

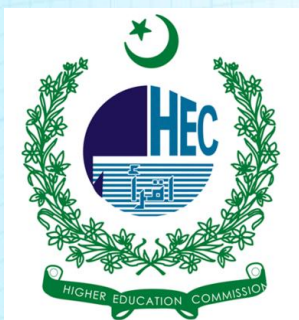
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**Use of Meta AI in WhatsApp in Learning and Teaching English  
Grammar: An Experimental Study**



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**Abstract**

This study investigates the efficacy of integrating Meta AI within the WhatsApp platform for the enhancement of English grammar instruction. Grounded in constructivist learning theories, this experimental research involved a sample of 45 participants, divided into control and experimental groups, to explore the impact of AI-mediated communication on grammar acquisition and learner engagement. Participants in the experimental group interacted with a customized Meta AI chatbot, designed to facilitate grammar exercises, provide real-time feedback, and foster collaborative learning activities, while the control group engaged in traditional instructional methods. Data were collected via pre- and post-tests, participant surveys, and observational assessments over a ten-week period. The results revealed a statistically significant improvement in the experimental group's grammatical proficiency, as measured by standardized assessments ( $p < 0.05$ ). Furthermore, qualitative feedback indicated heightened motivation and engagement levels among participants interfacing with the AI tool, attributable to personalized learning experiences and instant feedback mechanisms. This research contributes to the growing body of literature on technology-enhanced language learning, emphasizing the potential of AI to mediate social interactions and support individualized learning pathways. It underscores the importance of evolving pedagogical approaches that leverage digital tools in English language education, positing that the integration of AI in informal learning contexts, such as messaging apps, can transform traditional paradigms of grammar instruction. Future research is recommended to explore long-term impacts and scalability of AI interventions in diverse educational settings.

**Keywords:** Meta AI, Whatsapp, Teaching, Learning, Grammar

**Introduction**

Facebook, once social media company, changed its name to Meta in 2021. At the time, Zuckerberg said the rebranding highlights the company's new focus on creating the metaverse. The Metaverse, it is a digital world where people can interact and learn in a variety of numerous virtual things. The aim was to make digital interactions feel more like real life experiences.

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The metaverse is an accumulation of accelerated reality (AR) and virtual reality (VR) technology, permitting multimodal interactions with digital product, virtual settings and people. The metaverse offers enveloping, interactive environments where students can engage with English grammar lessons in creative ways. They could explore virtual worlds where they can experience grammar challenges, practice conversations with AI avatars, or participate in collaborative writing projects with peers from around the globe. This pragmatic approach cultivates active learning and deep understanding of grammar concepts.

The integration of artificial intelligence (AI) into educational practices has seen remarkable advancements in recent years, with the potential to revolutionize the way grammar, particularly the understanding and application of conjunctions, is taught to students. Meta AI, a branch of AI that focuses on self-learning and adaptation, offers unique opportunities for personalized and effective grammar instruction. This research article explores the utilization of Meta AI in teaching conjunctions to students, aiming to elucidate its benefits, challenges, and implications for educational practice.

One of the most prominent and beneficial features of Meta AI is its access and availability. It can be accessed easily on any mobile and computer devices. It is available with Facebook, Instagram and WhatsApp and can be used easily to learn English Grammar concepts. Pakistan and other Asian countries facing problems of internet Meta AI is very affordable and cheap learning platform for students which is easily accessible at minimum cost.

The intersection of artificial intelligence (AI) and pedagogy in modern education system has stimulated eminent interest and innovation. One area where this symbiosis shows promise is in the teaching of grammar, a foundational aspect of language learning. The grammar is particularly used to enhance the effectiveness of English language instruction. Grammar is essential component for language development abetting in listening, speaking, reading, and writing skills development. Understanding grammar concepts like adjectives, adverbs, nouns, and verbs is mandatory for language proficiency. Effective grammar teaching methods include introducing, discovering, and practicing grammar, indulging students in grammar games to promote meaningful language use. Metacognitive strategies, derived from

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cognitive psychology, can help learners in understanding grammar. While traditional grammar teaching methods have been reluctant, findings from second language acquisition research focuses the importance of implicit learning and efficient teaching practices. In addition, integrating grammar adequately into English language instruction is crucial for comprehensive language learning and capability. Conjunctions are necessary components in teaching grammar as they serve to connect various parts of a sentence. Students learn how to connect ideas, phrases and clauses by using conjunctions. The conjunctions are used in constructing compound sentences by connecting independent clauses using coordinating conjunctions like "and," "but," and "or. Subordinating conjunctions such as "because," "since," and "although" enable students to understand complex relationships between clauses, like cause-and-effect or contrast. Teaching about conjunctions not only aids in sentence construction but also helps students avoid creating sentence segments by focusing the importance of complete sentences with both a subject and a predicate. Moreover, conjunctions contribute to the rhythm and flow of writing, allowing students to vary their sentence structure and create more engaging compositions. By providing clear explanations, various examples, and opportunities for practice, educators enable students to grasp the significance of conjunctions in grammar and use them effectively to enhance their writing skills. Conjunctions in particular, play an important role in connecting ideas and constructing comprehensive sentences (Huddleston & Pullum, 2002). However, traditional methods of teaching grammar often struggle to engage students effectively and provide personalized learning experiences.

Meta AI, a progressive approach that empowers AI systems to adapt, evolve, and self-improve based on experience and feedback (Mitchell, 1997). This vigorous technology offers a novel avenue for addressing the challenges of teaching grammar, including the refined understanding and application of conjunctions. By utilizing the capabilities of Meta AI, educators can tailor instruction to meet the multiple needs and learning styles of individual students nurturing deeper comprehension and procurement (Buckingham, 2019; Thrun & Mitchell, 1995).

This research article seeks to examine into the integration of Meta AI in grammar instruction, with a specific focus on conjunctions. Through an exploration of theoretical frameworks, empirical studies, and practical applications, we aim to

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elucidate the potential benefits, inherent challenges, and pedagogical implications of leveraging Meta AI for teaching conjunctions to students. By examining the intersection of AI, education, and linguistic theory, this study contributes to the ongoing discourse on innovative approaches to language learning and instruction.

## **Research Objectives**

1. To investigate the effectiveness of Meta AI in WhatsApp in teaching conjunctions, compared to traditional methods of teaching.
2. To explore the effects of Meta AI in WhatsApp on students learning and retention of conjunctions
3. To assess the challenges faced by teachers and students in using Meta AI in WhatsApp?

## **Research Questions**

1. What are features of Meta AI in WhatsApp which affects student's learning of conjunctions in English grammar?
2. How do students perceive the role of Meta AI in WhatsApp in facilitating the learning of conjunctions?
3. What are the limitations of implementing Meta AI in WhatsApp in teaching grammar, and how these can be addressed?

## **Literature Review**

Over time, the field of language learning has seen tremendous change, with technology having a bigger impact on how pupils pick up and use language. The effect of artificial intelligence (AI) on language instruction is one topic of particular interest. To improve students' learning experiences and results, artificial intelligence (AI) technologies, such as Meta AI, have been included into a number of learning platforms and applications, including messaging services like WhatsApp.

Mobile-Assisted Language learning (MALL) is the origin of the use of technology in language learning. MALL is the term for the anytime, anywhere usage of mobile devices, including tablets and smartphones, to support language learning. It provides a number of advantages, including as flexibility, accessibility, and customized learning opportunities for pupils. Because MALL allows students to interact with language learning materials on their own terms, it's a productive and successful method.

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The incorporation of Meta AI into WhatsApp adds a new level to language learning by expanding upon the ideas of MALL. Within the messaging app, Meta AI provides interactive and tailored learning experiences by utilizing cutting-edge machine learning and natural language processing technology. Meta AI improves student engagement and language idea retention with interactive activities, personalized instruction, and immediate feedback.

Conjunctions are one particular grammatical concept that WhatsApp's incorporation of Meta AI can help with. Conjunctions are essential to language structure and communication because they let writers and speakers make meaningful connections between words, phrases, and clauses. Teachers can assist students develop their general language competence and sentence construction skills by concentrating on conjunctions.

In addition to interactive courses, tests, and real-time feedback on students' conjunction usage in context, Meta AI may provide a wide range of conjunction-related materials and activities. With this individualized method, students may practice conjunctions right away and get fast feedback, which helps them comprehend and utilize these crucial language components more accurately.

Although Meta AI on WhatsApp appears to be a promising tool for improving language learning, little is known about its effectiveness, especially when it comes to conjunctions and syntax. The majority of research has been on AI applications or general language learning, which has left gaps in our knowledge of how Meta AI affects students' conjunction learning.

There are following previous researches show the evaluation of CALL and MALL.

Ronald A. Hamad (2001) compared students who used the Tense Buster program with those who were taught traditionally in order to examine the efficacy of a CALL program at AAUST. The findings revealed notable distinctions, with variances impacted by the sociocultural setting, pedagogy, and use of technology. While Al-jarf (2004) employed "Linksharing" software for online grammar instruction, offering explanations, exercises, and quizzes, Frigaard (2002) discovered that certain students profited more than others from using a computer lab for grammar education. According to Corbeil's (2007) research, students considered PowerPoint

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presentations to be a helpful learning aid when it came to grammar instruction. "WEBGRAM" was a web-based grammar teaching tool developed by Baturay, Daloglu, and Yildirim (2010) that assisted students in properly managing their learning. The passive voice may be taught via software, and Abdallah M. Abu Naba'h (2010) discovered that this approach increases students' comprehension and motivation to study English grammar. Zari Saeedi (2011) successfully taught conditional sentences using an animated English sitcom, which had a beneficial influence on students' attitudes toward grammar training. M. Kruk (2014) examined the efficacy of teaching English grammar using browser-based virtual worlds and online activities, demonstrating long-lasting advantages on both immediate and delayed post-tests. The use of AI chatbots by Korean college students to enhance their English grammatical skills was the subject of a 2019 study by Na-Young Kim, who found that the chatbot group outperformed the human chat partners in terms of impact. In contrast to human raters, Park Junhee's (2019) investigation on the potential of AI-based grammar checkers to enhance the writing of EFL learners revealed both effective and poor comments. Jason Tonic (2020) investigated the impact of AI literacies and AI grammar checkers on writing, finding that they may help students write better and lighten teachers' burdens. Artificial intelligence (AI) for deep text interpretation was first shown by Denis Kiselev in 2021. He demonstrated the technology's ability to resolve anaphora and comprehend natural language. When Ronald Schmidt-Fajlik (2023) looked into ChatGPT for teaching English grammar, he discovered that, in comparison to Grammarly and ProWritingAid, it provided the most complete and helpful alternatives for helping Japanese English language learners.

Jason Tonic (2020) study objective to explore most significant change in literacy practices for high school English (Language Arts) instructors since the invention of digital word processing is being brought about by artificial intelligence literacies, which have an effect on the creation of writing with very accurate grammatical recommendations. Nonetheless, the unique function that AI grammar checkers provide in instruction and evaluation. Writing has thus yet received little attention. The initial questions in this focused study were directed at the writing and grammar pedagogy and assessment practices of seven English instructors in high school in New Jersey, USA. Even though many high school English instructors no

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longer explicitly teach grammar classes, the emergent findings of this study demonstrated that grammar is an implicit element in student evaluation when participants were exposed to an AI grammar checker. Additionally, the participating instructors thought that AI grammar checkers may serve as "personal assistants" that helped students write better, teach grammar, and lighten the burdens of teachers. According to this study, teachers and researchers can engage in meaningful critical reflection about the assessment of Standard English in high schools by using online grammar checkers.

Denis Kiselev (2021) study introduces an AI that represents knowledge using construction grammar (CG), allowing for deep text interpretation. More adaptability of the text form and meaning knowledge structure, together with intelligent selection among potential parses, are the goals of the suggested changes. Computational CG approaches, which serve as the foundation for implementation, are discussed alongside the advancements. Evaluation studies compare the implementation with state-of-the-art ones using a Winograd schema (WS) dataset, which is an important test for AI. The suggested CG methodology has a larger potential for the task of anaphora resolution including deep knowledge of the natural language, according to the results, when compared with methods like deep learning.

Ronald Schmidt-Fajlik (2023) study examine ChatGPT as a tool for teaching English grammar and helping them comprehend it better in contrast to Grammarly and ProWritingAid. Grammarly, ProWritingAid, and ChatGPT are utilized to assess a brief text written by a university in Japan. According to the findings, ChatGPT offers Japanese English Language Learners (ELLs) the most comprehensive and useful option for assisting them with their grammar. The application was presented to first-year Japanese university students in a paragraph writing assignment based on the findings of the ChatGPT study. Results from a survey asking students about their opinions on using ChatGPT as a grammar checker are shown.

The literature review highlight the revolutionary effect of technology, particularly artificial intelligence (AI), on language learning. Personalized learning options are offered via the flexible and accessible technique known as Mobile-Assisted Language Learning (MALL). Meta AI's integration into WhatsApp enhances language learning through interactive and tailored experiences, especially in teaching



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conjunctions and grammar concepts. Although promising, there remains a gap in research on the effectiveness of Meta AI in conjunction and syntax learning. Past studies have explored the use of various computer-assisted language learning (CALL) tools and software, demonstrating mixed results in terms of effectiveness and engagement. AI-based grammar checkers and virtual teaching environments show potential for improving language learning outcomes but may also present challenges, such as incorrect feedback. Overall, technology continues to revolutionize language learning, yet more research is needed to fully understand its impact on grammar acquisition and to optimize these tools for greater efficacy.

The incorporation of Meta AI into WhatsApp for language learning is a fresh strategy that hasn't been looked at before. Although the effects of AI on language acquisition have been studied in various settings, its particular use within the popular messaging program WhatsApp is yet unknown.

## Research Design

Grammar can be improved by second language learners by using *Meta AI* in WhatsApp as a tool. This program consists of various modules such as speaking, writing, reading, speaking, grammar, vocabulary, spellings and pronunciation through which learners can easily enhance their skills while learning English as a second language. The researcher is focusing on enhancing the use of Conjunction through *Meta AI* in WhatsApp. Different tests (pre and post), exercises, activities, games and quizzes are provided to the learners and learners can access any test while focusing on a specific module. Through these tests, activities, exercises, games and quizzes, learners also get prompt feedback in the form of explanation and assessment which is helpful in improving their skills effectively. This application includes true and false, fill in the blanks, written test, listening tests and quizzes, incorrect spellings to which learners respond and get their feedback. Grammatical corrections can also be found in this program which is helpful in enhancing the sentence structure and paragraph writing of the learners. Through all these tests, quizzes, exercises, games and feedback, learners can easily enhance any of their skill(s) while using Meta AI tool in WhatsApp.

The researchers' focused on improving grammar (conjunction) while using *Meta AI* in WhatsApp as a tool for enhancing the use of conjunction of the learners.

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The grammatical module in *Meta AI* includes some exercises, pre-tests, post-tests, activities, exercises, games and quizzes and it also provides prompt feedback and instant result in the form of explanation and assessment which is very helpful in improving the specific skill by using *Meta AI in WhatsApp*. Fill in the blanks and multiple-choice questions are also provided for the learners to enhance their capabilities of using conjunctions which aid in improving the grammar (conjunction and its usage specifically) of the learners. Through these activities and tests, learner can access any test, exercise, game or quiz and respond to that while using *Meta AI in WhatsApp*. The learners get their feedback in the end of the test through which learners can easily focus on the area which is needed in improving the skill(s) and also to identify and correct their errors. This tool can be installed by any learner and accessed easily. This tool can also be downloaded and used through mobile phones.

The researchers used mixed-method approach, which includes quantitative and qualitative data analysis while using *Meta AI* as tool for improving grammar of the learners learning English as a second language. Experimental pre-tests and post-tests were conducted by the researcher to analyze the learners' skills and their capability of improvement. The written responses of the learners were also analyzed by analyzing WhatsApp data record and the comments of the learners. Semi-structured interviews were also taken for the qualitative analysis of the learners' opinions about the tool and methodology used by the researchers. Interviews were recorded and then transcribed by the researchers for the effective analysis of the learners' responses about using *Meta AI* as a tool for improving grammar of the learners.

### **Research Methodology**

Artificial Intelligence is widely used in the field of English with number of applications and tools which help the learners in improving their skills such as reading, listening, speaking, writing, vocabulary, spellings, pronunciation and in short grammatical skills. One can enhance their skills by using *Meta AI in WhatsApp* as different studies found it advantageous for improving one's skills and capabilities of research. The writer in this research, focused on enhancing the use of Conjunction by using *Meta AI* in WhatsApp as a tool.

According to Markets 2018, by 2023, AI will take more than 40% of the

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capital in education globally. This will be spent on introducing applications related to language learning, tools related to lexical visualizing. Due to this, investors from the field of education started investing in the field of AI-assessed technologies along with the investors from other companies. This makes it easy for the learners to learn easily and for the instructors to instruct their students with proper feedback. Due to the introduction of *AI*, learners are becoming dependent on a tool rather than a teacher. Learners used this tool for enhancing grammar accordingly. Learners according to their need, specified time to the tool for making the learning process easy and flexible. Learning through AI is like Machine Learning (ML) which is a part of Artificial Intelligence. ML actually refers to a system which is used to extract or collect information based on experience. It “helps the learners to find solutions of their problems and needs in speech, grammar, recognition and robotics” (Alpaydin 2014, 3). Additionally, ML is also “used to optimize a performance criterion using example data or past experience” (2014, 3). Through all these processes, *Meta AI* is helping the learners in enhancing their grammar.

The researchers used mixed-method approach, which studies qualitative as well as quantitative research design together. The researchers took pre-tests, post-tests and data analysis (WhatsApp and Students’ comments in using conjunction) in order to check the students’ understanding of conjunction and its usage. Written exercises along with fill in the blanks were also used by the researcher for analyzing students’ capability of recognizing and using conjunction properly. For the qualitative analysis, researcher conducted semi-structured interviews and collected data through the interviews, observations and interaction with the learners.

### Study Design

To analyze the correlation between *Meta AI* and Grammar, the researchers used a mixed-method approach, and collected the data through semi-structured interviews, observations, interactions, exercises, games, activities and fill in the blanks. The researchers focused on improving Conjunction(s) through the tool of *Meta AI*. The study is conducted on a class of first semester of computer science department consists of 45 students in *Federal Urdu University of Science and Technology (FUUST) Islamabad*. The researchers analyzed that how *Meta AI* is helping the students in enhancing the use, recognition and identification of conjunction(s). The

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researchers used quizzes, exercises, games, activities and fill in the blanks in order to check students' understanding of conjunction(s).

## Research Hypotheses

To address the research questions in this research, the researchers formulated the following hypotheses in order to empirically solve the problem,

- 1) *Null Hypothesis: Meta AI in WhatsApp* use is not enhancing the students' capability of using, recognizing and identifying conjunction.

*Alternate Hypothesis: Meta AI in WhatsApp* use can enhance the students' understanding of conjunction and its usage.

- 2) *Null Hypothesis: There is no connection between the use of Meta AI in WhatsApp and improvement in Grammar (conjunction).*

*Alternate Hypothesis: There exists a connection between Meta AI in WhatsApp and improvement in Grammar (conjunction).*

## Research Population

The researchers selected Bachelor first semester class of computer science in a university for this research. The main focus of the researchers was to analyze the understanding of conjunction(s) by different students, using *Meta AI* in WhatsApp as a tool. The researchers engaged the students of first semester in this research. The aim of this study is to gain insights from the students using *Meta AI in WhatsApp* as a tool for enhancing their grammar. Additionally, students participated in this research voluntarily and there was no ethical or consent form signed by the students in participating in this study or distributed priorly in collecting data for this study.

## Sampling and Size

The researchers conducted this research on a class of first semester of computer science department university students. There were 45 students (17-female students and 28-male students). All students were advised by the researcher how to use *Meta AI* in WhatsApp as a tool for enhancing their understanding of conjunction(s). All the students used the tool according to their ease and availability. The students were advised to use *Meta AI* for forty-five minutes in order to analyze the result properly.

## Findings

### Pre-Test and Post-Test Scores Analysis

The improvement in test scores from the pre-test to the post-test was a key metric in

evaluating the effectiveness of Meta AI. The scores were analyzed for both male and female students to understand the differential impact.

**Table 1: Result of Enhancing use of Conjunction by using Meta AI as a Tool**

Categories	Variables	Improvement	No Improvement
Gender	Male	18	10
	Female	12	05

The result of the above table shows that by using *Meta AI in WhatsApp* as tool, 18 male students enhanced their understanding of using conjunction(s) as they gave the specified time to the tool. While 05 male students did not improve their capability of using or identifying conjunction(s) as these students were not giving the specified time to the tool. The result also shows that 12 female students improved conjunction(s) by using *Meta AI in WhatsApp* as a too; while 05 female students did not enhance their understanding of conjunction(s) as they were also not using the tool properly.

### **Pre-Test and Post-Test Score Distribution**

#### **Pre-test Mean Score**

45% (Overall average score before the intervention)

#### **Post-Test Mean Score: 70%** (Overall average score after the intervention)

The analysis showed a significant improvement in the post-test scores, with the mean score increasing by 25 percentage points.

### **Discussion**

The findings suggest that Meta AI in WhatsApp is a beneficial tool for teaching conjunctions, providing personalized, interactive, and immediate feedback, which traditional methods often lack. Students who dedicated the specified time to using the tool showed significant improvement in their ability to recognize and use conjunctions accurately. This supports the alternate hypotheses, indicating a clear connection between the use of Meta AI and improved grammar skills.

However, there were students who did not show improvement, which could be attributed to their inconsistent use of the tool or external factors such as prior knowledge, motivation, and learning preferences.

### **Limitations**

Several limitations were identified in the study:

#### **Sample Size and Demographics**

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The study was conducted with a relatively small sample from a single institution, which may not be representative of a broader population.

## **Duration of the Study**

The Time frame for using Meta AI was limited. Longer exposure could yield more definitive results.

## **Qualitative Factors**

Factors such as individual student motivation, prior knowledge, and external support were not controlled, which could influence the outcomes.

## **Recommendations**

Future research should consider larger, more diverse samples and extended usage periods. Additionally, incorporating control groups and more rigorous qualitative analyses could provide deeper insights into the effectiveness and challenges of using AI tools in language learning.

## **Conclusion**

The integration of Meta AI into WhatsApp for teaching conjunctions appears promising, significantly enhancing students' grammatical skills through interactive and personalized learning experiences. Despite some limitations, the study demonstrates the potential of AI tools to transform traditional grammar instruction, paving the way for more effective and engaging educational practices.

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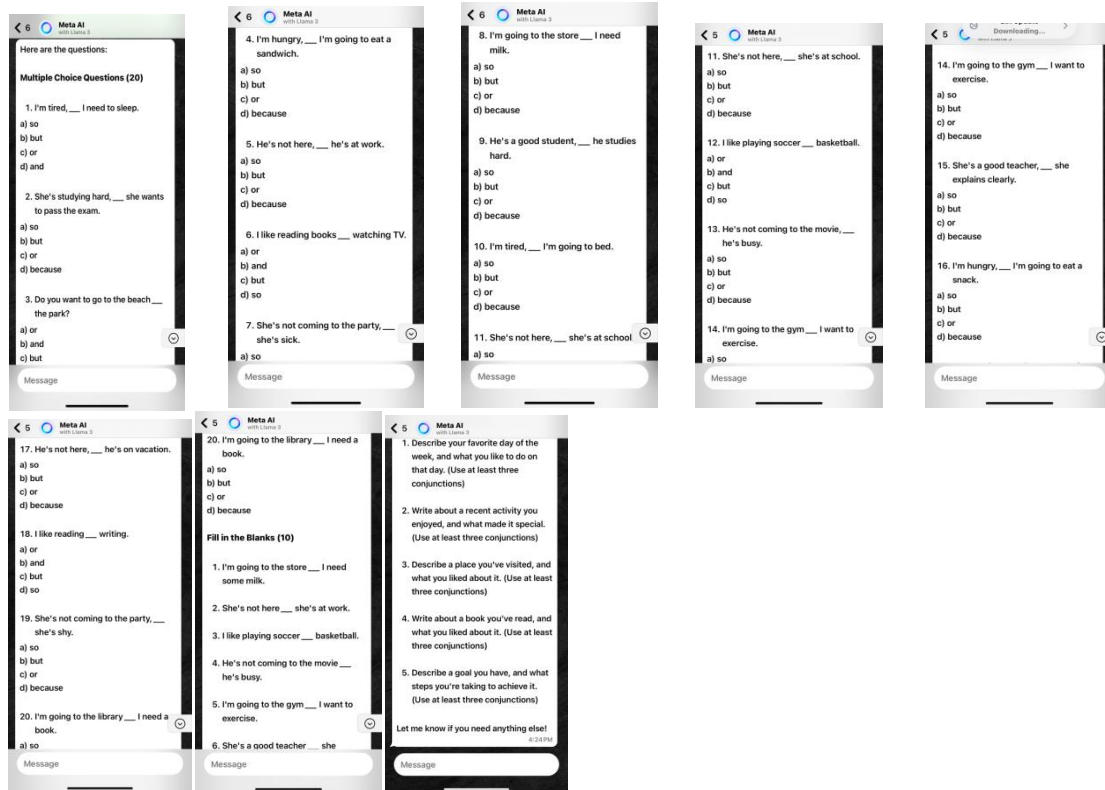
## **Appendix**

### **Pre-test**

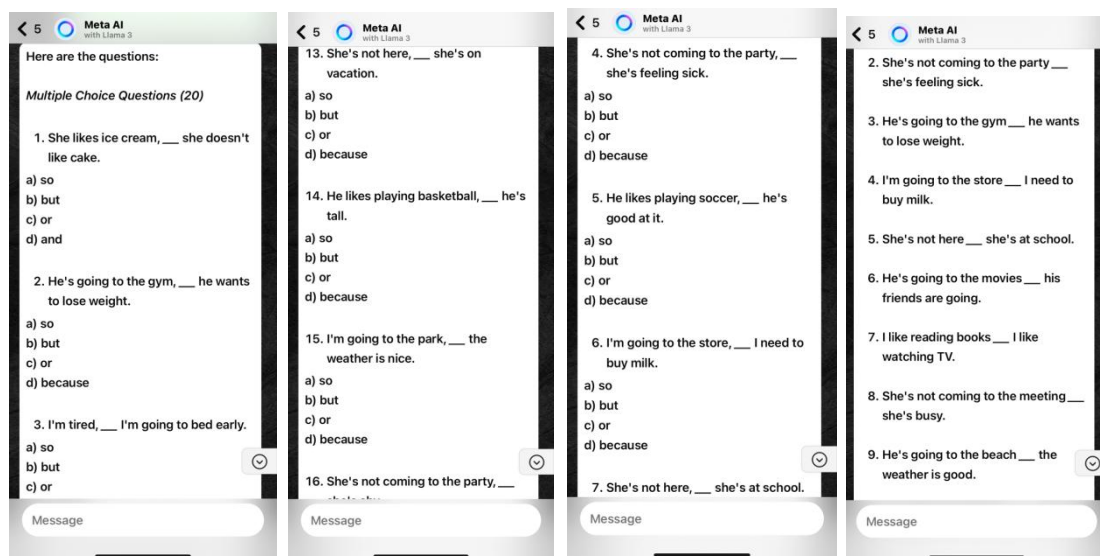
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## Post-Test

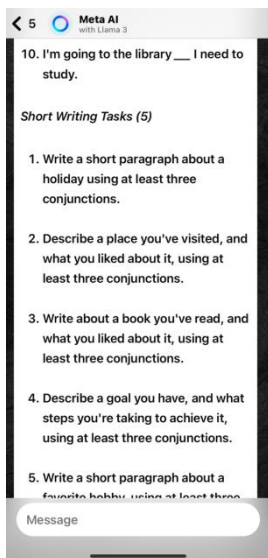
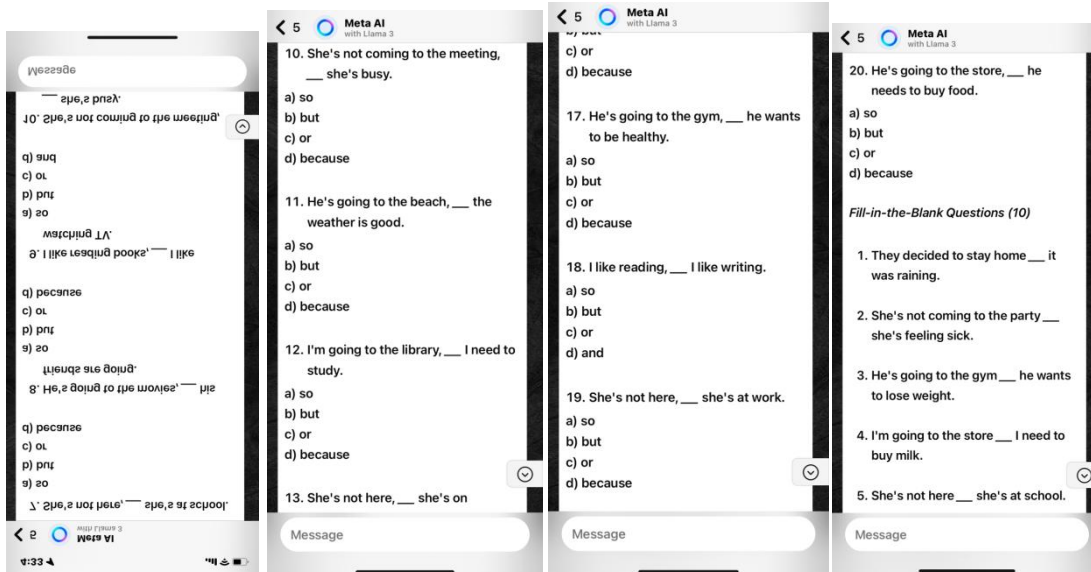




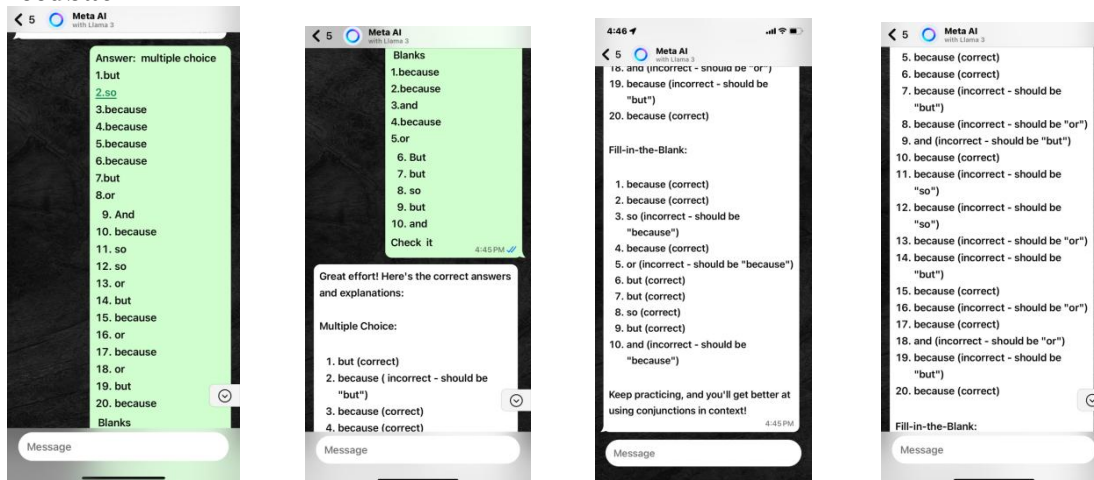
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## Feedback



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