

AI-Driven Dynamic Comic Generation for Financial Literacy: Conceptualization and Prototypical Implementation

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Abstract- This paper presents the conceptualization and prototypical implementation of an AI-driven system designed for the dynamic generation of educational comics to enhance financial literacy. Recognizing that financial topics like compound interest, inflation, or debt management are often perceived as abstract and inaccessible, the author leverages Artificial Intelligence to transform complex information into engaging, visual narratives. The core of the research is a generative-evaluative AI pipeline. While initial concepts considered template-based approaches, these were rejected due to limited content coverage and the inability to achieve full end-to-end automation. Instead, this work utilizes advanced Large Language Models (LLMs) and AI image generation APIs to create a system that can process free-form user input and produce a complete, structured comic page. The AI Pipeline and Architecture: The system follows a modular architecture that separates user interaction, backend logic, and AI-supported generation. The process is orchestrated through four main stages:

- **AI Story Generation & Validation:** The backend uses an AI model to generate a cohesive story from the user's prompt, automatically structuring it into nine distinct segments to ensure a clear narrative thread. A second AI instance then validates this story to ensure it meets the user's educational goals.
- **AI-Based Panel Creation:** Each story segment is transformed into a specific image prompt. To maintain visual consistency and reduce "hallucinations" or fragmented results, the system employs a minimalist style.
- **Automated AI Evaluation:** A central feature of the pipeline is the automated quality control. Every generated image is analyzed by an AI evaluator (using vision capabilities) to check if the visual content accurately represents the text segment. If the AI detects a discrepancy, the specific panel is regenerated.
- **Deterministic Assembly:** Once all panels are accepted, the system assembles them into a standardized 3x3 layout on an A4 page.

Findings and Performance: The evaluation shows that the AI-based approach provides a pragmatic solution for controlled content creation. A full generation cycle typically takes between 260 and 290 seconds, with the majority of the time and cost (approx. € 0.60 per comic) attributed to the image generation APIs. Although the sequential nature of the current pipeline impacts runtime, the study demonstrates that **Generative AI** can be effectively harnessed to create low-threshold educational materials through a structured, multi-stage verification process.

Keywords: Generative AI, Automated Comic Generation, Generative-Evaluative Pipeline, AI Storytelling, Prompt Engineering.