

MUET Mind Forge

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ABSTRACT

This innovation proposes the MUET MindForge as an AI-driven tool designed to enhance Malaysian University English Test (MUET) candidates' critical thinking skills for the MUET Writing Paper Task 2: Extended Essay. Traditional essay writing support often focuses on grammar and structure, leaving students to struggle with generating novel, high-quality ideas and logical arguments. This project leverages Google's Gemini large language model not as a content generator, but as an intellectual sparring partner. The system prompts students with questions and provides frameworks to help them brainstorm, refine, and connect their thoughts. The MUET MindForge guides students from a general topic to a detailed, well-structured essay outline. It enables them to explore multiple perspectives, identify potential counter-arguments, and build a cohesive logical flow. The tool helps students learn to think like critical writers, moving beyond simple factual recall to producing original insights. By transforming the AI from an answer machine into a collaborative coach, this innovation aims to empower MUET candidates to develop the analytical skills necessary to achieve a minimum Band 4 in their overall score, academic success and lifelong learning. The implementation of this platform promises to revolutionize how students approach the most challenging part of the MUET writing paper, improving both their scores and their cognitive abilities.

Keywords: MUET Essay Writing, Critical Thinking, Google Gemini.

INTRODUCTION

The Malaysian University English Test (MUET) is a crucial prerequisite for tertiary education in Malaysia, and its Extended Writing paper (800/4) is a significant component. This section assesses a candidate's ability to articulate, structure, and support complex ideas, moving beyond basic comprehension and grammar. However, many students face a common and fundamental challenge: a lack of critical thinking skills needed to generate original and insightful ideas. They often rely on generic, formulaic responses or struggle to develop a logical flow of arguments. Current educational tools and teaching methodologies primarily focus on the mechanics of writing, such as syntax and paragraph structure, but provide insufficient support for the ideation process itself (Ramamuthie & Aziz, 2022). This gap leaves students underprepared to tackle the higher-order thinking demands of the MUET essay, hindering their potential scores and, more importantly, their development as critical thinkers. The problem is a lack of accessible and effective tools that can act as a catalyst for critical idea generation, empowering students to move from rote memorization to genuine intellectual creation.

This project introduces MUET MindForge, an AI-powered platform designed to strengthen the critical thinking and idea-generation skills of MUET candidates (Creely, 2024). Success in MUET writing requires more than linguistic accuracy; it demands the ability to generate relevant ideas, evaluate perspectives, and organise arguments effectively. MUET MindForge addresses this need by offering a user-friendly interface where students can input essay questions and engage in guided brainstorming. Instead of producing ready-made answers, the platform harnesses the Gemini model to present arguments, counterarguments, and examples as scaffolds for students to build upon. This approach keeps learners actively engaged, pushing them to refine raw ideas through targeted prompts that encourage deeper reasoning and sharper insights.

Beyond idea generation, the system supports students in transforming brainstormed content into structured essay outlines, ensuring logical flow and persuasive impact. By combining AI innovation with pedagogy, MUET MindForge aims to provide a practical, scalable solution that empowers candidates to approach MUET writing with confidence and critical awareness.

METHODOLOGY

MUET MindForge was developed as a prompt designed to scaffold students' idea-generation processes through guided inquiry. The methodology integrates AI-driven prompting with pedagogical principles of Socratic questioning, ensuring that learners remain active participants in constructing their own arguments. The process begins when a student inputs a MUET essay prompt into the system. The platform then activates a sequence of modules that collectively support critical thinking and structured ideation.

The **Topic Analysis Module** employs the Gemini model to dissect the prompt, highlighting key themes, subtopics, and implicit assumptions. Building on this, the **Guided Brainstorming Engine** poses reflective questions such as "What are three perspectives on this issue?" or "What are the possible societal impacts?" rather than offering pre-written responses. The **Argument Development Tool** then enables students to expand selected ideas by considering evidence, examples, and logical coherence. Finally, the **Outline Builder** provides a drag-and-drop interface for arranging refined ideas into a standard essay framework, ensuring clarity and flow.

The methodology is iterative and student-centred, with the AI serving as a facilitator rather than a content provider. This design not only enhances ideation but also strengthens learners' independence and critical awareness in essay writing.

RESULTS AND DISCUSSION

The primary potential finding is a measurable improvement in the quality and originality of ideas generated by students using the platform compared to a control group. We anticipate that students will produce more complex, well-supported, and coherent essays. This would validate the platform's effectiveness in enhancing critical thinking skills. MUET MindForge utilises the platform's core components which includes Topic Analysis Module, Guided Brainstorming Engine, Argument Development Tool and finally Outline builder suitable for students or registered MUET candidates.

Topic Analysis Module

Gemini Ai is used to dissect the essay question, identify key themes, potential subtopics and underlying current issue which would be of help to comprehend the given title in depth. For a MUET Writing paper, one of the main qualities in achieving a Band 4 starts with a good grasp on the title presented. Candidates often encounter a common challenge when attempting to comprehend a title in greater depth. This is due to the fact that candidates are at lost in a title which seems alien. This soon results in a domino effect of difficulty in moving forward in generating ideas and attaining appropriate vocabularies (Parnabas et al., 2022). Hence, Topic Analysis Module is prompt to assist candidates achieve some level of in-depth comprehension on the title given. This is to ensure that candidates are able to attempt the task with information at par to a tertiary level.

Guided Brainstorming Engine

The second stage of this prompt is to ensure that candidates are guided through the formulation of ideas which would be generated for content. Parnabas et al. (2022), highlights candidates often face difficulties in developing coherent arguments and clear thesis statements, which are crucial for high scores in the extended essay section. While Razali et al. (2023), states the solution to overcome this difficulty is for candidates for develop a string of Wh-question in relation to the title and information gained through the first stage which is Topic Analysis Module. By in cooperating Wh-questions on Gemini it prompts the system to generate a guided brainstorming engine which serves as a tutor who leads candidates to develop and expand their thoughts in a

systematically. This done in a regular basis will also help shape a candidate's thinking process suitable for MUET Writing

Extended Essay.

The Argument Development Tool.

Karnine et al. (2022) discovered that candidates often struggle with insufficient knowledge and insufficient vocabularies which lead to the hurdle in expressing ideas coherently and cohesively. Candidates also struggled with the words and structure of the extended essay. Argumentative structure the most common structure often championed among educators when dealing with the MUET Writing Extended Essay question paper. In order to progress in the band descriptor a candidate is required to formulate ideas which are critical and justified. This is something that candidates who are not familiar with may struggle to cope. Hence, the Argument Development Tool serves as bridge to help close the gap experienced by candidates who struggles with constructing critical and justified ideas, expansions and examples. This prompt will assist candidates with the raw idea fed into Gemini. Gemini will work hand in hand with the candidate to formula the raw idea into a band 4 quality by helping students think about the evidence given, examples required and the logical connections between the ideas given. With the help of Ai, students are placed on a specific path to look for information. By doing so, candidates are able to identify the areas which requires improvements.

Outline Builder

The final stage of the prompt is designed to help students arrange and refined ideas in a standard 5 paragraph essay structure. This stage assists students in achieving clarity in idea delivery, accuracy in word choices and effective use of transition signals. It is understood that most students who struggle with proficiency are unable to formulate compound and complex structure effectively. In the struggle of doing so, at times it often compromises the meaning. Hence, this prompt will allow students to work hand in hand with Ai as a guide, to achieve a step-by-step practise in formulating compound or complex sentences with clarity and apt vocabularies. With this done on a regular basis, students or registered MUET candidates are able to exercise the language without the fear of being judge or ridiculed by peers or the public.

Commercialisation

For commercialisation, the platform can be offered on a subscription model to individual students, schools, and tutoring centres (Creely, 2024). A tiered pricing structure could include a basic plan for individual users and an institutional plan with analytics for teachers to monitor student progress. The product could also be licensed to publishers of MUET reference books or integrated into existing educational platforms. Its market appeal is strong, given the high demand for effective MUET preparation tools and the growing interest in leveraging AI for educational purposes.

The novelty of the MUET MindForge lies in its unique pedagogical approach. Unlike existing AI tools that are often misused for content generation, this platform re-engineers the AI's function from a producer to a facilitator. It shifts the focus from "what to write" to "how to think," fostering genuine intellectual growth. This approach addresses the root cause of poor essay performance and aligns with the educational goal of developing lifelong learners.

Further development could include a feature for peer review within the platform, allowing students to give and receive feedback on their outlines. The tool could also be adapted for other forms of academic writing beyond the MUET, such as university-level essays and research papers, expanding its market potential and educational impact.

LIMITATION

The use of AI tool in isolation with minimal human facilitation presents notable limitations which at times can hinder the effectiveness of language learning. Learners often face issues such as repetitive or overly simplistic

outputs, which restrict exposure to advanced vocabulary and complex language structures. Additionally, lengthy and non-concise responses demand excessive cognitive effort, overwhelming learners' attention and memory capacity. The lack of clear source verification also creates uncertainty about information accuracy, reducing learner confidence and autonomy. Without teacher mediation, students may struggle to discern reliable content or to contextualize AI-generated feedback meaningfully. Furthermore, inconsistencies between user expectations and AI capabilities—such as difficulty understanding question formats—can cause frustration and disengagement. Repetitive information patterns also narrow learners' perspectives, limiting critical thinking and creativity. These challenges highlight that while AI can support learning, it cannot independently provide the nuanced guidance, validation, and adaptability that human educators offer (Alnasib & Alharbi, 2024). Therefore, AI tools should function as complementary aids within a guided learning environment, ensuring students benefit from both technological efficiency and human insight to achieve a more balanced and effective educational experience.

CONCLUSION

MUET MindForge marks a significant innovation in combining artificial intelligence with pedagogy to enhance critical thinking and essay-writing preparation. Its design emphasizes guided inquiry and Socratic questioning, encouraging students to actively construct arguments rather than passively consume ready-made answers. This shift positions the platform not just as a study tool but also as a classroom teaching aid. Teachers can incorporate MUET MindForge into lesson delivery, using its modules to spark guided brainstorming sessions, promote collaborative discussions, and support students in refining their arguments. In doing so, the platform extends beyond individual practice to foster a shared learning experience that strengthens collective reasoning skills.

Equally important, MUET MindForge helps reframe students' understanding of AI. By functioning as a sparring partner in their learning journey, it challenges the common perception of AI as merely an answer generator. Instead, it demonstrates how technology can be harnessed to stimulate deeper thought, generate multiple perspectives, and scaffold the development of coherent, persuasive essays. The platform thus positions AI as a facilitator of independence, confidence, and critical awareness. Looking ahead, validating its effectiveness will not only benefit MUET candidates but also open pathways for adapting the platform to other academic writing contexts, making it a scalable solution for education.

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