

Langlam: Leveraging Large Language Models and Retrieval-Augmented Generation for Personalized English Language Learning

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Abstract

This paper explores the application of Large Language Models (LLMs) in English language learning, focusing on enhancing foundational language skills. Traditional language learning applications often lack content variety and adaptability, leading to repetitive and less engaging experiences. To address these limitations, we present Langlam, an LLM-based English learning application that dynamically generates diverse lesson modules and interactive exercises tailored to individual learner needs, creating a more engaging and effective learning environment. Langlam conducts diagnostic tests to assess user proficiency and uses Retrieval-Augmented Generation (RAG) with LLMs to plan lesson modules on essential topics for beginner and intermediate learners. It features a daily vocabulary and idiom generator with exercises to test the meaning and usage of learned words. Our findings indicate that while LLMs offer significant advantages, they face limitations in evaluating user answers, even with techniques like semantic search and evaluation rubrics, and sometimes generate improperly formatted text affecting the application's frontend. To address these issues, we aim to enhance the LLM's evaluation capabilities and text formatting using agents, improve question quality, scoring metrics, feedback, and suggestions in the diagnostic quiz for better proficiency assessment. Additionally, we plan to implement exercises for each lesson module and introduce a communication feature for advanced learners using Whisper.

Keywords: Large Language Models, question generation, answer evaluation, feedback generation, content generation, proficiency assessment

Introduction

In today's globalized world, the English language has emerged as an essential tool for communication, business, education, and technology. Proficiency in English not only enhances individual career opportunities but also fosters cultural exchange and international collaboration. As the lingua franca of the modern era, English enables people from diverse backgrounds to connect, share ideas, and participate in global dialogues. Consequently, the demand for effective language learning solutions has grown exponentially, with learners seeking platforms that can cater to their unique needs and help them achieve fluency efficiently.

The advent of Artificial Intelligence (AI) and, more specifically, Large Language Models (LLMs) has significantly transformed the landscape of educational technology. Advanced AI systems like OpenAI's GPT series and Google's Gemini possess the ability to generate coherent and contextually relevant text, engage in logical reasoning, and provide human-like interactions. These capabilities have opened up new avenues in education, enabling the development of personalized learning experiences, automation of administrative tasks, and provision of real-time feedback to students. Educators are leveraging LLMs to create interactive learning modules, adaptive assessments, and supportive teaching tools that cater to diverse learning styles and proficiency levels.

In the context of English language learning, AI offers innovative approaches to enhance both teaching and learning processes. AI-driven applications can deliver personalized instruction, adapt content based on individual proficiency levels, and provide immediate, constructive feedback on language use. Natural Language Processing (NLP) technologies assist learners in improving their reading, writing, listening, and speaking skills through interactive exercises and real-time assessments. Moreover, AI can analyze learners' performance data to identify areas of strength and weakness, facilitating targeted interventions and personalized learning pathways. The integration of AI in English language education holds great promise for creating more engaging, efficient, and accessible learning environments, ultimately contributing to global proficiency in English.

Despite these advancements, existing language learning applications exhibit notable limitations that hinder their effectiveness. For instance, Rosetta Stone emphasizes immersive learning through visual and auditory cues but often becomes repetitive and lacks interactive support for user queries, leading to decreased motivation and engagement. Duolingo heavily relies on gamification elements such as points, streaks, and leaderboards to motivate users; however, this approach sometimes overshadows the learning content, and the platform provides limited conversational practice, which is crucial for developing real-world communication skills. Babbel offers structured and progressive lessons but lacks dynamic adaptability to cater to individual learner needs, frequently presenting the same content regardless of the user's proficiency level.

To address these shortcomings, we developed Langlam, an English language learning application that leverages the generative and adaptive capabilities of LLMs to create a dynamic learning experience. Our methodology involves integrating various AI technologies and techniques to implement key features that ensure adaptability, interactivity, and effective assessment, thereby enhancing user engagement and learning outcomes.

A fundamental component of Langlam is the diagnostic test, designed to accurately assess the user's English proficiency. The test comprises two parts: multiple-choice questions (MCQs) and a reading comprehension exercise. The MCQs cover a wide range of topics and difficulty levels, generated using prompt engineering to ensure variety and relevance. The frontend interface presents these questions through interactive widgets, allowing users to select options easily. All correct and incorrect options are displayed, providing immediate feedback upon selection. If a user selects an incorrect answer, the application highlights the correct one and offers explanations to aid understanding. This interactive approach enhances engagement and helps identify specific areas where the learner may need improvement.

The reading comprehension component generates passages of varying complexity, tailored to the user's estimated proficiency level. Users input their answers into a text box, and the LLM evaluates responses using a predefined rubric that assesses comprehension, vocabulary usage, and critical thinking skills. The rubric-based evaluation provides detailed feedback, highlighting areas of strength and suggesting improvements where necessary. This comprehensive assessment combines MCQ results and reading comprehension performance to calculate

an overall proficiency score, informing the personalization of subsequent learning content and ensuring that lessons are appropriately challenging.

Langlam also features a daily vocabulary and idiom generator with corresponding exercises to enhance vocabulary acquisition. Prompts are carefully structured to generate words and idioms that align with the user's proficiency level, ensuring that the content is neither too easy nor overly challenging. The application stores these words and idioms in a user-specific database, maintaining a 'do-not-repeat' list to avoid redundancy and keep the learning experience fresh. This strategy minimizes repetition and maximizes exposure to new vocabulary, aiding in long-term retention.

The accompanying exercises test the user's understanding of the meaning and usage of these words and idioms. Users receive constructive feedback on their answers, including suggestions for improvement and examples of correct usage in sentences. The LLM generates this feedback by comparing the user's response to expected answers and identifying areas of misunderstanding. This iterative process reinforces learning and helps users incorporate new vocabulary into their active language use.

Central to Langlam's offering are the lesson modules, created using Retrieval-Augmented Generation (RAG) and LangGraph. The application retrieves content from authoritative sources, such as *Wren and Martin's English Grammar*, ensuring the accuracy and quality of educational material. Each topic from *Wren and Martin* is compiled into individual files and broken down into subtopics accessible through interactive widgets. This modular structure enhances organization and ease of access, allowing users to navigate the content seamlessly and focus on specific areas of interest or difficulty. By structuring the material in this way, we maintain consistency and ensure that no important concept is skipped due to errors in text retrieval.

Interactivity is a key component of the lesson modules. Users can pose queries about the content at any point, and the LLM utilizes agentic capabilities to handle these interactions effectively. The process involves assessing the relevance of the user's question, reformulating it for clarity if necessary, and generating a response that is easy to understand, particularly for beginners. The LLM employs prompt techniques that incorporate fundamental English principles, ensuring that answers are accurate and pedagogically sound. This interactive approach allows users to engage deeply with the material, clarifying doubts in real-time and promoting active learning. It also addresses the lack of interactive support in applications like Rosetta Stone, enhancing user motivation and engagement.

To further motivate users and enhance engagement, Langlam incorporates basic gamification elements. Users earn points and level up upon completing lessons and exercises, providing a sense of accomplishment and progress. Points may be deducted for poor performance, encouraging users to strive for improvement without causing discouragement. The gamification mechanics are intentionally kept simple to ensure that they support rather than overshadow the educational content. Unlike Duolingo, where gamification can sometimes dominate the learning experience, Langlam's balanced approach maintains the primary focus on language acquisition while still leveraging the motivational benefits of game-like features.

Our application ensures that all generated content is dynamic and non-repetitive by tracking previously used materials and adjusting prompts accordingly. This dynamism keeps the learning experience engaging and prevents the monotony that can arise from repetitive content. The frontend interface is designed to be user-friendly, with interactive widgets facilitating seamless navigation and interaction with the application's features. Users can easily select topics, access tailored lessons, and engage with exercises and assessments, making the learning process intuitive and enjoyable.

As of now, Langlam has successfully implemented these core features. Users can take the diagnostic test, receive immediate feedback, and obtain a proficiency score that influences their personalized learning path. The daily vocabulary and idiom generator is fully functional, providing new content daily and offering corresponding exercises with personalized feedback. The lesson modules are operational, allowing users to access high-quality educational material and interact with the content through queries answered by the LLM. The basic gamification features enhance user engagement by rewarding progress and encouraging consistent use of the application.

Moving forward, we plan to enhance existing features and introduce new functionalities to further personalize and improve the learning experience. We intend to implement interactive exercises corresponding to each lesson module to reinforce learning, utilizing the LLM to generate varied question types, including fill-in-the-blanks, sentence restructuring, and short-answer questions. These exercises will incorporate adaptive difficulty levels based on user performance, ensuring that challenges remain appropriate as the learner progresses.

We aim to refine the personalization algorithm to more precisely adjust lesson content according to the user's proficiency level determined by the diagnostic test. Implementing a continuous assessment mechanism will allow the application to update proficiency levels as the user advances, ensuring that the content remains aligned with their evolving skills. Additionally, we plan to introduce an advanced communication feature using OpenAI's Whisper model, enabling voice-based interactions and allowing advanced learners to practice listening and speaking skills. This will involve developing conversational exercises where users can engage in dialogues and receive real-time feedback on pronunciation and fluency, addressing the limited conversational practice in platforms like Duolingo.

To address the challenges in evaluating user answers, particularly in open-ended responses, we aim to enhance the LLM's evaluation capabilities using AI agents. Implementing semantic search and advanced natural language understanding will enable the application to provide more precise and detailed feedback, improving the overall effectiveness of assessments. Further improvements will focus on refining prompt engineering techniques to generate higher-quality questions that align closely with learning objectives. We also plan to develop a more sophisticated scoring system that considers various aspects of language proficiency and to enhance feedback mechanisms to provide more actionable suggestions for improvement.

By focusing on these areas, Langlam aims to deliver a comprehensive and adaptive English language learning platform that not only addresses the limitations of existing applications but also sets new standards for education through the innovative use of AI technologies. Our goal is to create an engaging, effective, and accessible learning environment that empowers learners to achieve proficiency in English, unlocking opportunities for personal and professional growth in an increasingly interconnected world.

Related Works

1. Duolingo

Duolingo and Langlam both leverage large language models (LLMs) to enhance language learning, but their approaches and features differ significantly. Duolingo, particularly its Max edition, integrates OpenAI's GPT-4 to power features like "Explain My Answer" and "Roleplay," providing personalized feedback and interactive conversation practice. This makes the learning experience more engaging and adaptive. Duolingo heavily relies on gamification elements such as points, streaks, and leaderboards to motivate users, which can sometimes overshadow the learning content. In contrast, Langlam uses LLMs to dynamically generate diverse lesson modules and interactive exercises tailored to individual learner needs. It employs Retrieval-Augmented Generation (RAG) and LangChain technologies to ensure content accuracy and relevance. Langlam's diagnostic tests assess user proficiency and personalize learning paths, offering a more structured and

adaptive learning experience. While Duolingo focuses on gamification to drive engagement, Langlam balances gamification with educational content, ensuring that learning remains the primary focus. Both platforms aim to make language learning accessible and effective, but Langlam's use of LLMs for content generation and personalized feedback sets it apart in terms of adaptability and depth of learning.

2. Babbel

Babbel and Langlam both aim to provide structured and effective language learning experiences, but they differ in their use of technology and approach. Babbel offers well-structured lessons with practical vocabulary and speech recognition for pronunciation practice. It also provides live private and group classes with native speakers, which adds a human touch to the learning process. Babbel's lessons are created with the help of language experts, ensuring high quality and relevance. However, Babbel lacks the dynamic adaptability found in Langlam. Langlam uses LLMs to generate diverse lesson modules and interactive exercises tailored to individual learner needs. It conducts diagnostic tests to assess user proficiency and uses RAG and LangChain technologies to plan lesson modules. This allows Langlam to offer a more personalized and adaptive learning experience. While Babbel focuses on structured lessons and live classes, Langlam emphasizes dynamic content generation and personalized feedback. Both platforms provide effective language learning solutions, but Langlam's use of advanced AI technologies offers a more adaptive and engaging learning experience.

3. Rosetta Stone

Rosetta Stone and Langlam both focus on immersive language learning, but their methodologies and use of technology differ. Rosetta Stone emphasizes immersive learning through visual and auditory cues, using interactive activities and audio from native speakers to build fluency. It provides immediate feedback on pronunciation and offers live coaching with native speakers. However, Rosetta Stone often becomes repetitive and lacks interactive support for user queries, which can lead to decreased motivation and engagement. In contrast, Langlam uses LLMs to dynamically generate diverse lesson modules and interactive exercises tailored to individual learner needs. It employs RAG and LangChain technologies to ensure content accuracy and relevance. Langlam's diagnostic tests assess user proficiency and personalize learning paths, offering a more structured and adaptive learning experience. While Rosetta Stone focuses on immersive learning through repetition and native speaker audio, Langlam balances immersive learning with dynamic content generation and personalized feedback. Both platforms aim to make language learning effective and engaging, but Langlam's use of advanced AI technologies provides a more adaptive and interactive learning experience.

4. Comuniqa

Comuniqa is a specialized system designed to enhance English speaking skills, focusing on pronunciation, fluency, and grammar through the use of LLMs and NLP techniques. It integrates voice-to-text transcription with real-time feedback mechanisms, making it particularly useful in non-native contexts like India to improve oral communication aspects such as fluency, pitch, and pace.

In contrast, Langlam offers a comprehensive English language learning system that utilizes LLM-based technologies for adaptive, interactive, and assessment-based learning tailored to user proficiency across multiple domains, including reading comprehension, vocabulary, and written language. It incorporates a diagnostic test, personalized vocabulary generation, and RAG-driven lessons, along with advanced feedback mechanisms that adapt to learners' progress, providing a holistic approach to language acquisition.

While both systems rely on personalized feedback and LLMs to generate dynamic learning content, Langlam's broader scope addresses various facets of language learning, offering a more extensive framework compared to Comuniqa's specialization in speaking skills. Langlam's adaptive learning pathways and comprehensive assessment tools enable learners to improve multiple aspects of English proficiency, making it a more versatile platform. Although Comuniqa includes human-in-the-loop feedback to mimic expert guidance, Langlam's robust features provide a more rounded language learning experience.

5. Large Language Models in Education: Vision and Opportunities

While Gan et al.'s paper explores how Large Language Models (LLMs) can transform education through personalized learning and intelligent tutoring, the Langlam English learning application implements these concepts in a more advanced, user-friendly environment. One of Langlam's key advantages is its real-time adaptability. Unlike the theoretical model in the paper, Langlam offers continuous feedback loops, dynamically adjusting lessons based on user performance and preferences. This ensures a personalized learning experience that evolves with the user's progress and style. The app's scalability and accessibility also set it apart. Designed for a global audience, Langlam supports learners of various proficiency levels and languages, addressing resource limitations that the paper's model does not. By utilizing Retrieval-Augmented Generation (RAG), the app delivers personalized, contextually relevant content with real-time responses, enhancing efficiency and user engagement.

6. Large Language Model Augmented Exercise Retrieval for Personalized Language Learning

The paper "Large Language Model Augmented Exercise Retrieval for Personalized Language Learning" by Austin Xu, Will Monroe, and Klinton Bicknell introduces mHyER (multilingual Hypothetical Exercise Retriever), a system that personalizes language learning exercises based on learner inputs. Unlike traditional methods that rely on pre-trained retrieval models, mHyER addresses the "semantic gap" between user queries and available content by leveraging large language models (LLMs) to generate hypothetical exercises. This approach allows learners to explicitly request exercises via natural language and receive relevant content, even in a zero-shot setting where no relevance labels are available for training.

Langlam's framework, on the other hand, uses Retrieval-Augmented Generation (RAG) and LangGraph to retrieve structured grammar content from sources like Wren and Martin's English Grammar. It breaks topics into subtopics and presents them through interactive widgets, ensuring users can easily navigate and engage with specific areas of difficulty. Langlam's focus on accuracy, structure, and consistency contrasts with mHyER's dynamic approach, which is flexible in handling open-ended user inputs and tailoring content based on real-time learner needs.

Both systems emphasize interactivity and user engagement. Langlam facilitates real-time queries and modular content navigation, while mHyER allows users to direct their own learning by requesting specific exercises based on topics, grammar, or cultural aspects. Langlam incorporates basic gamification for motivation, while mHyER focuses on dynamically generating relevant exercises without needing pre-labeled data, enhancing the personalization of the learning experience.

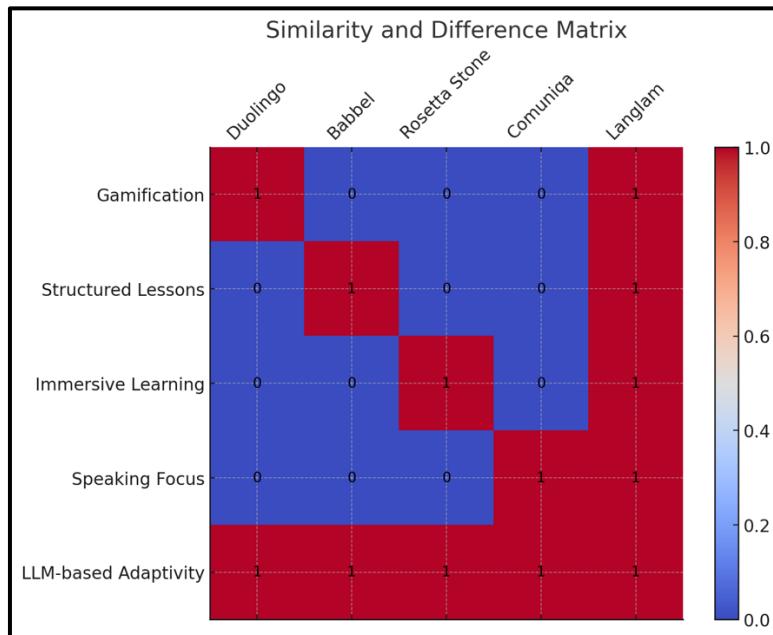
In essence, while Langlam organizes and retrieves static content, mHyER offers real-time, learner-driven content generation, allowing for a more tailored and responsive language learning process.

7. On the application of Large Language Models for language teaching and assessment technology

Caines et al., 2023 explores the transformative potential of large language models (LLMs) such as GPT-4 in educational technology, particularly in language learning and assessment systems. It delves into various applications, including content creation, assessment automation, and personalized feedback, all while acknowledging the risks and ethical considerations associated with these technologies. While LLMs show promise in improving text generation for educational purposes, the paper also highlights challenges in automated grading and error correction, noting that current models may not yet surpass existing benchmarks for such tasks.

In contrast to Langlam, which leverages Retrieval-Augmented Generation (RAG) and LangGraph to ensure accurate and structured educational content, this paper emphasizes the broader integration of LLMs in content generation and evaluation. Both papers underscore the importance of human-in-the-loop mechanisms to mitigate risks like misinformation and ensure the reliability of outputs. However, Langlam's focus on interactivity and gamification for engagement presents a more user-centric approach, aiming to address motivational and real-time query resolution challenges that systems like Duolingo have struggled with.

While Langlam's modular, widget-based learning experience is designed for personalized and interactive language education, the paper by Caines et al. takes a more exploratory stance, considering multiple LLM applications and their potential to innovate but acknowledging the ongoing need for refinement in both the technology and its ethical use.



Methodology

Interactive Lesson plan

Overview

Our language learning app incorporates a structured lesson plan system, allowing users to explore and learn from a wide array of English grammar topics. This system is built on Retrieval-Augmented Generation (RAG) and LangGraph, which work together to provide contextually relevant and concise answers to user queries. The app is designed to teach grammar systematically, enabling users to select chapters, subchapters, topics, and subtopics from "Wren and Martin."

Once users choose a specific subtopic, the content is retrieved and displayed. Users can then interact with the app by asking questions about the subtopic, and the system generates responses using the LangGraph pipeline.

Lesson Plan Feature

The lesson plan feature allows users to:

1. **Select a Module:** Users begin by choosing a Module (e.g., "Tenses").
2. **Choose a Chapter:** Within each Module, Users can select chapter (e.g., "Present Tense")
3. **Choose a Subchapter:** Within each chapter, users select a subchapter (e.g., "Present Continuous Tense").
4. **Pick a Topic:** Each subchapter is divided into topics (e.g., "General Uses").
5. **Drill Down to a Subtopic:** Finally, users select a specific subtopic (e.g., "Action happening at the time of speaking").

This structured hierarchy enables efficient retrieval and display of lesson content.

Generating Lesson content (RAG)

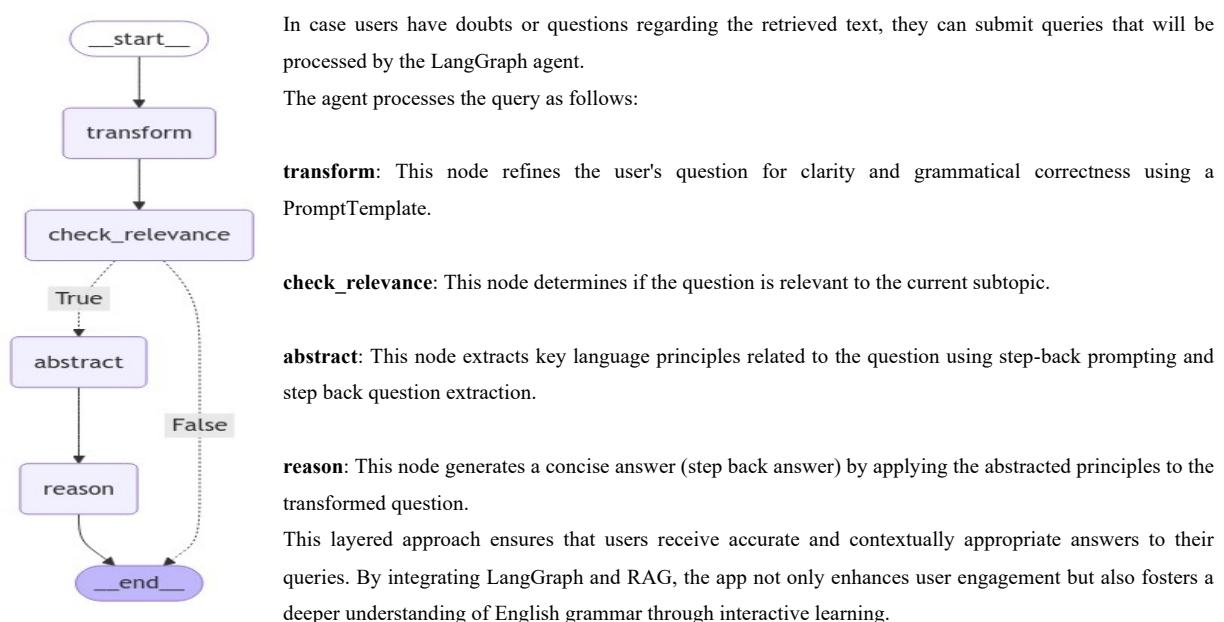
Once a subtopic is selected, the app uses Retrieval-Augmented Generation (RAG) to fetch relevant content. This technique retrieves information from a pre-indexed vector store (FAISS) and augments it with large language model (LLM)-generated responses. The vector store is created using text embeddings from Hugging face, and relevant content from markdown files containing contents of each chapter is split into smaller chunks using a text splitter, ensuring efficient and contextually accurate retrieval.

Here's how the RAG process works in the app:

- **Embeddings:** Text chunks are embedded using HuggingFace embeddings.
- **Vector Store:** FAISS stores the text chunks for efficient retrieval.
- **Retriever:** Retrieves relevant content based on user selected topic and subtopic, which is then passed to the LLM.

This approach ensures that users receive precise, contextually relevant answers by combining both pre-existing content and LLM's generative capabilities.

User Query Processing (LangGraph)



Agentic techniques and prompt techniques

State class:

The State class manages the flow of data between different nodes in the query-processing pipeline, ensuring consistency across each step. It uses Python's TypedDict to define the following key attributes:

```
class State(TypedDict):  
    user_question: str  
    context: str  
    transformed_question: str  
    relevance: str  
    abstracted_principles: str  
    final_answer: str
```

- **user_question:** The original user query.
- **context:** Relevant lesson content retrieved using RAG.
- **transformed_question:** The refined version of the user's query after processing.
- **relevance:** The result of checking if the query is relevant to the subtopic.
- **abstracted_principles:** Key principles abstracted from the context.
- **final_answer:** The concise, contextually accurate response to the query.

Each node in the LangGraph pipeline reads or modifies these attributes, ensuring smooth data flow and precise, relevant answers throughout the app's interactive features.

Node Prompts and Functions:

1. Query Transformation

```
transform_question_template = PromptTemplate(
    input_variables=["question", "context"],
    template=""""
Original: {question}
Context: {context}
Improve the question in 20 words or less. Fix grammar, clarify, and align with the topic:
Improved:
"""
)

def transform_question(state):
    question = state['user_question']
    context = state['context']
    transformed = model.predict(transform_question_template.format(question=question, context=context))
    return {"transformed_question": transformed}
```

Type of Prompt:

The Query Transformation prompt focuses on grammatical and contextual refinement. It is designed to refine the user's question for clarity and grammatical correctness while ensuring it aligns with the subtopic.

Structure:

- **Input Variables:** The prompt uses {user_question}, which is the original question asked by the user, and {context}, the relevant content retrieved from the subtopic.
- **Instructions:** The model rephrases the original user question to improve clarity, grammar, and alignment with the subtopic. The transformed question should be concise, not exceeding 20 words, and must be grammatically correct. Importantly, it should remain relevant to the subtopic and must not change the meaning of the original query.

Techniques Used:

- **Contextual Refinement:** Enhances the clarity and grammar of the user's query while ensuring it remains connected to the lesson's content.
- **Explicit Formatting:** Provides a clear and improved question that follows consistent grammar and relevance.
- **Query transformation:** Enhances the effectiveness and accuracy of user queries

2. Relevance Check

```
relevance_check_template = PromptTemplate(
    input_variables=["context", "user_question"],
    template=""""
Context: {context}
Question: {user_question}
Is this relevant? Answer 'Yes' or 'No' and explain in 10 words or less:
"""
)

def check_relevance(state):
    context = state['context']
    user_question = state['user_question']
    relevance = model.predict(relevance_check_template.format(context=context, user_question=user_question))
    return {"relevance": relevance}
```

Type of Prompt:

This is a Zero-Shot with Explicit Formatting. It aims to determine if the user's question is relevant to the current subtopic.

Structure:

- **Input Variables:** It uses {context}, the content retrieved for the subtopic, and {user_question}, the question asked by the user.
- **Instructions:** The prompt checks whether the question is related to the subtopic context, providing a simple "Yes" or "No" response with a brief explanation. The response should be a maximum of 10 words, including the "Yes" or "No" and the explanation. The explanation must be brief and directly related to the subtopic's content.

Techniques Used:

- **Relevance Emphasis:** Ensures the question is answerable and pertinent to the subtopic content, enhancing the learning process.
- **Explicit Formatting:** The clear "Yes" or "No" formatting makes the output easy to understand and process.
- **Zero-Shot Prompting:** Decides relevance without additional examples or labelled data.

3. Abstract Principles:

```
abstract_principles_template = PromptTemplate(
    input_variables=["transformed_question", "context"],
    template="""
Given the transformed question: {transformed_question}, and the context: {context}.

1. What are the underlying principles, laws, or key details relevant to this question?
2. Abstract the question to identify the main concept that needs to be addressed.

List 2-3 key language principles relevant to this question. Max 30 words total:
1.
2.
3.
""")
```

```
def abstract_principles(state):
    transformed_question = state['transformed_question']
    context = state['context']
    principles = model.predict(abstract_principles_template.format(transformed_question=transformed_question, context=context))
    return {"abstracted_principles": principles}
```

Type of Prompt:

This prompt uses Step-Back Prompting with Contextual Abstraction to extract key language principles related to the user's transformed question.

Structure:

- **Input Variables:** It takes {transformed_question}, the refined question after transformation, and {context}, the content retrieved for the subtopic.
- **Instructions:** The model is instructed to list 2-3 key language principles related to the transformed question. Each principle should be numbered (1, 2, 3) and be concise, not exceeding 30 words in total. The principles should come directly from the context and be relevant to the user's query.

Techniques Used:

- **Step-Back Prompting:** Abstracts underlying principles from the user query and context before proceeding to answer the transformed question.
- **Contextual Generation:** Ensures the principles are closely tied to the lesson content for conceptual correctness.
- **Explicit Formatting:** Numbering the principles for clarity and ease of understanding.

4. Final Reasoning:

```
final_reasoning_template = PromptTemplate(
    input_variables=["abstracted_principles", "transformed_question"],
    template="""
Now using the following principles: {abstracted_principles}, apply them to reason out the answer for the question: {transformed_question}

Answer the question concisely. Max 50 words:
""")
```

```
def final_reasoning(state):
    abstracted_principles = state['abstracted_principles']
    transformed_question = state['transformed_question']
    answer = model.predict([final_reasoning_template.format(abstracted_principles=abstracted_principles,
                                                             transformed_question=transformed_question)])
    return {"final_answer": answer}
```

Type of Prompt:

This is a Final Reasoning prompt with Contextual Application, designed to generate a concise answer using the abstracted principles.

Structure:

- **Input Variables:** It uses {abstracted_principles}, the principles from the previous step, and {transformed_question}, the refined question.
- **Instructions:** The model applies the abstracted principles to generate a clear and concise answer to the transformed question, not exceeding 50 words. The answer must be based on the context and principles identified earlier and should be easily understandable for the user.

Techniques Used:

- **Contextual Reasoning:** Applies abstracted principles generated from step back reasoning to provide a relevant and clear answer.
- **Concise Generation:** Emphasizes brevity to ensure the response is informative and easy to understand.
- **Explicit Formatting:** Ensures the final answer directly addresses the user's query based on the context.

AGENT GRAPH

```
def build_graph():
    workflow = StateGraph(State)
    workflow.add_node("transform", transform_question)
    workflow.add_node("check_relevance", check_relevance)
    workflow.add_node("abstract", abstract_principles)
    workflow.add_node("reason", final_reasoning)
    workflow.add_edge("transform", "check_relevance")
    workflow.set_entry_point("transform")
    workflow.add_conditional_edges(
        "check_relevance",
        lambda x: "Yes" in x["relevance"],
        {True: "abstract", False: END}
    )
    workflow.add_edge("abstract", "reason")
    workflow.add_edge("reason", END)
    return workflow.compile()
```

The graph-building function constructs the workflow for processing user queries in a structured sequence using LangGraph. Each node in the graph represents a distinct operation, such as transforming the user's question, checking its relevance, abstracting key principles, and generating the final response.

Comparison Before and After Using agents and advance prompting techniques

Before utilizing agents and advanced prompting techniques, the responses generated by the system were often inconsistent, lacking clarity, and difficult to read. The absence of a structured workflow led to verbose or irrelevant answers, which hindered the learning experience. After implementing agents and advanced prompting techniques, including query transformation and the step-back process, we observed significant improvements in the quality of responses. LangGraph, as a framework for creating agents, enhances the workflow by systematically organizing each step—transforming queries, checking relevance, abstracting principles, and applying the step-back method for refinement. This structured approach results in answers that are not only accurate but also concise and easy to understand for English learners. By formalizing the query handling process with these enhancements, we have improved the consistency and readability of the responses, providing a more effective and engaging learning tool.

Limitations

A limitation of the agent is that its step-back prompt can be unreliable. It occasionally extracts incorrect principles to address user queries, leading to inaccurate or irrelevant responses. Additionally, there are instances where the extracted agents are applied incorrectly, resulting in erroneous answers.

Diagnostic Test Feature

Overview

Our language learning app features a diagnostic test designed to assess and determine the user's proficiency in English. This test consists of two main components: a multiple-choice questionnaire (MCQ) and a reading comprehension exercise. By leveraging meticulous prompt engineering, the system generates customized questions and provides detailed evaluations, enhancing the learning experience and accurately gauging user proficiency.

Feature Description

Multiple-Choice Questionnaire (MCQ)

1. **Randomized Question Generation:** The system generates a set of MCQs covering a variety of English topics such as idioms, tenses, vocabulary, and grammar. The questions vary in difficulty levels—beginner, elementary, intermediate, advanced, and expert.
2. **Question Structure:** Each MCQ includes:
 - **Question:** A prompt related to a specific topic and subtopic.
 - **Answer Options:** Four options—one correct answer and three incorrect distractors.
3. **Immediate Feedback:** After the user selects an answer, the system reveals:
 - **Result:** Indicates whether the selected answer is correct or incorrect.
 - **Explanation:** Provides a brief explanation for the correct answer to enhance understanding.

Reading Comprehension Exercise

1. **Passage Generation:** The system generates a short passage tailored to the selected difficulty level.
2. **User Interaction:** Users read the passage and answer a related open-ended question.
3. **Automated Evaluation:**
 - **Rubric-Based Scoring:** The user's response is evaluated against a predefined rubric assessing content accuracy, comprehension, clarity of expression, and language mechanics.
 - **Detailed Feedback:** Users receive scores for each criterion along with specific feedback, highlighting strengths and areas for improvement.

Scoring and Proficiency Level

- **Total Score Calculation:** The system combines scores from both the MCQ and reading comprehension sections to calculate a total percentage score.
- **CEFR Level Determination:** The percentage score is mapped to the Common European Framework of Reference for Languages (CEFR) levels, ranging from A1 (Beginner) to C2 (Proficiency).
- **Profile Update:** The user's proficiency level is updated in their profile, allowing for personalized learning paths and content recommendations.

Prompt Engineering Techniques

Below are the prompts used in the system, followed by detailed descriptions, including the prompt type, structure, and techniques applied.

1. MCQ Generation Prompt

Prompt:

```
question_prompt = PromptTemplate(  
    input_variables=["topic", "subtopic", "difficulty"],  
    template=""">Generate a multiple-choice question on {topic} ({subtopic}) for {difficulty} English language learners.  
  
Provide the following:  
1. Question  
2. Correct Answer  
3. Brief Explanation for the correct answer only  
4. Three incorrect options without any explanations  
  
Format the response as follows:  
Question: [Your multiple-choice question here]  
Correct Answer: [The correct answer]  
Explanation: [Brief explanation for the correct answer only]  
Incorrect Options:  
- [Incorrect option 1]  
- [Incorrect option 2]  
- [Incorrect option 3]  
  
Note:-  
1)Do not provide explanations for the incorrect options.  
2)Ensure all content is clear, educational, and appropriate for all ages. Avoid repeating questions.  
3)Please follow the Format provided. Make sure the spacing and indentation is the same in the format.  
4)Please Make sure that the answer is not provided anywhere in the question itself.""  
)
```

Type of Prompt:

This prompt uses Zero-Shot, Chain-of-Thought Prompting with Explicit Formatting to generate multiple-choice questions (MCQs) tailored to the user's learning needs.

Structure:

- **Input Variables:** {topic}, {subtopic}, and {difficulty} allow customization of the content, targeting specific areas of English language learning.
- **Instructions:** The prompt specifies that the output should include the question, correct answer, explanation, and incorrect options. Explicit formatting instructions ensure the output is consistent and easy to parse. Content constraints emphasize avoiding including the answer in the question, ensuring appropriateness, and not repeating questions.

Techniques Used:

- **Zero-Shot Prompting:** Generates questions without example inputs, relying on training data.
- **Explicit Formatting:** Defines the exact format for predictable, machine-readable output.
- **Content Control:** Prevents common issues like revealing the answer within the question or providing explanations for incorrect options.
- **Chain of Thought prompting:** Helps the model verify the correctness of the answer by reasoning through the underlying concepts. This reduces the likelihood of incorrect answers being provided as the "correct" option. It also leads to more coherent and meaningful explanations, as the model systematically works through the rationale behind the correct answer. Users receive not just the correct answer but also an insight into the reasoning process, which enhances understanding and reinforces learning.

2. Reading Comprehension Prompt

Prompt:

```
question_prompt_reading = PromptTemplate(  
    input_variables=["difficulty"],  
    template=""">Generate a passage with a difficulty level of {difficulty} for English language learners.  
  
Provide the following:  
1. Short scenario or passage  
2. Your question based on the Passage/scenario  
3. Correct Answer of the question  
4. Brief explanation for the correct answer only  
  
Format the response as follows:  
Context: [Short scenario or passage, if applicable]  
Question: [Your question based on the Passage/scenario]  
Correct Answer: [Correct Answer of the question]  
Explanation: [Brief explanation for the correct answer only]  
  
Ensure all content is clear, educational, and appropriate for all ages. Avoid repeating questions.  
Answer of the question should be present in the passage """)
```

Type of Prompt:

This is a Zero-Shot, Chain-of-Thought Prompting with Contextual Generation, aimed at creating passages and related questions.

Structure:

- **Input Variable:** {difficulty} adjusts the complexity of the passage to match the user's proficiency level.

- **Instructions:** The prompt asks for a context (passage), a question based on the passage, the correct answer, and an explanation. Specific formatting ensures consistency and ease of parsing. Content constraints ensure appropriateness, avoid repetition, and ensure the answer is contained within the passage.

Techniques Used:

The prompt utilizes:

- **Zero-Shot Learning:** Generates passages and questions without example inputs.
- **Contextual Generation:** Creates a passage and question that are directly related.
- **Explicit Formatting:** Facilitates parsing and presentation.
- **Relevance Emphasis:** Ensures the question is answerable from the passage.

3. Evaluation Prompt for Reading Comprehension

Prompt:

```
comparison_prompt = PromptTemplate(
    input_variables=['user_answer", "correct_answer", "context", "rubric", "question"],
    template="""
Evaluate the user's answer based on the provided rubric, context, and correct answer.
Provide a score for each criterion, a total score, and detailed feedback.

Context: {context}
Question: {question}
User's answer: {user_answer}
Correct answer: {correct_answer}

Rubric:
{rubric}

Provide the scores and feedback in the following format:
Content Accuracy: [score]/5
Feedback: [Specific feedback on content accuracy]

Comprehension: [score]/5
Feedback: [Specific feedback on comprehension]

Clarity of Expression: [score]/5
Feedback: [Specific feedback on clarity]

Language Mechanics: [score]/5
Feedback: [Specific feedback on punctuation, grammar, and spelling]

Total Score: [total]/20

Overall Feedback:
[Provide a summary of strengths and areas for improvement]

Remember to consider partial credit."""
)
```

Rubrik:

```
rubric = """
Rubric for Scoring Reading Comprehension Answers:

1. Content Accuracy (0-5 points):
0 - Completely incorrect or irrelevant
1 - Mostly incorrect with minor relevant points
2 - Partially correct, missing several key points
3 - Mostly correct with some key points missing
4 - Mostly correct with minor inaccuracies
5 - Fully correct and comprehensive

2. Comprehension (0-5 points):
0 - No understanding demonstrated
1 - Minimal understanding of the passage
2 - Limited understanding with major gaps
3 - Good understanding with some gaps
4 - Very good understanding with minor gaps
5 - Excellent, thorough understanding of the passage

3. Clarity of Expression (0-5 points):
0 - Incomprehensible or extremely unclear
1 - Mostly unclear with significant issues
2 - Somewhat clear but with notable issues
3 - Mostly clear with minor issues
4 - Clear and well-expressed with very minor issues
5 - Exceptionally clear and well-articulated

4. Language Mechanics (0-5 points):
0 - Numerous major errors in punctuation, grammar, and spelling
1 - Many significant errors in punctuation, grammar, and spelling
2 - Several noticeable errors in punctuation, grammar, and spelling
3 - Some minor errors in punctuation, grammar, and spelling
4 - Very few minor errors in punctuation, grammar, and spelling
5 - Flawless or near-flawless punctuation, grammar, and spelling

Total possible score: 20 points
...."""

```

Type of Prompt:

This prompt employs Instruction-Prompting with an Embedded Rubric and Chain-of-Thought Reasoning to evaluate the user's response.

Structure:

- **Input Variables:** {context}, {question}, {user_answer}, {correct_answer}, and {rubric} provide all necessary information for evaluation.
- **Instructions:** The prompt includes a detailed rubric outlining scoring for content accuracy, comprehension, clarity of expression, and language mechanics. It specifies how to present scores and feedback for each criterion and reminds the evaluator to consider partial credit and provide detailed feedback.

Techniques Used:

It makes use of:

- **Chain-of-Thought Reasoning:** Encourages step-by-step evaluation for a comprehensive assessment.
- **Embedded Rubric:** Provides a standardized framework for consistent and fair evaluation.

- **Instruction-Following:** Guides the model to produce outputs in a specific, readable format.

Comparison Before and After Using Advance Prompt Techniques

Before implementing structured prompts and chain-of-thought reasoning, the outputs generated by the Language Model (LLM) were often inconsistent in both format and content. This inconsistency led to difficulties in parsing and displaying information correctly, resulting in errors and a subpar user experience. The lack of explicit formatting made it challenging to extract necessary components from the LLM's responses. Without specific instructions, the content quality varied significantly; the LLM sometimes included answers within the questions or generated inappropriate content. Additionally, the evaluations of user responses were shallow and lacked the detailed feedback necessary for effective learning. The absence of chain-of-thought reasoning meant that the LLM did not engage in step-by-step analysis, which limited the depth and coherence of its assessments.

After implementing structured prompts and chain-of-thought reasoning, the quality and reliability of the LLM's outputs improved markedly. Structured prompting provided explicit instructions and formatting guidelines, ensuring that the outputs were consistent and easy to parse. This made extracting necessary components straightforward and reliable. The use of instruction prompting with rubrics guided the LLM to evaluate user responses against specific criteria, enhancing the depth of evaluations. By embedding the rubric into the prompt, the LLM was instructed to assess each aspect of the user's answer systematically.

The incorporation of chain-of-thought prompting enabled the LLM to reason through each evaluation criterion step-by-step, offering comprehensive and detailed feedback on content accuracy, comprehension, clarity, and language mechanics. This approach led to improved content quality, as the LLM generated higher-quality content that was appropriate, educational, and relevant. Users experienced an enhanced learning process by receiving immediate and clear feedback with explanations that aided understanding.

Limitations

The LLM sometimes deviates from the specified format, leading to missing or improperly formatted MCQs. Occasionally, the LLM provides incorrect answers as the "correct" option in MCQs. The evaluation of user answers in the reading exercise is also inconsistent sometimes, often awarding high scores to incorrect or irrelevant responses.

Daily Vocabulary

Overview

The daily vocabulary game is a feature designed to enhance users' vocabulary by introducing new words and idioms every day. It leverages Large Language Models (LLMs) and advanced prompt engineering techniques to generate content that aligns with the user's proficiency level and minimizes repetition. This personalized approach ensures that users are consistently challenged and engaged, facilitating more effective language learning.

Feature Description

Personalized Content Generation

- **User Proficiency Alignment:** The system determines the user's proficiency level (e.g., beginner, intermediate, advanced) through a diagnostic test or profile settings.
- **Daily Generation:** Each day, the system generates a new word and idiom, along with their meaning and usage, tailored to the user's proficiency level.

Minimizing Repetition

- **User-Specific History:** The system keeps track of words and idioms previously generated for each user.
- **Repetition Avoidance:** Advanced prompt engineering ensures that the LLM does not generate words or idioms that the user has already learned.
- **Dynamic Exclusion Lists:** When generating new content, the system provides the LLM with a list of existing words and idioms to exclude.

Gamification

- **Points System:** Users earn points for every new word and idiom learned.
- **Progress Tracking:** The accumulation of points contributes to levelling up, providing a sense of achievement and motivation.

Prompt Engineering Techniques

The effectiveness of the daily vocabulary game relies heavily on the precise crafting of prompts provided to the LLM. Below are the detailed descriptions of the prompts used, along with the techniques applied.

Prompt for generation of words/idioms with meaning and usage

```
prompt_template_term = PromptTemplate[  
    input_variables=["difficulty", "existing_terms"],  
    template="""Generate a random {difficulty} term along with its meaning and usage in a sentence.  
The idiom should not be any of the following: {existing_terms}  
Format your response as follows:  
term: [term]  
Meaning: [meaning]  
Usage: [sentence using the term]  
Do not include any additional text or explanations."""  
]
```

Prompt Description

Type of Prompt:

This is a Chain of thought Prompting with Explicit Instruction and Repetition Avoidance, designed to generate new words and idioms appropriate for the user's proficiency level.

Structure:

- **Input Variables:** {difficulty} adjusts complexity (e.g., "beginner," "intermediate," "advanced"), and {existing_terms} is a list of terms the user has already learned.
- **Instructions:** The model generates a new term appropriate for the specified difficulty level, including the term, its meaning, and usage in a sentence. The response must strictly follow the specified format and must not include any term from {existing_terms}. Additional explanations or comments are to be avoided.

Techniques Used:

- **Chain-of-Thought Prompting:** Encourages the model to consider multiple options before selecting the final term, enhancing quality and appropriateness.
- **Explicit Instruction:** Provides clear guidelines to ensure consistent and format-adherent output.
- **Repetition Avoidance:** Includes {existing_terms} to prevent the model from repeating terms, guiding it away from undesired outputs.

Limitations

Prompt Length Constraints: For users with extensive histories, including all {existing_terms} may exceed prompt length limits. To manage prompt size, only a subset of existing terms is included, which might not fully prevent repetition.

Vocabulary Exercise

Overview

The vocabulary exercise is designed to reinforce users' learning by testing their knowledge of words and idioms they have previously learned. By leveraging Large Language Models (LLMs) and advanced prompt engineering techniques, the system evaluates users' responses and provides personalized feedback. This interactive approach not only helps in retaining vocabulary but also enhances the user's ability to use the words and idioms correctly in context.

Feature Description

Testing Previously Learned Vocabulary

- **Retrieval of Learned Items:** The system fetches two words and two idioms from the user's history of learned vocabulary stored in the database.
- **User Input:** Users are prompted to provide the meaning and use each word and idiom in a sentence, allowing them to actively recall and apply their knowledge.

Evaluation and Feedback

- **Custom Rubric Evaluation:** An LLM evaluates the user's responses based on a custom rubric that assesses accuracy, clarity, and completeness.
- **Personalized Feedback:** The LLM provides detailed feedback and scores for each response, highlighting areas of strength and suggesting improvements.

Gamification

- **Points System:**
 - Users earn points based on their performance, incentivizing them to engage more deeply with the material.
 - Points Deduction: Points are deducted for extremely erroneous answers, encouraging users to strive for accuracy and careful consideration in their responses.
- **Progress Tracking:** Accumulated points contribute to levelling up, fostering a sense of achievement and ongoing motivation.

Prompt Engineering Techniques

The success of the vocabulary review feature hinges on the effective design of prompts that guide the LLM to evaluate user responses accurately and provide constructive feedback.

Evaluation prompt

```

evaluation_prompt_template = PromptTemplate([
    input_variables=["item", "user_answer", "question_type"],
    template="""
        You are an English teacher. Evaluate the following user response for {question_type}.
        Your response should be similar to an English teacher:

        Task: {item}
        User's answer: {user_answer}

        Provide a comprehensive evaluation including:
        1. Accuracy: How correct is the answer?
        2. Clarity: How well-expressed is the answer?
        3. Completeness: Does the answer cover all necessary aspects?

        Format your response as follows:
        User's answer: [Repeat the user's answer]
        Evaluation:
        - Accuracy: [Comment on accuracy]
        - Clarity: [Comment on clarity]
        - Completeness: [Comment on completeness]

        Overall assessment: [Provide a brief, constructive overall assessment]
        Score: [X/10]

        Note:-
        Make sure you follow the format exactly as it is including the indentation and spaces.
        Make sure your evaluation isn't very strict."""
])

```

Prompt Description

Type of Prompt:

This is Persona Prompting with Chain of thought, crafted to evaluate user responses and generate detailed feedback according to specified criteria.

Structure:

- **Input Variables:**
 - {item}: The word or idiom being tested.
 - {user_answer}: The user's response to the prompt.
 - {question_type}: The type of question, such as "Word Definition" or "Sentence Usage".
- **Instructions:**
 - The model is instructed to act as an English teacher evaluating the user's response.
 - It must provide a comprehensive evaluation covering:
 - **Accuracy:** Correctness of the answer.
 - **Clarity:** Quality of expression.
 - **Completeness:** Coverage of all necessary aspects.
 - The response should follow a strict format, including repeating the user's answer and providing an overall assessment and a score out of 10.
 - Additional notes emphasize adhering to the exact format and maintaining a constructive tone.

Techniques Used:

- **Explicit Instruction:** The prompt provides clear and detailed instructions, ensuring the LLM's output is consistent, structured, and adheres to the specified format.
- **Custom Rubric Implementation:** By outlining specific evaluation criteria (accuracy, clarity, completeness), the LLM is guided to assess the user's response comprehensively.
- **Persona Assignment:** Instructing the LLM to act as an English teacher helps generate appropriate feedback in a pedagogical tone.
- **Chain-of-Thought Prompting:** This technique encourages the LLM to reason through the evaluation process step-by-step before arriving at a final assessment. By incorporating chain-of-thought, the model can better analyze the user's response, leading to more accurate and detailed feedback. This enhances the quality and reliability of the evaluations by ensuring that each aspect of the rubric is thoroughly considered.

Limitation

- **Response Consistency:** Despite explicit instructions, there may be variations in how the LLM interprets and applies the evaluation criteria, potentially affecting the consistency of feedback across different sessions.
- **Format Adherence:** Ensuring the LLM strictly follows the formatting guidelines may require iterative refinement of the prompt or additional prompt engineering strategies.

LLM Based Eval

Introduction

This study investigates the role of rubric-based scoring in enhancing the evaluation performance of a large language model (LLM) for reading comprehension exercises. The evaluation focused on four metrics: **Content Accuracy**, **Comprehension**, **Clarity of Expression**, and **Language Mechanics**. Two distinct approaches were employed:

1. **With a Standardized Rubric:** The LLM utilized a structured scoring framework to assign scores systematically.
2. **Without a Rubric:** The LLM relied solely on its inherent evaluation logic, without any predefined guidelines.

The primary objective of this study was to assess the impact of rubric-based scoring on accuracy, bias, and consistency. Additionally, the study sought to identify areas where the LLM's evaluation methodology could be improved.

Evaluation Methodology

The study evaluated sixteen reading comprehension passages, scoring user responses using both rubric-based and non-rubric approaches. The methodology comprised the following components:

1. Rubric-Based Scoring

- A detailed scoring rubric was developed, enabling the LLM to assign scores on a scale of 0–5 for each metric.
- The rubric provided specific criteria, helping the LLM account for nuanced variations in responses and ensure systematic evaluations.

2. Non-Rubric Scoring

- In this approach, the LLM relied solely on its internal logic for scoring responses, without any predefined framework.
- This method tested the LLM's ability to evaluate responses independently of external guidance.

3. Evaluation Agent

The evaluation agent was divided into two parts:

3.1. Ground Truth Score Assignment

- The ground truth scores were assigned by an LLM adopting an English teacher persona.
- This persona applied the rubric rigorously, ensuring objective, evidence-based benchmark scores for each user response.

3.2. Bias and Metric Comparison

- The scores assigned by the teacher persona were compared with those generated by the LLM performing the reading comprehension evaluation.
- This comparison assessed biases in each metric and measured the alignment between the LLM's scores and the ground truth values.

4. Metrics for Comparison

The following metrics were used to analyze and compare the scoring approaches:

- **Overall Accuracy:** The level of agreement between the LLM's scores and the ground truth scores.
- **Bias:** The average deviation from the ground truth across the four evaluation metrics.
- **Scoring Consistency:** The degree to which the LLM's scoring patterns matched the ground truth across all responses.

Metrics Used to Evaluate User Answers

Content Accuracy:

This metric measures how well the user's response aligns with the factual content of the passage. High scores reflect correctness and relevance, while low scores indicate irrelevance or factual inaccuracies.

Comprehension:

Comprehension evaluates the depth of understanding demonstrated by the user. High scores signify a thorough grasp of the passage, whereas low scores point to significant gaps or misinterpretations.

Clarity of Expression:

This metric assesses the coherence and articulation of the response. Clear, well-structured, and logical answers receive high scores, while disorganized or ambiguous writing results in lower scores.

Language Mechanics:

Language Mechanics focuses on grammar, syntax, and spelling. High scores are awarded for flawless or near-flawless language, while frequent or significant errors lead to lower scores.

These metrics collectively ensure a balanced assessment of both the content and presentation of user answers.

Quantitative Analysis

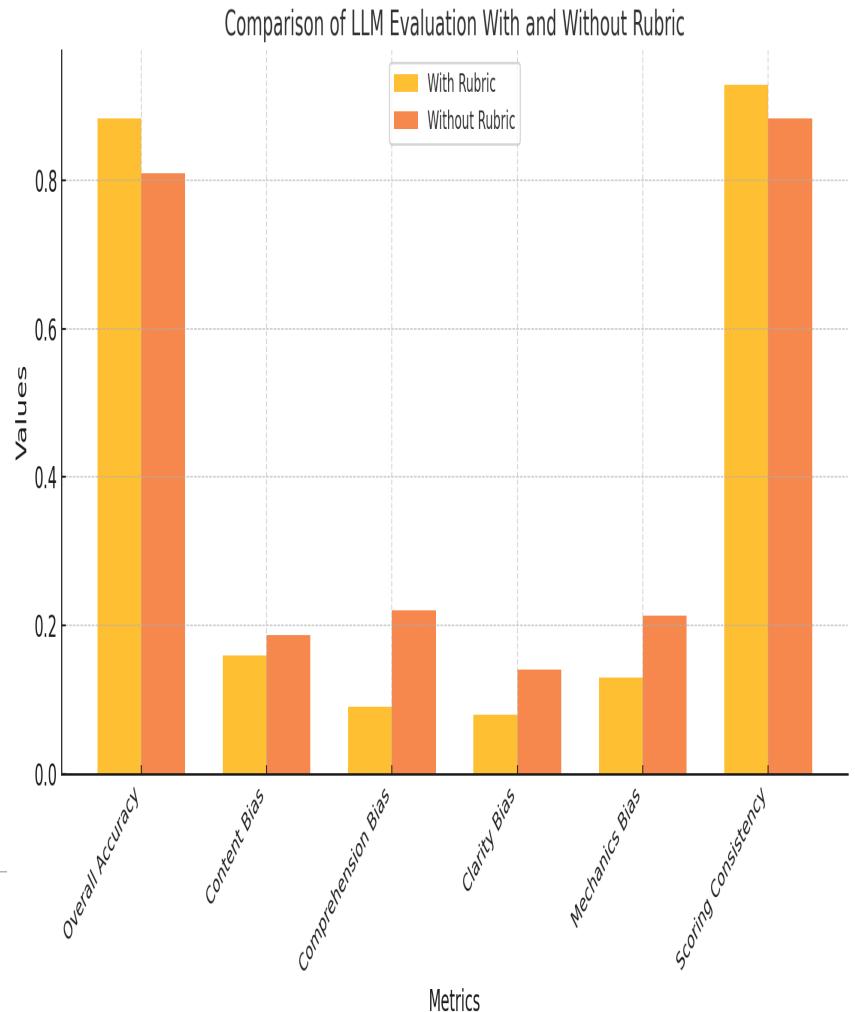
The quantitative results demonstrate the impact of rubric-based scoring on the LLM's performance.

Evaluation Results with Rubric

Metric	Average Value
Overall Accuracy	88.33%
Content Bias	0.16
Comprehension Bias	0.09
Clarity Bias	0.08
Mechanics Bias	0.13
Scoring Consistency	92.92%

Evaluation Results without Rubric

Metric	Average Value
Overall Accuracy	81.00%
Content Bias	0.19
Comprehension Bias	0.22
Clarity Bias	0.14
Mechanics Bias	0.21
Scoring Consistency	88.29%



Key Findings

The results highlight significant advantages of rubric-based scoring:

- Improved Accuracy:** The rubric-based approach achieved higher overall accuracy (88.33%) compared to the non-rubric approach (81.00%). This demonstrates the rubric's efficacy in guiding the LLM to align more closely with ground truth scores.
- Reduced Bias:** The rubric significantly reduced bias across all metrics, particularly in comprehension (0.09) and mechanics (0.13). This suggests that the rubric helps mitigate subjective scoring errors.
- Enhanced Consistency:** Scoring consistency was notably higher with the rubric (92.92%), reflecting the rubric's role in standardizing evaluations and ensuring reliable scoring patterns.

Conclusion

The findings underscore the critical role of rubric-based scoring in improving the evaluation performance of LLMs. By providing a structured framework, the rubric enhances accuracy, reduces bias, and improves consistency in the LLM's scoring process. These results suggest that rubric-based methodologies should be integrated into LLM evaluation workflows to achieve more reliable and objective assessments. Future research could explore extending rubric-based approaches to other domains and metrics, further enhancing the capabilities of LLMs in diverse evaluation tasks.

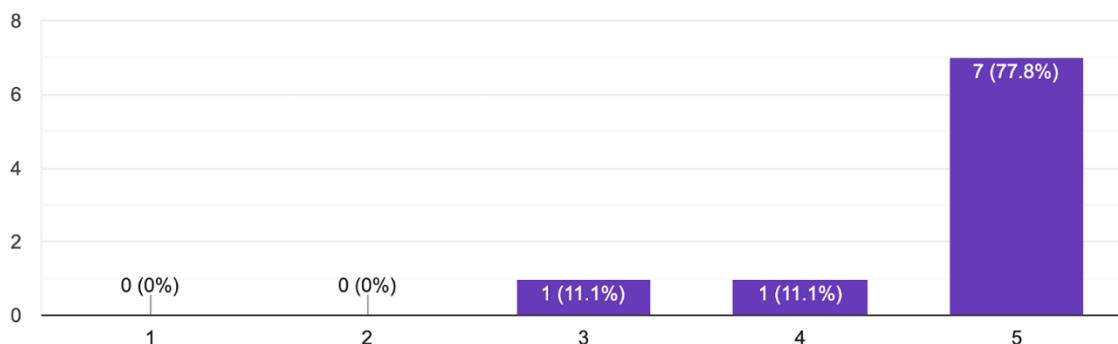
Usability Testing Analysis

On reviewing the 9 responses that we received to our usability testing survey, we can conclude that there is an overall positive response to the Langlam app. Most of our survey respondents were advanced English learners, currently pursuing their Bachelor's degrees.

Survey respondents reflected very positively on the Langlam vocabulary section, with a majority 66.7% of responses agreeing or strongly agreeing that the section was helpful to them in learning new idioms, despite most of the respondents being advanced learners. 77.8% of users reported that they could easily complete their learning tasks in a quick and efficient manner. Users were only somewhat satisfied with the novelty of the vocabulary section, with 33.3% of users reporting that the questions sometimes did repeat.

I could complete my learning tasks (e.g., answering MCQs or vocabulary exercises) quickly and efficiently.

9 responses

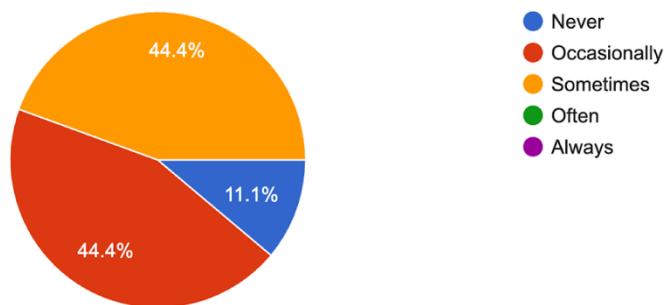


Users were very satisfied with the intuitiveness and engagement in the lesson modules, as well as the point system, with a majority agreeing that they enjoyed these elements of the app. Respondents reported high satisfaction with the design and layout of the app, with 66.7% strongly agreeing that it enhanced their learning experience.

We received mixed reviews regarding the LLM responses. While 87.5% of users agreed that the responses generated by the app were clear and concise, 44.4% disagreed or were indifferent about the LLM giving them useful feedback when they made mistakes. This may be due to an insufficiency in the capabilities of the LLM model to judge user answers and provide useful insight. 88.8% of users also reported that they encountered bugs while using the app.

How often did you encounter glitches or crashes while using the app?

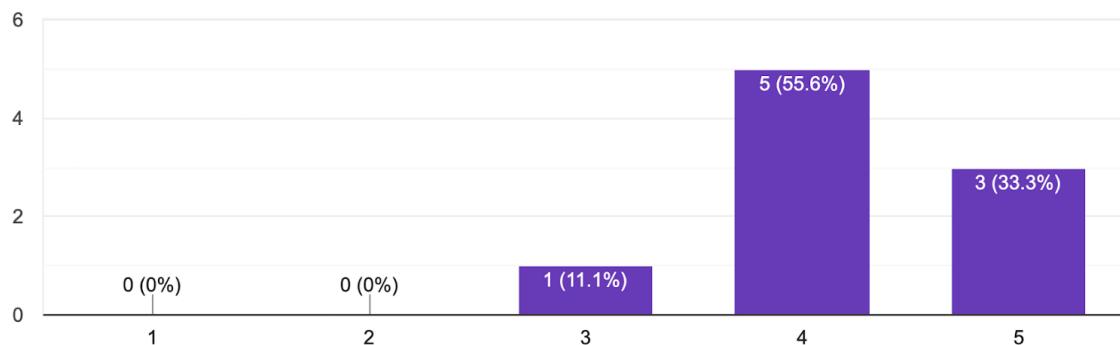
9 responses



Langlam did receive positive recommendations from surveyed users, with 88.9% of respondents reporting they would strongly recommend the app to other English learners, and 77.7% reporting that the app offered all the features they expected in a language-learning environment.

I would recommend this app to others who are looking to learn or improve their English skills.

9 responses



In conclusion, Langlam received an overall positive response from survey respondents, showcasing its potential utility to English learners, with some room for improvement in later iterations.

Conclusion

By integrating these advanced features and refinements, Langlam aims to present a user-friendly and immersive English language learning platform that closely resembles the guidance of a personal tutor. The application will feature an intuitive interface where users can seamlessly navigate through personalized lesson modules, engage in interactive exercises, and track their progress through gamified elements like points and levels. For advanced learners, the communication feature utilizing AI agents and speech-to-text technology will offer a realistic environment to practice speaking and listening skills, complete with nuanced assessments of fluency and expressiveness. Overall, Langlam will provide a comprehensive, dynamic, and engaging learning environment designed to facilitate effective English language acquisition in an accessible and personalized manner.

RAG Techniques

Choose a topic:

Select a topic

Core Uses

Core Uses - Subtopics:

Select a subtopic

Action that has recently stopped and has a visible result

The Present Perfect Continuous tense is used to describe an action that has recently stopped and has a visible result. This tense is often used to describe actions that have just finished, where the effects are still noticeable or important in the present. For example:

- I am tired because I have been running.
- The ground is wet because it has been raining.

In these examples, the actions of running and raining have just finished, but their effects are still visible in the present. The person is tired from running, and the ground is wet from the rain.

Special Considerations - Subtopics:

Select a subtopic

Incorrect usage of verbs

Incorrect usage of verbs

Incorrect usage of verbs in the Present Continuous Tense can occur when certain verbs are used in the continuous form, even though they are not typically used in this form due to their meaning. Some examples of incorrect usage include:

1. Verbs of Perception:

- Wrong: These grapes are tasting sour.
- Right: These grapes taste sour.

2. Verbs of Appearing:

- Wrong: She is seeming sad.
- Right: She seems sad.

3. Verbs of Emotion:

- Wrong: I am thinking you are wrong.
- Right: I think you are wrong.

4. Verbs of Thinking:

- Wrong: He is having a cellular phone.
- Right: He has a cellular phone.

5. Other Verbs:

- Wrong: I am thinking of going to the cinema tonight.
- Right: I am going to the cinema tonight.

RAG query :- Provide information about “Action that has recently stopped and has a visible result” in PRESENT PERFECT CONTINUOUS TENSE

RAG query :- Provide information about “Incorrect usage of verbs ” in PRESENT CONTINUOUS TENSE

Choose a topic:

Select a topic

Core Uses

Core Uses - Subtopics:

Select a subtopic

Action happening at the time of speaking

Action happening at the time of speaking

In the Present Continuous Tense, Action happening at the time of speaking refers to actions that are occurring right now. This tense is used to describe ongoing actions that are happening at the moment of speaking. For example, "She is singing" means that the action of singing is happening at the time of speaking. Similarly, "The boys are playing hockey" means that the action of playing hockey is currently happening.

Choose a topic:

Select a topic

Special Considerations

Special Considerations - Subtopics:

Select a subtopic

Non-continuous verbs

Non-continuous verbs

In the Present Perfect Continuous tense, certain verbs, such as stative verbs, are not commonly used. These verbs are typically used in the Present Perfect tense instead. For example:

- I have known her for years. (Correct: Present Perfect with stative verb)
- I have been knowing her for years. (Incorrect: Present Perfect Continuous with stative verb)

RAG query :- Provide information about “Action happening at the time of speaking ” in PRESENT CONTINUOUS TENSE

RAG query :- Provide information about “Non-continuous verbs” in PRESENT CONTINUOUS TENSE

RAG Techniques

Choose a topic:

Select a topic

Core Uses

Core Uses - Subtopics:

Select a subtopic

General Truths

General Truths

General Truths in the Simple Present Tense are used to state facts that are universally true or accepted. These facts are often about the natural world, scientific facts, or commonly accepted truths. For example:

- The sun rises in the east.
- Honey is sweet.
- Water boils at 100 degrees Celsius.
- The capital of France is Paris.

Choose a topic:

Select a topic

Core Uses

Core Uses - Subtopics:

Select a subtopic

General Truths

General Truths

General Truths in the Simple Present Tense are used to state facts that are universally true or accepted. These facts are often about the natural world, scientific facts, or commonly accepted truths. For example:

- The sun rises in the east.
- Honey is sweet.
- Water boils at 100 degrees Celsius.
- The capital of France is Paris.

RAG query :- Provide information about “General Truths” in PRESENT SIMPLE TENSE

RAG query :- Provide information about “Action that has recently stopped and has a visible result” in PRESENT PERFECT CONTINUOUS TENSE

Choose a topic:

Select a topic

Key Points

Key Points - Subtopics:

Select a subtopic

Key Point 1

Key Point 1

Key Point 1 in the Simple Present Tense refers to Habitual Actions. This means it is used to express actions that are regularly or frequently performed. For example, "He drinks tea every morning" or "I get up every day at five o'clock." This key point highlights the use of the Simple Present Tense to describe routine activities or events that occur on a regular basis.

Choose a topic:

Select a topic

Additional Uses

Additional Uses - Subtopics:

Select a subtopic

Introducing Quotations

Introducing Quotations

Introducing Quotations in the Simple Present Tense is used to introduce direct quotes from other sources. This tense is versatile and can express both present and future actions, depending on the context. For example, Keats says, "A thing of beauty is a joy for ever."

RAG query :- Provide information about “Key point 1” in PRESENT SIMPLE TENSE

RAG query :- Provide information about “Introducing Quotations” in PRESENT SIMPLE TENSE

RAG Techniques

Choose a topic:

Select a topic

Special Considerations



Special Considerations - Subtopics:

Select a subtopic

Time expressions used with Present Perfect

Select a topic

Core Uses



Core Uses - Subtopics:

Select a subtopic

Recently completed actions



Recently completed actions

Recently completed actions in the Present Perfect Tense refer to actions that have just been completed or have relevance to the present moment. This use of the Present Perfect Tense is often accompanied by time expressions such as "just" and "already". For example: - I have just finished my homework. - He has already left.

Time expressions used with Present Perfect

Time expressions commonly used with the Present Perfect tense include: - already - yet - just - ever - never - for - since

RAG query :- Provide information about “Time expressions used with Present Perfect” in PRESENT PERFECT TENSE

RAG query :- Provide information about “Recently completed actions” in PRESENT PERFECT TENSE

NOTE :- RAG QUERIES ARE PASSED IN THE BACKEND AS SOON AS USER MAKES THE CHOICE OF TOPIC AND SUBTOPIC IN THE DROPODOWN BOX

LANGGRAPH AGENT

WITH QUERY TRANSFORMATION, STEPBACK PROMPTING AND LANGGRAPH	WITHOUT QUERY TRANSFORMATION, STEPBACK PROMPTING AND LANGGRAPH
<p>Difference between Present Perfect and Past Simple ↗</p> <p>The Present Perfect is used for actions with relevance to the present, whereas the Past Simple is used for actions completed in the past with a specific time reference. For example:</p> <ul style="list-style-type: none">I have visited Paris. (no specific time)I visited Paris in 2015. (specific time) <p>Ask a question:</p> <p>Enter your question here:</p> <div style="border: 1px solid #ccc; padding: 5px; width: 100%;">can you provide another difference with an example</div> <p>Transformed Question: Can you provide another example illustrating the difference between Present Perfect and Past Simple, with a specific time reference?</p> <p>Abstracted Principles: 1. Present Perfect for actions with relevance to the present. 2. Past Simple for actions completed in the past with a specific time reference. 3. Contextualizing the tense usage based on the given information.</p> <p>Response: Present Perfect: I've been studying English for three years. Past Simple: I studied English for three years in high school.</p>	<p>Difference between Present Perfect and Past Simple ↗</p> <p>According to the provided context, the difference between the Present Perfect and Past Simple tenses is: "The Present Perfect is used for actions with relevance to the present, whereas the Past Simple is used for actions completed in the past with a specific time reference."</p> <p>In other words:</p> <ul style="list-style-type: none">Present Perfect is used for actions that happened at some point in the past, but the exact time is not specified, and are still relevant to the present.Past Simple is used for actions that were completed at a specific time in the past. <p>Examples:</p> <ul style="list-style-type: none">Present Perfect: I have visited Paris. (no specific time)Past Simple: I visited Paris in 2015. (specific time) <p>Ask a question:</p> <p>Enter your question here:</p> <div style="border: 1px solid #ccc; padding: 5px; width: 100%;">can you provide another difference with an example</div> <p>Response: Another key difference between Present Perfect and Past Simple is that Present Perfect often implies a connection to the present moment, whereas Past Simple simply describes a completed action in the past without any reference to the present. Here's an example to illustrate this difference:</p> <ul style="list-style-type: none">Present Perfect: I have been studying English for three years, and now I can speak fluently. (The action of studying English is connected to the present moment, highlighting the result of studying for three years.)Past Simple: I studied English in high school from 2010 to 2013. (The action of studying English is simply described as a completed event in the past, without any connection to the present moment.) <p>In the Present Perfect example, the focus is on the result of studying English (speaking fluently), which is relevant to the present moment. In the Past Simple example, the focus is solely on the fact that the speaker studied English in the past, without any emphasis on the present.</p> <p>This difference in focus can greatly impact the meaning and tone of the sentence, and is an important consideration when choosing between Present Perfect and Past Simple in your writing or conversation.</p> <p>The LLM response is not very readable due to excessive explanation of the user query.</p>

LANGGRAPH AGENT

Action completed at an indefinite time in the past

Action completed at an indefinite time in the past refers to actions that happened at some point in the past, but the exact time is not specified. This is one of the core uses of the Present Perfect tense. Examples of this use include:

- I have visited Paris.
- She has seen that movie.

In these sentences, the actions of visiting Paris and seeing the movie happened at some point in the past, but the exact time is not mentioned.

Ask a question:

Enter your question here:

does it only work with has or have or can it be used in the context of any auxiliary verbs

Transformed Question: Does the Present Perfect tense only work with 'has' or 'have', or can it be used with other auxiliary verbs in the context of actions completed at an indefinite time in the past?

Abstracted Principles: 1. Present Perfect tense 2. Action completed at an indefinite time in the past 3. Auxiliary verbs 'has' and 'have'

Response: The Present Perfect tense primarily works with 'has' and 'have' as auxiliary verbs, indicating actions completed at an indefinite time in the past. Other auxiliary verbs are not typically used in this context.

Action completed at an indefinite time in the past

According to the context, the Action completed at an indefinite time in the past is one of the core uses of the Present Perfect tense. This use refers to actions that happened at some point in the past, but the exact time is not specified. Examples of this use include:

- I have visited Paris.
- She has seen that movie.

In both examples, the action of visiting Paris and seeing the movie happened at some point in the past, but the exact time is not specified. Instead, the focus is on the completion of the action, rather than when it happened.

Ask a question:

Enter your question here:

does it only work with has or have or can it b used in the context of any auxiliary verb

Response: The Present Perfect tense can be formed with various auxiliary verbs, not just "has" or "have". While "has" and "have" are the most common auxiliary verbs used to form the Present Perfect tense, other auxiliary verbs can also be used in specific contexts.

Here are some examples:

- With "has" and "have" (the most common):
 - I have visited Paris.
 - She has seen that movie.
- With "had" (for the third person singular):
 - He had eaten breakfast before we met.
 - It had snowed last week.
- With "been" (for the passive voice):
 - The report has been written.
 - The play has been performed.

In the context of "Action completed at an indefinite time in the past", the Present Perfect tense can be formed with any of these auxiliary verbs, depending on the sentence's meaning and structure.

For instance:

- I had learned French before I went to college. (Here, "had learned" indicates an action completed at an indefinite time in the past, with "had" as the auxiliary verb.)
- The new employee has been working here for three months. (In this case, "has been working" also implies an action completed at an indefinite time in the past, with "has" as the auxiliary verb.)

In summary, while "has" and "have" are the most common auxiliary verbs used to form the Present Perfect tense, other auxiliary verbs like "had" and "been" can also be used in specific contexts to describe actions completed at an indefinite time in the past.

The absence of query transformation results in examples that illustrate the use of auxiliary verbs in the past tense, which is not the intended topic

LANGGRAPH AGENT

Action completed at an indefinite time in the past ↗

Action completed at an indefinite time in the past refers to actions that happened at some point in the past, but the exact time is not specified. This is one of the core uses of the Present Perfect tense. Examples of this use include:

- I have visited Paris.
- She has seen that movie.

In these sentences, the actions of visiting Paris and seeing the movie happened at some point in the past, but the exact time is not mentioned.

Ask a question:

Enter your question here:

who is the president of america

Transformed Question: Who has been the president of America?

I'm sorry, but I cannot answer your question as it appears to be unrelated to the current topic. Please ask a question related to Action completed at an indefinite time in the past in PRESENT PERFECT TENSE.

Action completed at an indefinite time in the past

According to the context, the Action completed at an indefinite time in the past is one of the core uses of the Present Perfect tense. This use refers to actions that happened at some point in the past, but the exact time is not specified.

Examples of this use include:

- I have visited Paris.
- She has seen that movie.

In both examples, the action of visiting Paris and seeing the movie happened at some point in the past, but the exact time is not specified. Instead, the focus is on the completion of the action, rather than when it happened.

Ask a question:

Enter your question here:

who is the preident of america

I'm sorry, but I cannot answer your question as it appears to be unrelated to the current topic. Please ask a question related to Action completed at an indefinite time in the past in PRESENT PERFECT TENSE.

Correctly identifies irrelevant query

Action completed at an indefinite time in the past ↗

Action completed at an indefinite time in the past refers to actions that happened at some point in the past, but the exact time is not specified. This is one of the core uses of the Present Perfect tense. Examples of this use include:

- I have visited Paris.
- She has seen that movie.

In these sentences, the actions of visiting Paris and seeing the movie happened at some point in the past, but the exact time is not mentioned.

Ask a question:

Enter your question here:

can you explain it in simpler terms i didnt quite understand the subtopic

Transformed Question: Can you simplify the concept of the Present Perfect Tense, specifically how it's used to describe actions completed at an indefinite time in the past?

Abstracted Principles: 1. Present Perfect Tense 2. Action completed at an indefinite time in the past 3. Indefinite past

Response: The Present Perfect Tense simplifies the concept of an action completed at an indefinite time in the past by using the auxiliary verb "has" or "have" with the past participle of the main verb. It indicates that the action started in the past and may or may not be completed, but its effect is still relevant today.

Action completed at an indefinite time in the past

According to the context, the Action completed at an indefinite time in the past is one of the core uses of the Present Perfect tense. This use refers to actions that happened at some point in the past, but the exact time is not specified.

Examples of this use include:

- I have visited Paris.
- She has seen that movie.

In both examples, the action of visiting Paris and seeing the movie happened at some point in the past, but the exact time is not specified. Instead, the focus is on the completion of the action, rather than when it happened.

Ask a question:

Enter your question here:

can you explain it in simpler terms i didnt quite understand th subtopic

I'm sorry, but I cannot answer your question as it appears to be unrelated to the current topic. Please ask a question related to Action completed at an indefinite time in the past in PRESENT PERFECT TENSE.

LLM is unable to answer user question despite query being relevant to context.

LANGGRAPH AGENT

Time expressions used with Present Perfect

Time expressions commonly used with the Present Perfect tense include: - already - yet - just - ever - never - for - since

Ask a question:

Enter your question here:

can you explain it better

Transformed Question: How do I use time expressions like "already," "yet," "just," "ever," "never," "for," and "since" with the Present Perfect tense effectively?

Abstracted Principles: 1. Use "already" and "yet" to indicate an action started before the present moment. 2. Use "just" to indicate an action that has been completed a short time ago. 3. Use "ever" and "never" to indicate if an action has been completed at least once or not at all.

Response: To use time expressions effectively with the Present Perfect tense, follow these guidelines:

- "already" and "yet" indicate actions started before the present moment.
- "just" shows an action completed a short time ago.
- "ever" and "never" indicate if an action has been completed at least once or not at all.
- "for" and "since" indicate the duration or starting point of an action.

Time expressions used with Present Perfect

According to the context, the time expressions commonly used with the Present Perfect tense include:

- already
- yet
- just
- ever
- never
- for
- since

These expressions are used to specify the timing or duration of the action described by the Present Perfect verb form.

Ask a question:

Enter your question here:

can you explain it better

Response: The Present Perfect tense is a complex and fascinating aspect of English grammar. I'd be happy to help you understand it better!

What is the Present Perfect tense?

The Present Perfect tense is used to describe an action that started in the past and has a connection to the present. It's formed using the present tense of the auxiliary verb "has" (or "have" for singular subjects) and the past participle of the main verb. For example:

- I have studied English for three years.
- She has been living in Paris since 2010.

Provide wrong answer for user Question

Exclamatory Sentences

Exclamatory Sentences in the Simple Present Tense are used to describe actions happening in the present moment. They are often used in exclamations beginning with "here" or "there" to create a sense of immediate action. Examples include:

- Here comes the bus!
- There she goes!

Ask a question:

Enter your question here:

give me more examples please

Transformed Question: Could you provide more examples of using the Simple Present Tense in Exclamatory Sentences?

Abstracted Principles: 1. Present tense 2. Exclamatory sentences 3. Immediate action

Response: "Look! It's snowing! Put on your winter clothes! Grab your snowshoes! Let's go sledding! Be careful on the ice! Hold my hand! Enjoy the snowball fight! Oh, the snow is so soft! Let's make a snowman! Look at the snowflakes! They're so beautiful!"

Exclamatory Sentences

According to the provided context, Exclamatory Sentences are one of the core uses of the Simple Present Tense in English grammar. Here's what it says:

3. Exclamatory Sentences

- Used in exclamations beginning with *here* or *there* to describe actions happening in the present moment.
- Examples:
 - Here comes the bus!
 - There she goes!

In Exclamatory Sentences, the Simple Present Tense is used to describe actions that are happening in the present moment, often with a sense of surprise, excitement, or emphasis. These sentences typically begin with the words "here" or "there" and are used to draw attention to something that is happening at that moment.

Ask a question:

Enter your question here:

give me more examples please

I'm sorry, but I cannot answer your question as it appears to be unrelated to the current topic. Please ask a question related to Exclamatory Sentences in SIMPLE PRESENT TENSE.

LLM is unable to answer user question despite query being relevant to context.

LANGGRAPH AGENT

Key Point 2

Key Point 2 in the Simple Present Tense is about expressing both present and future actions, depending on the context. This tense is versatile and can be used to convey a wide range of meanings, including regular or frequent actions, general truths, and future events that are part of a fixed schedule or timetable. Understanding these uses will help you effectively convey your meaning in English.

Ask a question:

Enter your question here:

can you give an example and an explanation of the usage of simple tense used to convey future events.

Transformed Question: How is the Simple Present Tense used to convey future events in English, and can you provide an example?

Abstracted Principles: 1. Present and future actions 2. Contextual meaning 3. Fixed schedule or timetable

Response: The Simple Present Tense is used to convey future events in English when referring to a fixed schedule or timetable, such as train schedules or class timetables. For example, "The train leaves at 10 AM tomorrow." This implies a future event, but it is a scheduled event.

Key Point 2

According to the context, Key Point 2 states that the Simple Present tense can express both present and future actions, depending on the context. This means that the tense is versatile and can be used to describe actions that are happening at the moment of speaking, as well as actions that will happen in the future.

Ask a question:

Enter your question here:

can you give me an example and usage of simple tense used to convey future events

Response: I'd be happy to help you with that. Key Point 2 states that the Simple Present tense can express both present and future actions, depending on the context. Here's an example of how the Simple Present tense can be used to convey future events:

Example sentence: "I meet my friends at 7 pm tomorrow."

Usage: In this sentence, the verb "meet" is in the Simple Present tense (meet, not meets or meeting), but it's referring to a future event, specifically the time and day when the action will take place.

Why it works: The context of the sentence makes it clear that the event is not happening at the moment of speaking, but rather in the future. The use of the word "tomorrow" also helps to specify that the action will occur at a later time.

Key takeaways:

- The Simple Present tense can be used to describe future events when the context makes it clear that the action is not happening at the moment of speaking.
- The use of words like "tomorrow", "next week", "next month", etc. can help to specify that the action is in the future.
- Pay attention to the context of the sentence to determine whether the Simple Present tense is being used to describe a present or future action.

I hope this helps! Let me know if you have any more questions.

Provides additional details due to lack of word limit in prompt

Action that began in the past and continues into the present

In the Present Perfect Continuous tense, one of its core uses is to describe an action that began in the past and continues into the present. This tense refers to actions that started at some point in the past and are still happening or have just finished with relevance to the present. For example, "She has been reading for two hours" or "They have been working on this project since morning." This tense is used to emphasize the ongoing nature of the activity and its connection to the present moment.

Ask a question:

Enter your question here:

I think there is an error, the first example is in present continuous tense.

Transformed Question: I believe there's a mistake. The first example is in the present continuous tense.

Abstracted Principles: 1. Present Perfect Continuous tense 2. Action began in the past 3. Continues into the present

Response: The first example is not in the present continuous tense, but rather in the present perfect continuous tense. This is because it describes an action that began in the past and continues into the present.

Action that began in the past and continues into the present

According to the context, the first core use of the Present Perfect Continuous tense is:

1. Action that began in the past and continues into the present

- Refers to actions that started at some point in the past and are still happening or have just finished with relevance to the present.
- Examples:
 - She has been reading for two hours. (action started in the past and is still happening)
 - They have been working on this project since morning. (action started in the past and is still happening)

This use of the Present Perfect Continuous tense emphasizes the continuity of an action from the past into the present, often with a focus on how long the action has been ongoing.

Ask a question:

Enter your question here:

I think there is an error, the first example is in present continuous tense

Response: You are correct that the first example, "She has been reading for two hours," is actually in the present perfect tense, not the present perfect continuous tense. The present perfect tense is used to describe an action that started in the past and has a clear completion point in the present, whereas the present perfect continuous tense is used to describe an action that started in the past and is ongoing up to the present moment. In the example "She has been reading for two hours," the action of reading has a clear completion point, as it is limited to a specific period of time (two hours). This is an example of the present perfect tense, not the present perfect continuous tense.

The correct example of the present perfect continuous tense, emphasizing the continuity of an action from the past into the present, would be:

- She has been studying English for three years. (action started in the past and is still ongoing)

In this example, the action of studying English started in the past and is still ongoing, with no clear completion point in the present.

Thank you for pointing out the error, and I hope this clears up any confusion.

Misleading LLM response due to lack of step back prompting

LANGGRAPH AGENT

COMPARISON MATRIX			
Metric	WITH QUERY TRANSFORMATION, STEPBACK PROMPTING AND LANGGRAPH	WITH QUERY TRANSFORMATION, STEPBACK PROMPTING AND LANGGRAPH	Difference/Improvement
Relevance	partially addresses the question/ classifies relevant questions as irrelevant	Fully addresses the user's query. Correctly identifies relevance of query	Clear improvement
Clarity	Some sentences are unclear or convoluted.	Clear, direct, and easy to understand.	High improvement
Conciseness	Overly verbose, includes unnecessary info.	Concise and to the point.	Significant improvement
Accuracy	Some factual errors.	Accurate and correct information.	Improved factual correctness
Fluency	Grammatically correct but unnatural phrasing.	Grammatically correct and smooth.	Slight improvement
Completeness	Part of the query is not addressed sometimes.	Complete answer to the query most of the time. Sometimes misses out on certain parts of the query	High improvement
Response Length	100-150 words	20-30 words	High improvement
Consistency	Different responses to similar queries.	Consistent responses across queries.	Significant consistency
Factuality	Includes fewer incorrect statements.	Includes some incorrect statements.	Slight improvement

DIAGNOSTIC TEST SAMPLES

GENERATED MCQ ON TOPICS OF VARYING DIFFICULTY USING CUSTOM PARSER AND LLM RESPONSE

LLM RESPONSE FOR MCQ USING CHAIN OF THOUGHT PROMPTING

Sentence structure

Which of the following sentences is an example of a compound sentence?

Select the correct answer for Sentence structure:

- I love playing games.
- The dog is happy.
- I like reading books.
- I like reading books, and I love playing games.

Check Answer



Explanation: This sentence connects two independent clauses ("I like reading books" and "I love playing games") using a conjunction ("and"), making it a compound sentence.

Word formation

What is the meaning of the word "bookshelf" when it is formed by compounding the words "book" and "shelf"?

Select the correct answer for Word formation:

- A shelf that holds only books
- A type of book about shelves
- A place where books are displayed or stored
- A book with a shelf inside

Check Answer

✗ Incorrect. The correct answer is: A place where books are displayed or stored

Explanation: The word "bookshelf" is formed by compounding the words "book" and "shelf", indicating a specific location where books can be placed or displayed.

Here is the multiple-choice question:

Question: Which of the following sentences is an example of a compound sentence?

Correct Answer: I like reading books, and I love playing games.

Explanation: This sentence connects two independent clauses ("I like reading books" and "I love playing games") using a conjunction ("and"), making it a compound sentence.

Incorrect Options:

- I like reading books.
- I love playing games.
- The dog is happy.

Here is a multiple-choice question on Word formation (subtopic: Compounding) for expert English language learners:

Question: What is the meaning of the word "bookshelf" when it is formed by compounding the words "book" and "shelf"?

Correct Answer: A place where books are displayed or stored

Explanation: The word "bookshelf" is formed by compounding the words "book" and "shelf", indicating a specific location where books can be placed or displayed.

Incorrect Options:

- A type of book about shelves
- A shelf that holds only books
- A book with a shelf inside

DIAGNOSTIC TEST SAMPLES

Prepositions

In the museum, the ancient artifacts are placed _____ the walls.

Select the correct answer for Prepositions:

- within
- under
- on
- beneath

[Check Answer](#)

 Incorrect. The correct answer is: on

 Explanation: The preposition "on" indicates the location of the ancient artifacts in relation to the walls. It shows that the artifacts are positioned directly on the surface of the walls.

Here is the multiple-choice question:

Question: In the museum, the ancient artifacts are placed _____ the walls.

Correct Answer: on

Explanation: The preposition "on" indicates the location of the ancient artifacts in relation to the walls. It shows that the artifacts are positioned directly on the surface of the walls.

Incorrect Options:

- under
- within
- beneath

Passive voice

By the year 2050, what will the city's population be estimated to have increased to?

Select the correct answer for Passive voice:

- It will have increased to 10 million.
- The city's population will increase to 10 million.
- The city's population will have decreased to 8 million.
- It is estimated that the city's population will increase to 5 million.

[Check Answer](#)

 Incorrect. The correct answer is: It will have increased to 10 million.

 Explanation: This sentence is in the future passive voice, where the subject (the city's population) is acted upon by an unspecified agent (the process of population growth) and the focus is on the result of the action (the estimated population).

Here is the question:

Question: By the year 2050, what will the city's population be estimated to have increased to?

Correct Answer: It will have increased to 10 million.

Explanation: This sentence is in the future passive voice, where the subject (the city's population) is acted upon by an unspecified agent (the process of population growth) and the focus is on the result of the action (the estimated population).

Incorrect Options:

- The city's population will increase to 10 million.
- It is estimated that the city's population will increase to 5 million.
- The city's population will have decreased to 8 million.

DIAGNOSTIC TEST SAMPLES

Pronouns

Who did she give the toy to?

Select the correct answer for Pronouns:

- Them
- She
- Him
- Himself

Check Answer

Correct!

i Explanation: In this sentence, "him" is the object of the verb "give". It receives the action of the verb.

Here is a multiple-choice question on Object Pronouns for elementary English language learners:

Question: Who did she give the toy to?

Correct Answer: Him

Explanation: In this sentence, "him" is the object of the verb "give". It receives the action of the verb.

Incorrect Options:

- She
- Himself
- Them

Direct and indirect speech

What is the indirect form of the direct speech "Close the window"?

Select the correct answer for Direct and indirect speech:

- Close window
- Close the window
- Can you close the window?
- Window close

Check Answer

Correct!

i Explanation: In indirect speech, we use the base form of the verb and add the auxiliary verb "can" to make a polite request.

Here is a multiple-choice question on Direct and indirect speech (subtopic: Commands and requests) for beginner English language learners:

Question: What is the indirect form of the direct speech "Close the window"?

Correct Answer: Can you close the window?

Explanation: In indirect speech, we use the base form of the verb and add the auxiliary verb "can" to make a polite request.

Incorrect Options:

- Close the window
- Close window
- Window close

DIAGNOSTIC TEST SAMPLES

Conditional sentences

If I had studied harder, I _____ a better grade in the exam.

Select the correct answer for Conditional sentences:

- got
- would have got
- get
- getting

Check Answer

✗ Incorrect. The correct answer is: would have got

i Explanation: The sentence is using a mixed conditional to talk about a hypothetical past situation and its hypothetical past consequences. The correct verb form "would have got" is used to express the hypothetical past consequence.

Here is a multiple-choice question on Mixed Conditionals for advanced English language learners:

Question: If I had studied harder, I _____ a better grade in the exam.

Correct Answer: would have got

Explanation: The sentence is using a mixed conditional to talk about a hypothetical past situation and its hypothetical past consequences. The correct verb form "would have got" is used to express the hypothetical past consequence.

Incorrect Options:

- got
- get
- getting

Modal verbs

By the time I was 12, I _____ to ride a bike without training wheels.

Select the correct answer for Modal verbs:

- would
- could
- shall
- can

Check Answer

✗ Incorrect. The correct answer is: could

i Explanation: The correct answer is "could" because the sentence is describing a past ability to do something, which is a typical use of the modal verb "could".

Here is the multiple-choice question:

Question: By the time I was 12, I _____ to ride a bike without training wheels.

Correct Answer: could

Explanation: The correct answer is "could" because the sentence is describing a past ability to do something, which is a typical use of the modal verb "could".

Incorrect Options:

- can
- would
- shall

DIAGNOSTIC TEST SAMPLES

Articles

Which of the following sentences uses the definite article "the" correctly?

Select the correct answer for Articles:

- The new employee is looking for the conference room.
- The employee is looking for a conference room.
- This employee is looking for the conference room.
- The new employee is looking for conference room.

[Check Answer](#)

 Correct!

i Explanation: In this sentence, "the conference room" is a specific room that has already been referred to or is already known to the listener, making it necessary to use the definite article "the".

Here is your requested multiple-choice question:

Question: Which of the following sentences uses the definite article "the" correctly?

Correct Answer: The new employee is looking for the conference room.

Explanation: In this sentence, "the conference room" is a specific room that has already been referred to or is already known to the listener, making it necessary to use the definite article "the".

Incorrect Options:

- The employee is looking for a conference room.
- The new employee is looking for conference room.

Phrasal verbs

What does "put off" mean in a business context?

Select the correct answer for Phrasal verbs:

- Take over
- Delay or postpone
- Move forward
- Give up

[Check Answer](#)

 Incorrect. The correct answer is: Delay or postpone

i Explanation: In a business context, "put off" means to delay or postpone a task, meeting, or decision. For example, "The project was put off until next quarter due to budget constraints."

Here is a multiple-choice question on Business phrasal verbs for elementary English language learners:

Question: What does "put off" mean in a business context?

Correct Answer: Delay or postpone

Explanation: In a business context, "put off" means to delay or postpone a task, meeting, or decision. For example, "The project was put off until next quarter due to budget constraints."

Incorrect Options:

- Give up
- Take over
- Move forward- This employee is looking for the conference room.

DIAGNOSTIC TEST SAMPLES

Comparatives and superlatives

What does the idiomatic comparison "as busy as a bee" mean in the sentence "My sister is as busy as a bee preparing for her wedding"?

Select the correct answer for Comparatives and superlatives:

- very relaxed
- rather calm
- extremely busy
- extremely lazy

Check Answer

X Incorrect. The correct answer is: extremely busy

i Explanation: This idiomatic comparison means that someone is working or doing something at an extraordinary rate, just like a bee is known for its industrious nature.

Here is your multiple-choice question:

Question: What does the idiomatic comparison "as busy as a bee" mean in the sentence "My sister is as busy as a bee preparing for her wedding"?

Correct Answer: extremely busy

Explanation: This idiomatic comparison means that someone is working or doing something at an extraordinary rate, just like a bee is known for its industrious nature.

Incorrect Options:

- extremely lazy
- very relaxed
- rather calm- This employee is looking for the

Conjunctions and connectors

What is the coordinating conjunction used to join two equal sentences together?

Select the correct answer for Conjunctions and connectors:

- But
- The
- A
- And

Check Answer

X Incorrect. The correct answer is: And

i Explanation: Coordinating conjunctions are used to join two equal clauses or sentences together. "And" is one of the most commonly used coordinating conjunctions, used to add information or ideas.

Here is a multiple-choice question on Conjunctions and connectors (subtopic: Coordinating conjunctions) for beginner English language learners:

Question: What is the coordinating conjunction used to join two equal sentences together?

Correct Answer: And

Explanation: Coordinating conjunctions are used to join two equal clauses or sentences together. "And" is one of the most commonly used coordinating conjunctions, used to add information or ideas.

Incorrect Options:

- But
- The
- A

DIAGNOSTIC TEST SAMPLES

Relative clauses

Which of the following sentences is an example of a reduced relative clause?

Select the correct answer for Relative clauses:

- The student is late again because he overslept.
- The student is still waiting because he is anxious about the test.
- The one who arrived late is still waiting.
- The student who arrived late is still waiting because it is his first day.

Check Answer

 Correct!

Explanation: In this sentence, "who arrived late" is a non-restrictive relative clause, but it has been shortened to "who arrived late" and is now a reduced relative clause.

Here is the multiple-choice question on Reduced Relative Clauses

Question: Which of the following sentences is an example of a reduced relative clause?

Correct Answer: The one who arrived late is still waiting

Explanation: In this sentence, "who arrived late" is a non-restrictive relative clause, but it has been shortened to "who arrived late" and is now a reduced relative clause.

Incorrect Options:

- The student who arrived late is still waiting because it is his first day.
- The student is still waiting because he is anxious about the test.
- The student is late again because he overslept.- This employee is looking for the conference room.

Vocabulary

What is the opposite of the word "Fast"?

Select the correct answer for Vocabulary:

- Slow
- Happy
- Loud
- Big

Check Answer

 Correct!

Explanation: The opposite of "Fast" is "Slow", which means moving or doing something quickly is the opposite of moving or doing something slowly.

Here is a multiple-choice question on Vocabulary (subtopic: Antonyms) for beginner English language learners:

Question: What is the opposite of the word "Fast"?

Correct Answer: Slow

Explanation: The opposite of "Fast" is "Slow", which means moving or doing something quickly is the opposite of moving or doing something slowly.

Incorrect Options:

- Big
- Happy
- Loud- This employee is looking for the conference room.

DIAGNOSTIC TEST SAMPLES

Tense

By the time I _____ (finish) my homework, it was already midnight.

Select the correct answer for Tense:

- finish
- had been finishing
- was finishing
- had finished

Check Answer

Correct!

i Explanation: The correct answer is "had finished" because the sentence is using the Past Perfect tense to describe an action that occurred before another action in the past. The sentence is saying that the speaker finished their homework before it was already midnight.

Here is a multiple-choice question on Past tenses for expert English language learners:

Question: By the time I _____ (finish) my homework, it was already midnight.

Correct Answer: had finished

Explanation: The correct answer is "had finished" because the sentence is using the Past Perfect tense to describe an action that occurred before another action in the past. The sentence is saying that the speaker finished their homework before it was already midnight.

Incorrect Options:

- finish
- was finishing
- had been finishing

Idioms and expressions

When a company's sales are declining, the CEO decided to "bite the bullet" and lay off 20% of the workforce.

Select the correct answer for Idioms and expressions:

- Take the leap
- Cut the cord
- Fill the gap
- bite the bullet

Check Answer

X Incorrect. The correct answer is: bite the bullet

i Explanation: "Bite the bullet" is an idiomatic expression that means to accept a difficult or unpleasant situation and do what needs to be done, even if it's painful or uncomfortable. In this context, the CEO is making the difficult decision to lay off employees to save the company.

Here is the multiple-choice question on Idioms and expressions (subtopic: Business idioms) for expert English language learners:

Question: When a company's sales are declining, the CEO decided to "bite the bullet" and lay off 20% of the workforce.

Correct Answer: bite the bullet

Explanation: "Bite the bullet" is an idiomatic expression that means to accept a difficult or unpleasant situation and do what needs to be done, even if it's painful or uncomfortable. In this context, the CEO is making the difficult decision to lay off employees to save the company.

Incorrect Options:

- Cut the cord
- Fill the gap
- Take the leap

DIAGNOSTIC TEST SAMPLES

CHAIN OF THOUGHT PROMPTING WITH CUSTOM RUBRIK TO GENERATE READING COMPREHENSION WITH QUESTION, CORRECT ANSWER, EXPLANATION AND EVALUATION	
<p>Context:</p> <p>In the 19th century, the concept of social Darwinism emerged, which posited that the struggles and conflicts between individuals and groups were a natural process of evolution, much like the survival of the fittest in the animal kingdom. This ideology was used to justify the exploitation of the working class by the capitalist elite, who claimed that the poor were simply less fit to compete in the market. Meanwhile, critics of social Darwinism argued that it was a flawed theory that ignored the role of societal and environmental factors in shaping human development.</p> <p>Question:</p> <p>What implications does the application of social Darwinism have on the notion of "meritocracy," and how does it shape the way we perceive the relationship between individual effort and social inequality?</p> <p>Your answer:</p> <p>The application of social Darwinism partially supports the notion of "meritocracy" by suggesting that su</p> <p>Your Answer:</p> <p>The application of social Darwinism partially supports the notion of "meritocracy" by suggesting that success in society results from individual capability and competition, akin to the survival of the fittest. This perspective implies that those who succeed are inherently more deserving, while those who struggle are viewed as less capable. However, this interpretation overlooks the significant impact of societal and environmental factors on individual opportunities and outcomes. It risks reinforcing social inequalities by justifying the status quo, leading to the belief that people are solely responsible for their circumstances. In essence, while social Darwinism lends some credence to the idea of meritocracy, it fails to account for the complex realities of social inequality, thus shaping a skewed perception of the relationship between individual effort and success.</p> <p>Sample Correct Answer:</p> <p>Social Darwinism's emphasis on individual competition and struggle undermines the concept of meritocracy, as it suggests that social position is determined by inherent biological or natural differences, rather than by individual effort or achievement. This perspective perpetuates the idea that social inequality is a natural consequence of individual differences, rather than a result of systemic injustices or structural barriers.</p> <p>Explanation:</p> <p>The correct answer highlights the critical flaw in social Darwinism, which is its misuse of evolutionary principles to justify social and economic inequalities. By implying that the poor are naturally less fit, social Darwinism ignores the impact of societal and environmental factors on individual outcomes, effectively undermining the concept of meritocracy, which is based on the idea that success is earned through hard work and talent. Instead, social Darwinism perpetuates a narrative that social inequality is a natural consequence of individual differences, reinforcing existing power structures and justifying the exploitation of the working class.</p> <p>Evaluation:</p> <p>Here is the evaluation of the user's answer based on the provided rubric, context, and correct answer:</p> <p>Content Accuracy: 2/5 Feedback: The user partially corrects the idea that social Darwinism supports the notion of "meritocracy," but fails to accurately capture the core concept of social Darwinism. The correct answer emphasizes that social Darwinism undermines the concept of meritocracy by suggesting that social position is determined by inherent biological or natural differences, rather than by individual effort or achievement.</p> <p>Comprehension: 4/5 Feedback: The user demonstrates a good understanding of the passage, accurately identifying the flaws in social Darwinism's perspective on social inequality. They recognize that the ideology overlooks the impact of societal and environmental factors on individual opportunities and outcomes. However, they do not fully grasp the core idea that social Darwinism challenges the concept of meritocracy.</p> <p>Clarity of Expression: 4/5 Feedback: The user's writing is mostly clear and well-expressed, with minor issues. They effectively convey their ideas and provide relevant examples to support their arguments.</p> <p>Language Mechanics: 4/5 Feedback: The user's writing is mostly free of major errors in punctuation, grammar, and spelling, with only a few minor errors.</p> <p>Total Score: 16/20</p> <p>Overall Feedback: The user demonstrates a good understanding of the passage and effectively conveys their ideas. However, they fail to accurately capture the core concept of social Darwinism and its implications on the notion of "meritocracy." To improve, the user should focus on deeply understanding the central ideas of the passage and accurately conveying those ideas in their writing.</p>	<p>Context:</p> <p>The concept of "fake news" has become a ubiquitous phenomenon in today's digital landscape. In an attempt to combat the proliferation of misinformation, a team of researchers at a reputable university developed a sophisticated algorithm that flags potentially misleading articles based on their linguistic and semantic features. However, the algorithm's accuracy has been called into question by critics who argue that it may inadvertently perpetuate biases and reinforce existing power structures. Meanwhile, the proliferation of algorithms and AI-powered fact-checking tools has raised concerns about the potential erosion of critical thinking skills and the homogenization of information.</p> <p>Question:</p> <p>What is the main implication of the researchers' algorithm being accused of perpetuating biases, and how does it relate to the broader concern about the erosion of critical thinking skills?</p> <p>Your answer:</p> <p>The main implication of the researchers' algorithm being accused of perpetuating biases is that it could</p> <p>Your Answer:</p> <p>The main implication of the researchers' algorithm being accused of perpetuating biases is that it could reinforce existing societal prejudices and power imbalances, leading to unfair censorship or the disproportionate targeting of certain viewpoints. This concern is particularly relevant in the broader context of eroding critical thinking skills, as reliance on automated tools for information validation may discourage individuals from independently analyzing and evaluating sources. Consequently, the combination of biased algorithms and diminished critical thinking could create an environment where misinformation persists, and diverse perspectives are marginalized, ultimately undermining informed public discourse.</p> <p>Sample Correct Answer:</p> <p>The main implication is that the algorithm's biases may reinforce existing power structures, potentially perpetuating social inequalities and silencing marginalized voices.</p> <p>Explanation:</p> <p>The correct answer highlights the potential consequences of the algorithm's biases, which are not explicitly stated in the passage. The question requires the reader to analyze the context and infer the implications of the algorithm's biases on the broader social landscape. The correct answer also connects the dots between the algorithm's biases and the concern about the erosion of critical thinking skills, suggesting that the algorithm's reinforcement of biases may contribute to a lack of critical thinking and nuance in information consumption.</p> <p>Evaluation:</p> <p>Here is the evaluation of the user's answer:</p> <p>Content Accuracy: 4/5 Feedback: The user's answer is mostly correct, but it could be more precise. They accurately identify the main implication of the algorithm's biases and connect it to the broader concern about the erosion of critical thinking skills. However, they don't explicitly state that the algorithm's biases may perpetuate social inequalities and silence marginalized voices, which is the key point in the correct answer.</p> <p>Comprehension: 5/5 Feedback: The user demonstrates an excellent understanding of the passage, accurately interpreting the context and making relevant connections between the algorithm's biases and the erosion of critical thinking skills.</p> <p>Clarity of Expression: 4/5 Feedback: The user's writing is clear and well-structured, making it easy to follow their argument. However, some sentences could be tightened up for greater clarity, and there are a few minor issues with sentence structure.</p> <p>Language Mechanics: 4/5 Feedback: The user's writing is mostly free of errors, with only a few minor issues with punctuation, grammar, and spelling.</p> <p>Total Score: 17/20</p> <p>Overall Feedback: The user demonstrates strong comprehension and critical thinking skills, accurately identifying the main implication of the algorithm's biases and connecting it to the broader concern about the erosion of critical thinking skills. Their writing is clear and well-structured, with only minor issues with clarity and language mechanics. To improve, the user could work on precision in their answers, explicitly stating key points and avoiding minor errors in punctuation, grammar, and spelling.</p>

DIAGNOSTIC TEST SAMPLES

Context:

The debate about the impact of social media on mental health has been ongoing for years. While some argue that social media has a negative effect on mental health, others claim that it has a positive impact. A recent study published in the Journal of Social Psychology suggests that social media may have a paradoxical effect on mental health. The study found that individuals who use social media to compare themselves to others tend to experience increased feelings of anxiety and depression. However, the same study also found that individuals who use social media to connect with others and share their own experiences tend to experience increased feelings of social support and well-being.

Question:

What is the primary method by which social media influences mental health, according to the study, and what is the counterintuitive finding that challenges the conventional wisdom on this topic?

Your answer:

individuals who use social media to compare themselves to others tend to experience increased feeling

Your Answer:

individuals who use social media to compare themselves to others tend to experience increased feelings of anxiety and depression

Sample Correct Answer:

The primary method by which social media influences mental health is through comparison and connection. The study found that individuals who use social media to compare themselves to others tend to experience negative effects on their mental health, while those who use social media to connect with others and share their own experiences tend to experience positive effects.

Explanation:

The study reveals a paradoxical effect of social media on mental health, which is that the same platform that can lead to negative comparisons and feelings of inadequacy can also provide a sense of connection and community. The correct answer highlights the opposing ways in which social media can influence mental health, challenging the conventional wisdom that social media has only negative effects on mental well-being.

Evaluation:

Here is the evaluation of the user's answer based on the provided rubric, context, and correct answer:

Content Accuracy: 2/5 Feedback: The user has partially correct information, stating that individuals who use social media to compare themselves to others tend to experience increased feelings of anxiety and depression. However, they missed the counterintuitive finding that individuals who use social media to connect with others and share their own experiences tend to experience increased feelings of social support and well-being.

Comprehension: 3/5 Feedback: The user demonstrates a good understanding of the passage, recognizing the negative impact of social media on mental health when comparing oneself to others. However, they could have dug deeper to understand the full context of the study's findings.

Clarity of Expression: 4/5 Feedback: The user's answer is clear and concise, with no significant issues in expression.

Language Mechanics: 4/5 Feedback: The user's answer is well-written, with only minor errors in punctuation and grammar.

Total Score: 11/20

Overall Feedback: The user demonstrates a good understanding of the passage, but could benefit from reading more carefully to capture the full complexity of the study's findings. Their writing is clear and well-expressed, with only minor errors in language mechanics. To improve, the user should strive to provide more comprehensive answers that capture the nuances of the passage.

Context:

The intricate web of causality that underlies the dynamics of quantum mechanics has led some physicists to propose the notion of retrocausality, which posits that the effects of an event can influence the causes that gave rise to it. This concept is particularly intriguing in the context of the double-slit experiment, where the act of measurement itself appears to induce a non-local correlation between the particles being measured. Furthermore, the phenomenon of quantum entanglement has been observed to occur even when the particles are separated by vast distances, suggesting that the fabric of spacetime is woven from a complex tapestry of interconnected threads.

Question:

What is the phenomenon mentioned in the passage that is observed to occur even when the particles are separated by vast distances, suggesting that the fabric of spacetime is woven from a complex tapestry of interconnected threads?

Your answer:

retrocausality

Your Answer:

retrocausality

Sample Correct Answer:

Quantum entanglement

Explanation:

The correct answer is quantum entanglement.

Evaluation:

Here is the evaluation of the user's answer:

Content Accuracy: 0/5 Feedback: The user's answer, "retrocausality," is completely incorrect and irrelevant to the phenomenon mentioned in the passage. Retrocausality is a concept mentioned in the passage, but it is not the phenomenon observed to occur even when particles are separated by vast distances.

Comprehension: 1/5 Feedback: The user demonstrates a minimal understanding of the passage, but fails to identify the correct phenomenon. They seem to have some general knowledge of the concepts discussed in the passage, but lack the specific understanding to identify the correct answer.

Clarity of Expression: 5/5 Feedback: The user's answer, "retrocausality," is clear and concise, and does not contain any grammatical or spelling errors.

Language Mechanics: 5/5 Feedback: The user's answer is free of punctuation, grammar, and spelling errors.

Total Score: 11/20

Overall Feedback: The user demonstrates some understanding of the passage, but struggles to identify the correct phenomenon. They should focus on reading more carefully and paying attention to specific details in the passage. While their language skills are strong, they should prioritize accuracy over clarity and language mechanics.

WORD OF THE DAY FEATURE

Word of the day

Word: Perspicacious

Meaning: Having a keen understanding and insight; able to notice and understand things that are not immediately apparent.

Usage: The detective was perspicacious and quickly spotted the inconsistencies in the witness's story, which led to a breakthrough in the case.

Word of the day ↗

Word: Fastidious

Meaning: Meticulous and demanding in one's standards; having a strong attention to detail.

Usage: The chef was fastidious about the presentation of his dishes, ensuring that every garnish was perfectly placed and every plate was spotless.

Idiom of the day

Idiom: Burn the midnight oil

Meaning: To work late into the night, often to meet a deadline or complete a task.

Usage: She's been burning the midnight oil for weeks to finish her thesis on time.

Idiom of the day

Idiom: Cut to the chase

Meaning: To get to the point or the most important part of a conversation

Usage: "Can we cut to the chase and discuss the terms of the deal, please?"

Word of the day ↗

Word: Ennui

Meaning: A feeling of listlessness and boredom

Usage: After a few months of doing the same job, he began to feel ennui and started looking for a change.

Word of the day

Word: Bazaar

Meaning: A market or shopping area with many stalls or shops selling a variety of goods.

Usage: The tourists got lost in the crowded bazaar, searching for a unique souvenir to take back home.

Idiom of the day

Idiom: Beat around the bush

Meaning: To avoid talking directly or plainly about something; to be evasive or indirect

Usage: The manager was beating around the bush when I asked him about the company's financial troubles, but I finally got the straight answer from the CFO.

Idiom of the day

Idiom: Bite the bullet

Meaning: To accept a difficult or unpleasant situation and do what needs to be done.

Usage: After much hesitation, John decided to bite the bullet and ask for a raise at his job.

WORD OF THE DAY FEATURE

Word of the day

Word: Café

Meaning: a small restaurant or coffee shop

Usage: I love going to the café with my friends on Saturday mornings.

Idiom of the day

Idiom: Rain on someone's parade

Meaning: To ruin or spoil someone's plans or happiness

Usage: The traffic jam on the way to the wedding was a real downer and rain on the couple's parade.

Word of the day

Word: Rucksack

Meaning: a bag with two straps that you wear on your back

Usage: I packed my rucksack with water, snacks, and a map for the hike.

Idiom of the day

Idiom: Bats in the belfry

Meaning: To have a screw loose or to be a little crazy

Usage: Her idea of a new marketing strategy was a bit far-fetched, and some people thought she must have bats in the belfry.

Word of the day

Word: Spaghetti

Meaning: A type of long, thin pasta

Usage: I love eating spaghetti with meatballs on Fridays.

Idiom of the day

Idiom: On the same page

Meaning: To have the same understanding, goals, or intentions as someone else

Usage: After discussing their project plan, the team leader felt they were finally on the same page and could start implementing it.

Word of the day

Word: Fjord

Meaning: A long, narrow inlet of the sea between high cliffs

Usage: The tour boat sailed through the stunning fjord, surrounded by towering mountains and waterfalls.

Idiom of the day

Idiom: Break a leg

Meaning: Good luck

Usage: The actor took a deep breath and stepped onto the stage, hoping to break a leg and receive a standing ovation.

WORD OF THE DAY FEATURE

Word of the day

Word: Tintinnabulation

Meaning: A ringing or tinkling sound, especially of a bell.

Usage: The tintinnabulation of the wind chimes in the garden was soothing to the ears.

Idiom of the day

Idiom: To cry over spilt milk

Meaning: It is pointless to waste time feeling sorry for something that has already happened and cannot be changed.

Usage: The company's decision to cut costs had been made long ago, so it's pointless to cry over spilt milk and start calling for resignations now.

Word of the day

Word: Lissome

Meaning: (adjective) slender, flexible, and agile, often used to describe a person's body or movements

Usage: The lissome dancer glided effortlessly across the stage, her movements so fluid and graceful that the audience was mesmerized.

Idiom of the day

Idiom: The writing is on the wall

Meaning: It is clear what will happen or has happened, and it is impossible to ignore or deny it

Usage: The company's financial struggles were evident, and the writing was on the wall - it was only a matter of time before they went bankrupt.

Word Practice Evaluation

Word Practice

What does the word Perspicacious mean? Please provide its meaning and use it in a sentence.

User answer: - astute

Meaning:

astute

Evaluate Word Meaning

[View Feedback](#)

Accuracy: - The answer is partially accurate. While "astute" does share some similarities with "perspicacious", it doesn't fully capture the meaning of the word. "Astute" typically means having a keen understanding and being clever, whereas "perspicacious" specifically refers to having a keen understanding and being perceptive, often to the point of being able to notice subtle details.

Clarity: - The answer is clear and concise, making it easy to understand. However, it doesn't provide a precise definition or explanation of the word.

Completeness: - The answer only provides a general sense of the word's meaning, without delving deeper into its connotations, synonyms, or antonyms.

Overall Assessment: The user has demonstrated some understanding of the word "perspicacious", but could benefit from a more nuanced and detailed definition.

Score: 6/10

User answer: - The point is elaborated by the perspicacious professor a little later

Sentence:

The point is elaborated by the perspicacious professor a little later

Evaluate Word Sentence

[View Feedback](#)

Accuracy: - The user has correctly used the word "perspicacious" in a sentence. The word is used to describe a professor, which is a suitable context. However, the sentence could be more nuanced to fully showcase the professor's perspicacious nature.

Clarity: - The sentence is clear and easy to understand. The structure is simple and the vocabulary is straightforward. However, the sentence could be more engaging and interesting to read.

Completeness: - The sentence provides a good starting point, but it could be more detailed to fully convey the professor's perspicacious nature. For example, the sentence could explain how the professor's perspicaciousness is relevant to the topic or how it helps to elaborate the point.

Overall Assessment: The user has demonstrated a good understanding of the word "perspicacious" and has used it correctly in a sentence. However, the sentence could be more engaging and detailed to fully showcase the professor's perspicacious nature.

Score: 7.5/10

Word Practice Evaluation

Idiom Practice

What does the idiom Bite the bullet mean? Please provide its meaning and use it in a sentence.

User answer: - to end in failure

Meaning:

to end in failure

Evaluate Idiom Meaning

View Feedback

Accuracy: - The answer is partially accurate. The idiom "Bite the bullet" does not literally mean "to end in failure". Instead, it means to endure a difficult or unpleasant situation with courage or determination.

 **Clarity:** - The answer is clear and concise, but it does not accurately convey the meaning of the idiom, which may confuse the reader.

 **Completeness:** - The answer is incomplete because it does not provide any context or explanation for the idiom, which may leave the reader wondering what the phrase means and how it is used in everyday language.

Overall Assessment: The answer needs improvement to accurately convey the meaning of the idiom. The user should provide a more detailed and accurate explanation, including the historical context and common usage of the phrase.

Score: 4/10

User answer: - His career bit the dust when he lost his job.

Sentence:

His career bit the bullet when he lost his job.

Evaluate Idiom Sentence

View Feedback

Accuracy: - The user has attempted to use the idiom "Bite the bullet" correctly, but unfortunately, they have not applied it accurately. The idiom typically means to accept a difficult or unpleasant situation with courage or determination, rather than to cause harm or damage to something. In this case, the career is not "biting the bullet", but rather, the user is saying that the career came to an end when the person lost their job.

 **Clarity:** - The sentence is clear in its meaning, but it may be a bit confusing for some readers, as the idiom is not used correctly. A more accurate sentence might help to dispel any confusion.

 **Completeness:** - The sentence covers the main point of the task, which is to use the idiom "Bite the bullet" in a sentence. However, it would be more complete if the user had provided a clearer explanation of how they used the idiom and what it means.

Overall Assessment: The user has made a good effort to use the idiom, but would benefit from a deeper understanding of its meaning and correct application.

Score: 6/10

Word Practice Evaluation

Word Practice

What does the word Lissome mean? Please provide its meaning and use it in a sentence.

User answer: - (of a person or their body) thin, supple, and graceful.

Meaning:

(of a person or their body) thin, supple, and graceful.

Evaluate Word Meaning

View Feedback

Accuracy: - The answer is mostly accurate. The word "Lissome" indeed refers to something that is thin, flexible, and graceful, but it can also apply to things other than a person's body, such as a lissome branch or a lissome thread.

Clarity: - The answer is clear and easy to understand. The definition is concise and effectively conveys the meaning of the word.

Completeness: - The answer is mostly complete. It covers the main aspects of the word's meaning, but it could be more comprehensive by including more examples or nuances of the word's usage.

Overall Assessment: The answer is a good start, but it could be improved by providing more context and examples to demonstrate a deeper understanding of the word.

Score: 7/10

User answer: - the kind of outfit that should be left to lissom teenagers

Sentence:

the kind of outfit that should be left to lissom teenagers

Evaluate Word Sentence

View Feedback

Accuracy: - The user has attempted to use the word "lissome" correctly, but it's not entirely accurate. "Lissome" refers to something that is slender, agile, or supple, whereas the user has used it to describe an outfit. A more accurate sentence would be: "She wore a lissome dress that accentuated her slender figure."

Clarity: - The sentence is somewhat unclear because it doesn't provide context or explanation for why this outfit should be left to "lissom teenagers". The reader is left wondering what characteristics or traits make these teenagers suitable for wearing this outfit.

Completeness: - The sentence lacks completeness because it doesn't provide enough context or information about the outfit or the teenagers. It's a bare statement that doesn't convey much meaning or significance.

Overall Assessment: The user has made an effort to use the word "lissome", but the sentence is unclear and incomplete. To improve, the user could provide more context or explanation for their statement, and use the word "lissome" more accurately to describe something that is slender or agile.

Score: 4/10

Word Practice Evaluation

Idiom Practice

What does the idiom The calm before the storm mean? Please provide its meaning and use it in a sentence.

User answer: - a period of unusual tranquillity or stability that seems likely to presage difficult times.

Meaning:

a period of unusual tranquillity or stability that seems likely to presage difficult times.

Evaluate Idiom Meaning

View Feedback

Accuracy: - The user's answer is mostly accurate. The idiom "The calm before the storm" indeed refers to a period of calmness or tranquillity that precedes a period of turmoil, chaos, or difficulty. However, the word "unusual" is not entirely necessary, as the calm can be a normal period before the storm, not necessarily unusual.

Clarity: - The answer is clear and easy to understand. The user has used simple language to convey the meaning of the idiom, making it accessible to a wide range of readers.

Completeness: - The answer covers the main aspect of the idiom, which is the idea that the calm period precedes a difficult or turbulent one. However, it could be more comprehensive by including some examples or explanations of why this idiom is used in everyday language.

Overall Assessment: The user's answer provides a good understanding of the idiom, but could be expanded to include more context and examples to make it more comprehensive.

Score: 8/10

User answer: - I like to get everything done before the guests arrive and relax for a moment in the calm before the storm

Sentence:

I like to get everything done before the guests arrive and relax for a moment in the calm before the storm

Evaluate Idiom Sentence

View Feedback

Accuracy: - The user has accurately used the idiom "The calm before the storm" in the sentence, which is a significant achievement! The idiom is correctly applied to describe a moment of tranquility before a period of chaos or activity.

Clarity: - The sentence is clear and easy to understand. The user's intent is transparent, and the meaning is conveyed effectively. The sentence is concise and to the point.

Completeness: - The sentence provides enough context to understand the situation. The user has successfully linked the idiom to a relatable scenario, making it easier for the reader to grasp the intended meaning. However, it could be slightly more effective if the user had provided a bit more information about the situation or the guests.

Overall Assessment: The user has demonstrated a good understanding of the idiom and has successfully incorporated it into a sentence. The sentence is clear, and the user's intent is well-conveyed. To take it to the next level, the user could consider providing more context or details to make the sentence more engaging and vivid.

Score: 8.5/10

Word Practice Evaluation

Word Practice

What does the word Tintinnabulation mean? Please provide its meaning and use it in a sentence.

User answer: - the ringing or sounding of bells

Meaning:

the ringing or sounding of bells

Evaluate Word Meaning

View Feedback

Accuracy: - The user's answer is partially accurate. The definition provided does relate to the word "tintinnabulation", but it only captures a part of the word's meaning. "Tintinnabulation" specifically refers to the ringing or sounding of a bell, often in a soft and gentle manner.

Clarity: - The user's answer is clear and easy to understand. The definition is concise and straightforward, making it accessible to a wide range of readers.

Completeness: - The user's answer is somewhat incomplete. It does not fully capture the nuances and connotations of the word "tintinnabulation". For example, the word often evokes a sense of nostalgia, melancholy, or longing, which is not explicitly mentioned in the user's answer.

Overall Assessment: The user's answer provides a good foundation for understanding the word "tintinnabulation", but could benefit from further clarification and elaboration to capture the full range of meanings and connotations.

Score: 7.5/10

User answer: - I don't know

Sentence:

I dont know

Evaluate Word Sentence

View Feedback

Accuracy: - The answer lacks accuracy as it does not attempt to use the word 'Tintinnabulation' in a sentence, which is the task requirement.

Clarity: - The answer is clear in its simplicity, but it does not convey any meaningful information.

Completeness: - The answer does not cover any necessary aspects as it does not provide any information related to the task.

Overall Assessment: The answer shows a lack of attempt to tackle the task, and it does not demonstrate any understanding of the word 'Tintinnabulation'. It would be beneficial for the user to try again and use the word in a sentence.

Score: 2/10

Word Practice Evaluation

Idiom Practice

What does the idiom Cut to the chase mean? Please provide its meaning and use it in a sentence.

User answer: - Get to the point

Meaning:

Get to the point

Evaluate Idiom Meaning

[View Feedback](#)

Accuracy: - The answer is partially accurate. The idiom "Cut to the chase" does involve getting to the point, but it's not the entire meaning.

 **Clarity:** - The answer is clear, but it's missing some context. It's easy to understand what the user means by "Get to the point", but readers might not understand the idiom's specific nuances.

 **Completeness:** - The answer is missing some necessary context. The user doesn't explain the origin or common usage of the idiom, which would be helpful for readers.

Overall Assessment: The user's answer is close, but it doesn't quite capture the full meaning of the idiom. A bit more context and detail would make the answer more comprehensive and helpful for readers.

Score: 6/10

User answer: - I didn't have long to talk so I cut to the chase and asked whether he was still married

Sentence:

I didn't have long to talk so I cut to the chase and asked whether he wa:

[Evaluate Idiom Sentence](#)

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Accuracy: - The user has correctly used the idiom "cut to the chase" in a sentence. The phrase is used to mean getting to the point or ignoring unnecessary details, which is a common idiomatic expression in English. However, it's worth noting that the sentence could be a bit more precise in its context. The idiom is often used to convey a sense of urgency or impatience, but in this sentence, the phrase is used more as a casual way to introduce the question.

 **Clarity:** - The sentence is clear in its meaning, and the user has effectively conveyed the idea of getting to the point quickly. The language is simple and easy to understand.

 **Completeness:** - The sentence provides enough context to understand the situation, but it could benefit from a bit more detail. For example, what was the conversation about before the user "cut to the chase"? What was the response to the question? Adding a bit more context would make the sentence more engaging and complete.

Overall Assessment: The user has shown a good understanding of the idiom "cut to the chase" and has used it effectively in a sentence. With a bit more attention to context and detail, the sentence could be even stronger.

Score: 8/10

Word Practice Evaluation

Word Practice

What does the word Deleterious mean? Please provide its meaning and use it in a sentence.

User answer: - to destroy

Meaning:

to destroy

Evaluate Word Meaning

View Feedback

Accuracy: - The answer "to destroy" is partially accurate. While "deleterious" can indeed imply the destruction or harm of something, it is not the most precise definition. A more accurate definition would be "causing harm or damage" or "being harmful or detrimental".

Clarity: - The answer is clear and concise, but it could be improved by providing a more detailed explanation of what the word means.

Completeness: - The answer only provides a rough idea of what the word means and does not fully capture its connotations and nuances.

Overall Assessment: The answer is a good start, but it could be improved by providing a more precise and detailed definition.

Score: 6/10

User answer: - divorce is assumed to have deleterious effects on children

Sentence:

divorce is assumed to have deleterious effects on children

Evaluate Word Sentence

View Feedback

Accuracy: - The answer is generally accurate. The word "deleterious" is used correctly to describe the assumed effects of divorce on children. However, it would be even more accurate to specify what these effects are, such as emotional distress or lower academic performance.

Clarity: - The answer is clear and concise. The sentence is easy to understand, and the word "deleterious" is used in a straightforward way.

Completeness: - The answer is partially complete. It mentions the assumption that divorce has deleterious effects on children, but it does not provide any evidence or further explanation to support this claim.

Overall Assessment: This answer is a good start, but it could be improved by providing more specific and detailed information about the assumed effects of divorce on children.

Score: 7/10

Word Practice Evaluation

Idiom Practice

What does the idiom Rain on someone's parade mean? Please provide its meaning and use it in a sentence.

User answer: - 0

Meaning:

0

Evaluate Idiom Meaning

[View Feedback](#)

Accuracy: - The answer is completely inaccurate. The idiom "Rain on someone's parade" does not equal 0. The correct definition of the idiom is to spoil or ruin an event or a person's plans, usually in a way that is unexpected or unwanted.

Clarity: - The answer lacks clarity because it is a random number without any explanation or context. A clear answer would provide a concise and understandable definition of the idiom.

Completeness: - The answer is incomplete because it does not provide any information about the idiom's meaning, origin, or usage. A complete answer would cover all necessary aspects of the idiom.

Overall Assessment: The answer is not an attempt to provide a definition of the idiom, but rather a random number. To provide a good answer, the user should provide a clear and concise definition of the idiom, along with any relevant information about its origin and usage.

Score: 0/10

User answer: - to ruin somones day

Sentence:

to ruin somones day

Evaluate Idiom Sentence

[View Feedback](#)

Accuracy: - The idiom "Rain on someone's parade" is not accurately used in this sentence. The correct meaning of the idiom is to spoil or ruin someone's plans or event, not just ruin their day. The user's answer is close, but not precise.

Clarity: - The sentence is clear in its meaning, but the user's use of the idiom is not accurate, which makes the sentence less effective.

Completeness: - The sentence does not provide additional context or details about the situation, but it doesn't need to because the idiom is the main focus.

Overall Assessment: The user is close to using the idiom correctly, but needs to work on understanding its exact meaning and application.

Score: 6/10