healthcare. Its impact is undeniable, revolutionizing the way we interact with technology and enhancing our overall experiences (Kim & Kim, 2022; Pelgrum, 2021; Zhu, 2017). However, the true potential of AI goes beyond convenience and entertainment. In the realm of education, AI has emerged as a powerful tool for enhancing learning outcomes. This study delves into the fascinating realm of subject-verb agreement skills among English learners and investigates the transformative effect of the CiCi AI-Based App to improving language proficiency.

Although AI's presence is evident in almost all aspects of life, some individuals are confused about how AI differs from machine learning and deep learning (Phan et al., 2017; Schuetz & Venkatesh, 2020). Moore (2019) posits that deep learning is a subset of machine learning, which is a technique for achieving artificial intelligence. While deep learning uses methods inspired by the human brain, machine learning uses algorithms to give a machine the ability to learn from data and experience. This implies that data and patterns can be understood more clearly using deep learning.

In this study, the researchers have considered Luckin et al.'s (2016) principle about Artificial Intelligence, which is programmed to engage with the external environment by demonstrating skills and intelligent actions that are considered human. Although AI - as a sub-discipline of computer science - started in the 1950s, its application in the English as a Foreign Language (EFL) or English as a Second Language (ESL) classroom as a teaching tool has been considered a breakthrough in the past few years (Briggs, 2018). AI has achieved historic advances in the expansion and practice of intelligent education schemes as one of the most sophisticated information technologies in modern times (Kim & Kim, 2022; Sánchez-Prieto et al., 2020). Although the stage of AI application development for humans has begun, the integration of AI with education and teaching practice is still in its early stages. Thus, educators have been exploring the role of AI and digital technology in teaching and supporting L2 students in ESL courses over the last several decades (Celik et al., 2022; Hrastinski et al., 2019).

Robotics, computers, processors, or information networks that replicate mental functions generally compared to the human intellect, such as solving problems instantly and thinking critically, are referred to as artificial intelligence (Baker, 2016; Pelgrum, 2021). Online platforms are gradually becoming the standard for language learning in the digital era. Among the most commonly utilized digital learning aids include newspaper online, crowdsourcing, corrective feedback, augmented reality, recreational features, computerized language processing, virtual reality, speech signals creation, badging and gamification, AI writing assistant programs, and other virtualized web platforms.

The introduction of AI in English teaching has marked a significant milestone in improving the quality of English through information technology innovation. The favorable impacts of AI-powered learning tools in the EFL and ESL classrooms have been documented in the literature. O'Neill and Russell (2019), Zhang and Hyland (2018), and Li et al. (2015) claim that using AI-based corrective feedback in the classroom has saved millions of people from experiencing embarrassment due to English errors resulting from carelessness.

Cavaleri and Dianati (2016) explored the perceptions of students about their learning experiences of using Grammarly and the subjects responded positively by stating that Grammarly assisted them in comprehending grammar rules. The findings concluded that grammar books and scanned teaching guides are portable and accessible, but they do not have the same direct engagement with learners as digital grammar checkers do. AI chatbots have also been investigated as supplemental teaching tools in EFL classrooms. Topal et al. (2021), Kim et al. (2021) and Haristiani and Danuwijaya (2019) posited that when interacting with chatbots, EFL/ESL learners can enhance their speaking and writing competence by having plenty of opportunities to practice speaking and writing output. In addition, Kim et al. (2019) studied a number of AI chatbots and reported on their usefulness in teaching English as a second and foreign language. The authors discovered that chatbots improve students' communication abilities by enhancing linguistic inputs and increasing the number of opportunities to communicate meaning.

The potential of Artificial Intelligence (AI) to revolutionize education, especially in English language instruction, has garnered attention in recent years (Sumakul et al., 2022). Several studies have elucidated the opportunities and challenges associated with integrating AI into English as a Foreign Language (EFL) classes, focusing on teachers' perspectives in this domain.

The revolutionary power of AI in education is emphasized by Sumakul et al. (2022), who also points out that in order for teachers to successfully use AI technologies in the classroom, they must develop a set of specialized abilities. The study emphasizes how AI has the ability to improve current teaching methods in a number of subject areas, including EFL. Meanwhile, Alzubi (2019) explored how educators feel about utilizing cell phones in contexts where English is being used as a second language. Even though it is not specifically focused on AI, this study provides insightful information about teachers' perspectives on incorporating technology into language classes, which might help guide conversations about the use of AI in EFL instruction.

In the realm of language learning, AI has demonstrated its efficacy in addressing specific language acquisition challenges, such as subject-verb agreement. Han (2019) provides insights into how AI can enhance students' subject-verb agreement skills, while Huang et al. (2006) explore innovative approaches combining fuzzy data mining and artificial neural networks to identify and correct grammatical errors. Moreover, Miranda et al.'s (2021) study recommends looking into the use of artificial intelligence techniques like data analytics and machine learning in order to make the mobile learning application more intelligent and responsive to the demands of Filipino students learning subject-verb agreement topics.

Although not directly related to language learning, Garai et al. (2018) investigated the application of AI methods, such as random forests and artificial neural networks. This work shows the potential of AI in challenging pattern recognition tasks, which can be applied to the identification and correction of subject-verb agreement mistakes in student writing. Using online neural network training, Rubaai and Kankam (2011) created an adaptive tracking controller for induction motor drives. The idea of adaptive learning via neural networks can be used in language learning contexts to enhance subject-verb agreement competency through tailored learning paths, even if the focus is on control systems.

These studies collectively highlight AI's capacity to revolutionize language acquisition by providing customized interventions, focused feedback, and individualized learning experiences. However, the gap in the above literature is the lack of research on ESL teachers' and students' perceptions of AI-based apps in English classrooms, specifically using CiCi as a supplementary tool and focusing on subject-verb agreement skills. While there have been studies on the potential of AI in language acquisition and the use of technology in language classes, there is a need for more research specifically examining the perceptions and experiences of ESL students and teachers when utilizing AI-based apps for subject-verb agreement skills.

To address this gap, this paper investigated the effect of the CiCi App (CiCi, 2022), a smartphone program available on the Apple App Store and Google Play Store, on the subject-verb agreement skills of English learners. Additionally, it explored the perceptions of the learners and their teacher in using the CiCi App as a supplementary teaching tool in the English classroom. Thus, the following questions were addressed in this paper:

1. To what extent does a supplemental learning tool, CiCi App, enhance learners' subject-verb agreement skills?

2. How do the participants perceive the use of the CiCi App after their experience?

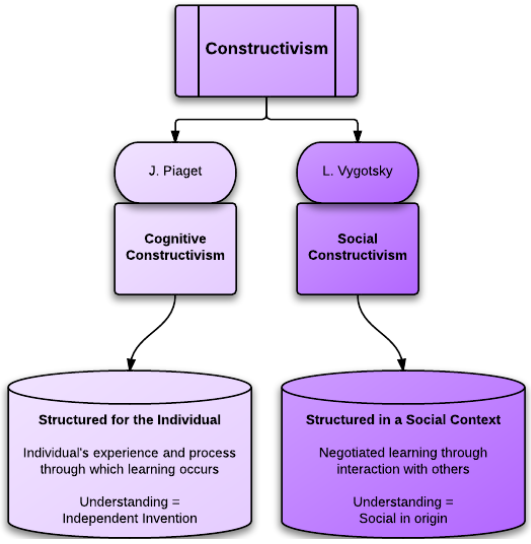
2. Theoretical underpinning

There are two underpinning constructivist approaches used in this study, but these are posited as one concept. The first is the Cognitive Constructivism of Piaget (1964), and the second is Social Constructivism of Vygotsky (1978). Cognitive constructivism is underpinned in this paper because during the investigation, the students were observed to experience and process learning individually or on their own. Social constructivism is also observed because the students negotiated learning experience with CiCi with their classmates and teacher.

This fusion of two constructivist approaches, which this study adopted, is asserted by Duffy and Cunningham (1996, as cited in Park, 2022).

Figure 1

Adopted Framework from Duffy and Cunningham's (1996, as cited in Park, 2022)



Source. The data are from "Learner experiences during the design-based research process for a problem-based instructional design course" by Y. C. Park, 2022, *Journal of Educational Technology Systems, 50*(4), pp. 448-472. (https://doi.org/10.1177/00472395211073679)

Figure 1 displays the two approaches of constructivist theory employed in this study. Students are encouraged to modify prompts provided by the teacher to meet their learning needs, representing cognitive constructivism. Throughout their interactions with CiCi, students are observed to be socially engaged with their classmates and teachers, portraying social constructivism.

For the validity of the CiCi App, it is crucial to discuss research-based evidence that supports the validity of the said app as a supplementary learning tool for subject-verb agreement. Two relevant studies, although did not specifically focus on the CiCi App, they provide insight into the effectiveness of similar apps in enhancing students' proficiency in subject-verb agreement.

One study by Nurjanah (2017) on enhancing students' proficiency in subject-verb agreement using QuizWhizzer as a pedagogical tool examined the effectiveness of QuizWhizzer, a similar app, in improving students' comprehension of subject-verb agreements in the simple present tense. The findings of this study indicated that QuizWhizzer is an effective tool for increasing students' understanding of subject-verb agreement.

Similarly, the study of Miranda et al. (2021) focused on the creation of INSVAGRAM, a mobile learning application specifically designed for subject-verb agreement. This research highlights the significance of using mobile learning applications to enhance subject-verb agreement skills and provides valuable insights into the effectiveness of such tools.

3. Methodology

This research employed a mixed-methods approach (Creswell & Plano Clark, 2011) specifically following the lens of embedded design. In this design, qualitative data was incorporated into a primarily quantitative research study to enhance the understanding of the quantitative findings. This study utilized both quantitative and qualitative data to provide comprehensive and systematic findings (Fetters, 2016), as elaborated in the subsequent sections.

3.1. Sampling procedure

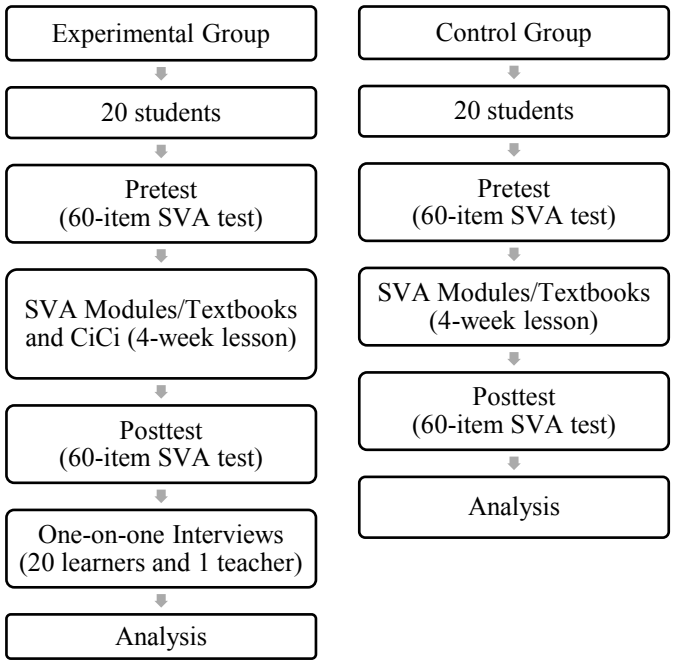
The researchers collected the first quarter grades in English 07 of 102 students enrolled in the school year 2019 - 2020 in a secondary school in Nueva Vizcaya, Philippines. The students who were in the same grade range were separated, and 40 students were chosen randomly. Twenty (20) students were randomly assigned to each group: the experimental group and the control group. They were all requested to complete a consent form duly signed by their guardians, parents, and class advisers stating that their participation was voluntary and that they would not undergo any treatment or experiment that would interfere with the purpose of the study. All the students in the experimental group were asked to install CiCi, an AI-based chatbot, on their smartphones.

3.2. Procedure

Figure 2 displays how the researchers carried out the study.

Figure 2

Study Process



Source. The author's

The figure shows that after randomly selecting the subjects for each group, the teacher administered a pretest, which was a 60-item researcher-made Subject and Verb Agreement Test. The test was content validated by 06 English teachers, and the content validity average score was 4.6 or qualitatively described as highly acceptable.

The experimental group underwent a 4-week (100 minutes per week or 400 minutes in total) lesson using the CiCi App, a free mobile application available on the Mac App Store or Google Store, as a supplemental learning material while the other 20 underwent the usual

approach of teaching subject-verb agreement in four weeks as well. The students in the experimental group completed all the tasks required in the textbook while using the CiCi App as an add-on to enhance their understanding of Subject-Verb Agreement (SVA) rules and other relevant topics. They had the freedom to explore these topics based on their individual preferences and control. Meanwhile, the students in the control group relied solely on the textbook and the teacher. The reason for having a significant amount of time (400 minutes) to teaching subject-verb agreement was because it encompasses several rules that Grade 7 learners need to understand and apply correctly. By spending ample time on this topic, the researchers aimed to ensure that students grasped the various rules and concepts involved. It is important to note that the minutes allocated for the intervention were specifically for the purpose of the experiment and may not reflect the actual time spent on subject-verb agreement in the curriculum. The extended time frame for the experiment allowed for a focused and intensive approach to assess the effectiveness of the CiCi App as a supplemental teaching tool for subject-verb agreement skills.

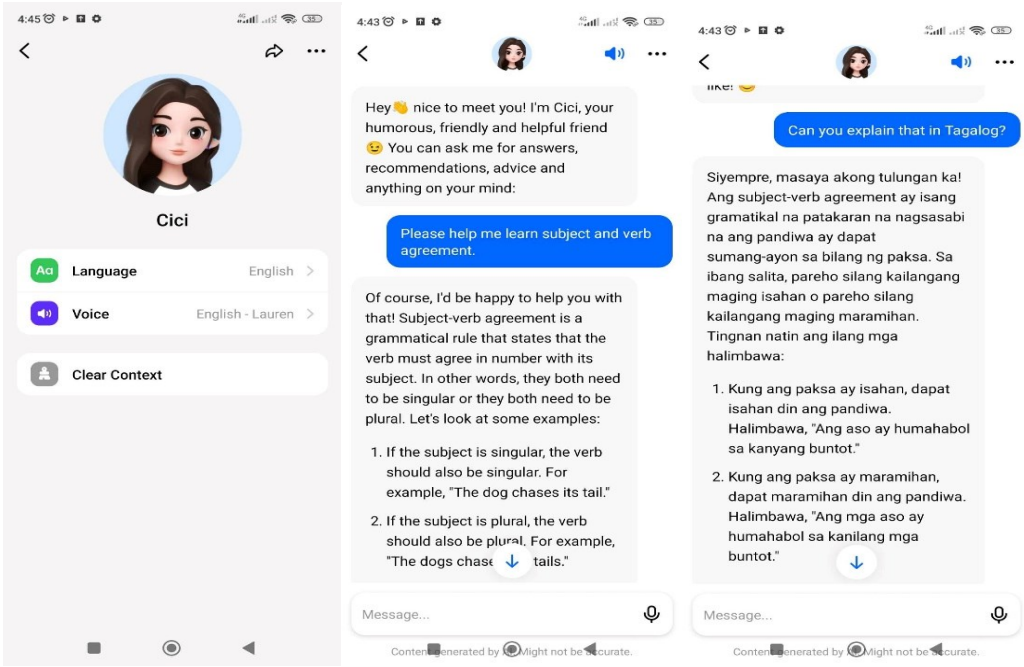
After each lesson, the subjects in the experimental group underwent supplemental instruction using the application with the guidance of their teacher, while the control group only received instruction based on their learning module from the textbook. The assignments, exercises, and activities were identical for both groups. The only difference was the intervention of using the CiCi App, which was utilized by the students in the experimental group but not by those in the control group.

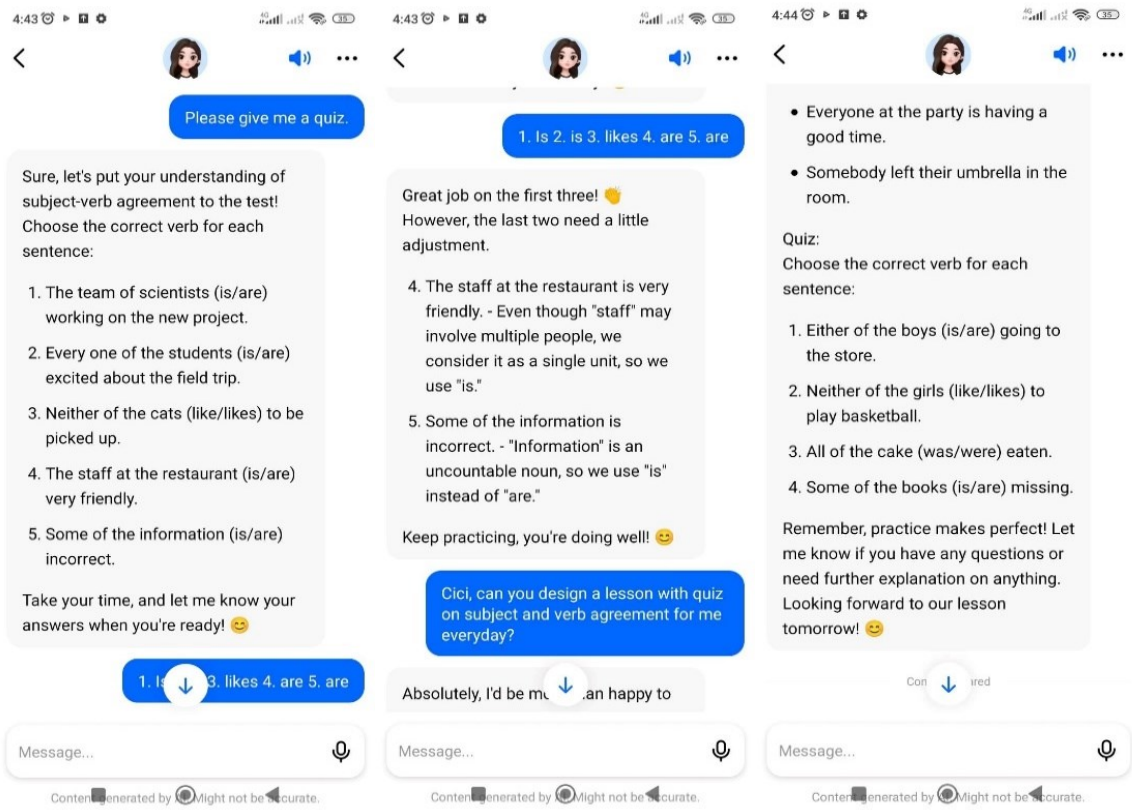
Then, the same Subject and Verb Agreement Test was conducted on both groups as a posttest. One-on-one interviews with all the students from the experimental group and their teachers were also carried out to gather their insights and feedback on their experiences while using the app as an intervention. The teacher in the experimental group was also requested to document her observations during the experiment using a daily journal. The program was implemented and closely monitored by the English teacher and some of the researchers.

Figure 3 displays the screenshots of the application.

Figure 3

Screenshots of CiCi





Source. These screenshots, with permission from the students, show their work on the CiCi app, demonstrating their progress in subject-verb agreement

3.3. Analysis process

The percentage, mean, frequency distribution, and t-test were used to statistically analyze the quantitative data, and the content analysis was used in analyzing the data interview. The researchers followed Neuman's (2009, as cited in Magday & Pramoolsook, 2021) six phases of content analysis: 1. formulate the research question, 2. decide on units of analysis, 3. develop a sampling plan, 4. construct coding categories, 5. coding and intercoder reliability check, and 6. data collection. Saldana's (2009, as cited in Magday & Pramoolsook, 2021) coding manual was utilized to code the interview data. Thus, after the coding and categorization techniques, the researchers conceptualized appropriate themes based on the qualitative data.

To ensure the validity of the coding procedure and the accuracy of the results, a test of inter-rater reliability, as suggested by Neuendorf (2002), was employed. Four ELT teachers were selected as inter-coders and inter-raters for this purpose. All these coders and raters recorded a high degree of reliability.

3.4. Establishing trustworthiness of study

The CiCi App was introduced to five English Language Teaching (ELT) teachers who have been teaching English for more than 10 years for their validation. They are all holders of Ph.D. or EdD degrees: three are English international teachers in Thailand, and two are English teachers in the Philippines. They were given a week to explore the app as well as the subject and verb agreement rules, examples, and activities found in the app, and they unanimously agreed that the content of the app is valid to be used as a supplementary learning tool of subject-verb agreement topics. They further recommended that CiCi is valid and reliable to be used as part of the present investigation.

The researchers used measures proposed by Lincoln and Guba (1985, as cited in Nowell et al., 2017) to establish the trustworthiness of the findings. The researchers constructed an audit trail throughout the study to document how data were acquired, categories were created, and judgments were made to improve dependability. By regularly comparing data, exploring the literature for examples, and gathering multiple opinions, the researchers attempted to control for bias to increase conformability as suggested by Merriam (1988, as cited in Cymberknop & Armentano, 2018).

Thus, the researchers ensured methodological rigor and dependability by maintaining an audit trail that encompassed the various steps of the experiment Yin (2018). This comprehensive approach involved conducting pretests, implementing interventions using the CiCi App, conducting posttests, carrying out interviews with students and teachers, and making teacher observations. These methodological strategies were employed to ensure the rigor and dependability of the study. By maintaining an audit trail, the researchers documented the process of data acquisition, category creation, and judgment formation, enhancing the dependability of the study. The audit trail served as a record of the steps taken and decisions made throughout the experiment, providing transparency and traceability.

4. Results and discussion

There are two components of the presentation: the first is the quantitative part, and the second is the qualitative part.

4.1. Extent of CiCi in enhancing learners' subject-verb agreement skill

This section is divided into four sub-sections, which are:

4.1.1. Pretest of the experimental group and control group

Table 1

Comparison of the Subjects' Mean Scores in the Pretest

Subjects	n	Mean	Standard Deviation	Computed t-value	Critical Value	Significant	Not Significant
Experimental	20	28.15	4.67	1.31	2.02		/
Control	20	25.5	6.26				

Note. df = 28, alpha level = 0.05.
Source. Data analysis result of the research

The experimental group's overall achievement average in the pretest was 28.15, while the control group's average was 25.5. The finding revealed that both groups, experimental and control, are described as 'average'. This could mean that the subjects in the two groups were very suitable for an experimental study.

According to the data, there is no significant difference in the pretest mean scores of the experimental and control groups, as indicated by the t-value of 1.31, which is less than the crucial value of 2.02. This could mean that the groups were already comparable, equivalent, and well-suited to the investigation from the very start. In spite of the similitude, the learning outcomes are determined by the teachers' pedagogy and treatment used in this study.

4.1.2. Pretest and posttest of experimental group

Table 2 presents the comparison and evaluation of the pretest and posttest of the experimental group.

Table 2

Comparison of the Experimental Group's Mean Scores in the Pretest and Posttest

Experimental	Mean	Standard Deviation	Computed t-value	Critical Value	Significant	Not Significant
Pretest	28.15	4.67	3.54	2.09	/	
Posttest	37.75	6.15				

Note. df = 19, alpha level = 0.05

Source. Data analysis result of the research

Table 2 displays the computed t-value of 3.54, which is substantially greater than the crucial value of 2.09. This indicates that there is a significant difference between the pretest and posttest results for the experimental group. The statement suggests that the CiCi App was a highly efficient supplemental learning tool used by the students in the experimental group. Not only did they improve their Subject-Verb Agreement (SVA) skills, but they also gained confidence in using the English language. This improvement is evident in Table 2, which shows their enhanced SVA performance. The teacher's feedback during a one-on-one interview further supports these findings, with the teacher noting an increase in the student's confidence and improved scores in SVA assignments and other activities. These results indicate that the CiCi App effectively enhanced the students' SVA skills and overall language proficiency.

This result is consistent with a case study by Dewi et al. (2021) that looked into how university EFL students used AI to learn the language. The study's findings suggest that EFL students can derive benefits from utilizing AI technology as a means to enhance their fluency in English. This paper concluded that Artificial Intelligence (AI) can be used in the form of applications, websites, and other technologies to assist students in interpreting difficult words, constructing sentences, improving their writing and listening skills, and learning other language skills. In a study on AI as a university English assistant teaching system, Zhu (2017) came to a similar finding. This study concludes that AI relieves English teachers of some of their teaching responsibilities and also improves teaching quality. In the focus group interview done by researchers, a student stated that:

"The app is very useful. I have mastered the rules of subject and verb agreement that were discussed by my English teacher. I can learn a lot of things even those that have not been discussed by my teacher".

(Student D, personal communication, March 11, 2020)

Thus, from the findings above, one may construe that an AI-powered application, like the CiCi, can personalize digital language learning and reduce the time, cost, and boredom associated with teaching and learning the English language.

4.1.3. Pretest and posttest of control group

Table 3 presents the comparison and evaluation of the pretest and posttest of the control group.

Table 3

Comparison of the Control Group's Mean Scores in Pretest and Posttest

Control	Mean	Standard Deviation	Computed t-value	Critical Value	Significant	Not Significant
Pretest	25.5	6.26	1.07	2.09		/
Posttest	29.15	6.38				

Note. df = 19, alpha level = 0.05
Source. Data analysis result of the research

The data above show that the 1.07 t-value is less than the critical value, 2.09, which is not statistically significant. This means that the results of the control group's pretest and posttest are not significantly different. Therefore, it can be concluded that textbook-based instruction was less effective in teaching subject-verb agreement compared to the use of the CiCi App as a supplemental learning tool. This is in complete agreement with the response of the teacher in a one-on-one interview:

"The app as a supplemental learning tool in teaching subject and verb agreement helped me and my students a lot. I have realized that the textbooks that we are using are not enough. The app was found effective because my students, and most of the students nowadays, love technology-enhanced language teaching".

(Teacher X, personal communication, March 15, 2020)

The textbook was still effective in teaching the topic, considering that the students' performance on the pretest and post-test improved. This underlines that textbooks have still a big role in ELT (Diniah, 2013; Gilmore, 2007; Mahmood, 2011; Marc & Rees, 2009; Olivia, 2020; Riasati & Zare, 2010), but with the support of an AI-powered application, it would be more entertaining and efficient to teach and learn English as highlighted in Table 2. Comparison of the Experimental Group's Mean Scores in Pretest and Posttest.

4.1.4. Posttest mean scores of the experimental group and control group

Table 4 displays the comparison between the post-mean scores of subjects.

Table 4

Comparison of Subjects' Mean Scores in Posttest

Subjects	n	Mean	Standard Deviation	Computed t-value	Critical Value	Significant	Not Significant
Experimental	20	37.75	6.15	4.34	2.02	/	
Control	20	29.15	6.38				

Note. df = 38, alpha level = 0.05
Source. Data analysis result of the research

The experimental group's mean in the posttest was 37.75, described as 'high', while the control group's average was 29.15, classified as 'moderately high'. According to the results, the experimental group outperformed the control group in terms of average scores. Compared to the critical value of 2.02, the computed t-value of 4.34 is noticeably greater. This indicates that the teachers' techniques in experimental and control groups differ significantly. Thus, the Subject-Verb (SV) Agreement skill had improved in both the experimental and control groups.

However, this is not to say that the results of teaching SV Agreement in two distinct methods are identical. The calculated t-value indicates that the experimented strategy, the CiCi App as a supplemental learning tool, has a considerable advantage. When compared to the traditional method of textbook-based teaching, the experimental group showed a higher level of learning. A student from the experimental group shared:

"The app has a lot of interesting exercises. The app helped me understand the subject and verb agreement. I am more confident now in speaking English. I want to explore more features of this app. I will share this with my friends".

(Student L, personal communication, March 11, 2020)

It could be noted from this finding that the subjects of the Experimental Group who used an AI-powered app supplementary instruction displayed an optimistic response as regards their adeptness in the English language, specifically the SV agreement. Several research in the existing literature on language acquisition utilizing Artificial Intelligence and Mobile Assisted Language Learning support this finding (Atabek, 2020; Bachore, 2015; Boonmoh et al., 2021; Boonmoh et al., 2022; Chen et al., 2020; Che Mustaffa & Sailin, 2022; Crompton et al., 2017; Nami, 2020; Papadakis, 2021; Rahmati et al., 2021; Shahrol et al., 2020). These studies have a common conclusion which is the positive contribution of AI-powered apps in teaching and learning English. Authors boldly recommended, in their studies, to include AI and MALL in English Language Teaching.

4.2. Perceptions of students in using the App

The researchers interviewed all the participants in the EG. The interview focused on their perceptions about the CiCi App as a supplemental learning tool. Interestingly, four themes that were categorized as positive responses emerged from the interview data, and these are:

4.2.1. Theme 1. Offering free of charge and user-friendly features

Fourteen students mentioned that the CiCi App is very easy to explore. The instructions are crystal clear, and they can easily download it free of charge from the Apple App Store. Student B (personal communication, May 11, 2020), during the one-on-one interview, shared: "The app can be downloaded easily from the app store, etc. if I couldn't understand the instruction, the help dialog is ready to answer my queries. It is very helpful".

This response was also mentioned by the teacher in an interview that whenever the students had queries about the app, they would immediately ask the assistance of the help button, and the answers with examples were displayed.

The user-friendly features of the CiCi App, as mentioned by both the students and teacher in the study, contribute significantly to its effectiveness as a supplemental learning tool (Student B & G, personal communications, May 11, 2020; Teacher X, personal communication, May 15, 2020). CiCi app's ease of exploration, clear instructions, and availability as a free download from stores makes it accessible to students. The presence of a help dialog within the app further enhances its user-friendliness (Student G, personal communication, May 11, 2020), allowing students to seek immediate assistance and receive answers to their queries. This user-friendly design empowers students to navigate the app independently and engage with the subject-verb agreement rules, examples, and quizzes.

The teacher's input further highlights the benefits of the CiCi App's free-of-charge and user-friendly features. In instances where students struggle to comprehend the Subject-Verb Agreement (SVA) rules presented in their textbook, they can easily navigate the app's user-

friendly interface to explore the rules through corresponding examples and quizzes. This accessibility and ease of use contribute to the app's effectiveness as a supplemental learning tool, as affirmed by the teacher.

4.2.2. Theme 2. Making English learning fun

This theme is the second most mentioned category in the interview data. When asked about the contribution of the app to them, twelve students positively stated and restated the codes: enjoyable, fun, interesting, motivating, exciting, and entertaining. These recorded codes led the researchers to conclude that the app really made the SV Agreement lesson fun. Student M (personal communication, May 11, 2020) said in an interview: "... it's so fun. It is exciting to know if my answer is correct or not. If it is incorrect, the app will show the rules with an explanation and examples etc. very exciting".

The studies conducted by Miangah and Nezarat (2012) and Karnjanapun (2015) focused on the use of smartphones and mobile-assisted language learning as learning devices. Their findings suggest that utilizing such devices can make learning English more interesting, motivating, and exciting. These findings align with similar studies conducted by Sakamoto and Tsuruta (2017), Stephen et al. (2017), Kannan and Munday (2018), Elaish et al. (2019), Shadiev and Yang (2020), Chen and Hsu (2020), and Alfitri et al. (2021). These studies collectively support the notion that incorporating technology-enhanced teaching methods, such as learning apps, AI-based tools, mobile-assisted instruction, and translation tools, can enhance the teaching and learning experience, making it more engaging and captivating compared to traditional English language teaching approaches.

4.2.3. Theme 3. Providing various SV agreement exercises

Fifty-five percent, or 11 of those interviewed, detailed their experiences in using the app, and they appreciated the numerous SV agreement exercises or activities provided in the app. The exercises helped a lot in understanding the rules of SV agreement according to the two participants. Wang et al. (2021) and Li and Hegelheimer (2013), in their studies on learning English grammar through a mobile-assisted personalized system and mobile-assisted grammar exercises, revealed that the grammar exercises and activities found in AI-based learning are more complete than other available resources. In an interview with the teacher, he claimed that:

"… my work as their teacher becomes easier because the app can provide many exercises. It is a daunting task, sometimes, if all my students will be asking for examples of the SV agreement rules etc. the examples in the book are limited".

(Teacher X, personal communication, May 11, 2020)

The last statement of the teacher supports the fact that the content found in the textbooks is not enough, so students might be asking their students for more information: examples, exercises, and activities, among others. But with the assistance of artificial intelligence, like the app used in this study, the students can get a lot of information that may help them acquire the English language (Al-Emran et al., 2016; Saekhow & Cheewaviriyanon, 2021).

4.2.4. Theme 4. Encouraging collaborative learning

Of the 20 participants who took part in the interview, over half shared that the app encourages collaborative learning between and among the students and teachers. The app, accordingly, served as a bridge for them to reach out to their classmates and have a discussion or collaboration about the SV Agreement lesson (Students 7, 5 & 14). A discussion took place when a student did not know the answer to an SV Agreement quiz and requested the assistance

of someone. Both of them answered the quiz with their mobile phones in front of them: a very nice picture of buddy learning, Teacher X said during the interview. This finding concurs entirely with the studies of Ahmad (2020) and Troussas et al. (2014) on group interaction using mobile-assisted multiple-language learning systems and learner experiences of utilizing smartphones as digital learning tools recommended to revisit and evaluate the current educational system in order to see how helpful mobile-supported collaborative systems for language learning could be.

However, although using the app in ELT has been reported as efficient based on the findings, Teacher X (personal communication, May 15, 2020) shared an interesting observation when using the app as a supplemental instructional tool: "… students were tempted to open other social media apps like Facebook, Instagram, Line, YouTube, gaming apps etc. some were just pretending to be using CiCi etc."

When the interviewer asked the teacher how to address the issue presented, he replied that it was the full responsibility of the teacher. There should be an allotted time for them to use their mobile phones in the ELT classes, he added. Studies by Mundy et al. (2012), Ahmad (2020) and Smale et al. (2021) support this observation that teachers must limit the students in using their mobile phones as a learning tool inside the classrooms.

The study's findings suggest a strong connection between the use of AI technology, specifically the CiCi App, and the improvement of EFL students' subject-verb agreement skills. The experimental group, which used the app as a supplemental learning tool, showed a significant increase in their post-test scores compared to the control group. This supports previous research that highlights the positive contribution of AI-powered apps in language learning and emphasizes the potential of technology-enhanced teaching methods.

Moreover, student perceptions of the CiCi App were overwhelmingly positive. They found the app to be user-friendly, enjoyable, and motivating, making English learning more engaging and exciting. The app also facilitated collaborative learning among students, encouraging discussions and interactions related to subject-verb agreement. These findings align with other studies that emphasize the benefits of using digital tools, such as AI-powered apps, in language teaching and learning.

5. Conclusion

This study has revealed the effectiveness of the CiCi App as a supplemental learning tool for enhancing students' subject-verb agreement skills. The findings demonstrate that the experimental group, which utilized the CiCi app, exhibited significant improvement in their post-test scores compared to the control group. The positive perceptions of students regarding the user-friendly nature and enjoyable learning experience provided by the app further support its effectiveness. It is important to note that while the study specifically focused on subject-verb agreement, the results highlight the potential of AI-powered apps in language teaching and learning. The use of such apps can make English learning more engaging, motivating, and exciting for students. However, it is crucial for teachers to manage the use of mobile phones in the English classroom and set appropriate boundaries and standards to ensure optimal learning outcomes.

Although this study has provided valuable insights into the benefits of the CiCi App in enhancing subject-verb agreement skills, it is important to acknowledge the limitations of the experimental design and the specific context in which the study was conducted. Therefore, future research should consider broader sample sizes and investigate the effects of AI-powered apps on various English language skills.

In line with the United Nations' Sustainable Development Goals, particularly SDG 4: Quality Education, the future research direction of Artificial Intelligence (AI) in teaching English holds great potential for transforming the educational landscape. Further studies should explore the application of AI in different educational settings and include more extensive interviews with both students and teachers at local and international levels.

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