



GASAC: A GAMIFIED WEB APPLICATION TO ENHANCE FOUNDATIONAL ACCOUNTING LEARNING FOR BEGINNERS

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ABSTRACT

Gegirl Akuntan developed the Gegirl Akuntan Smart Accounting Companion (GASAC), a gamified web-based learning tool that transforms complex journal entry rules into a simple, interactive, and enjoyable learning experience for beginners. GASAC offers a multimodal “Accounting Battle” in both solo and multiplayer modes, allowing students to easily participate by scanning a QR code or entering a room ID via Wi-Fi or mobile data. Each question includes clear explanations to support conceptual understanding and encourage collaborative learning. Through GASAC, Gegirl Akuntan aims to transform foundational accounting education into a more interactive and inclusive experience that meets the needs of today’s digital learning environment.

KEYWORDS: Accounting innovation, digital innovation, GASAC, gamification, interactive learning, journal entries

PROBLEM AND OBJECTIVE

Students without a prior accounting background frequently struggle with foundational concepts, particularly the rules of debits and credits. Traditional approaches, which rely on passive textbook reading, often fail to engage students or provide the immediate, real-time feedback necessary to correct conceptual misunderstandings (Maryono et al., 2022). This creates a barrier to entry for beginners, leading to low confidence and a lack of interest in the subject.

The primary objective of this project is to simplify the learning of complex journal entry rules through a **gamified, web-based platform**. By transforming abstract principles into an interactive experience, GASAC aims to

1. To identify challenges faced by beginner accounting students with no prior background in understanding foundational concepts (debit & credit).
2. To evaluate the effectiveness of GASAC in improving students’ understanding and application of basic accounting principles through structured workshops and surveys.
3. To promote inclusive and accessible education in alignment with SDG 4: Quality Education and SDG 9: Industry, Innovation & Infrastructure.
4. To develop an application that transforms journal entry rules into an interactive and enjoyable learning experience for beginner accounting students.
5. To assess the impact of GASAC on students’ confidence in handling debit and credit concepts



after engaging with the platform.

DESIGN DESCRIPTION

Gegirl Akuntan Smart Accounting Companion (GASAC) is a multimodal, web-based platform designed for beginners that features a unique "Accounting Battle" system. This functionality allows users to compete in solo or multiplayer modes by joining via a QR code or a Room ID, making it highly accessible over Wi-Fi or mobile data. The core interface transforms complex journal entry drills into a fast-paced game where every answer is paired with a clear, instant explanation to reinforce understanding and encourage peer-to-peer learning (Bitrián et al., 2021).

The unique selling point of this design is its data-driven effectiveness and scalability; it moves beyond simple quiz apps by providing a structured workshop-proven curriculum that resulted in a 71.4% improvement in student comprehension. By integrating digital innovation with the principles of Sustainable Development Goals (SDGs) 4 (Quality Education) and 9 (Industry, Innovation, and Infrastructure), GASAC offers a portable, high-engagement solution that bridges the gap between traditional theory and practical application for the modern digital learner.

VISUALS

GASAC is a web-based ecosystem that replaces passive learning with competitive "Accounting Battles," driving a 71.4% improvement in student comprehension (Maryono et al., 2022). Based on **Figure 1**, the platform first greets users with a clean, simple homepage, making it immediately welcoming, even for students who have never studied accounting. This keeps the experience straightforward and distraction-free. By prioritizing user engagement and accessible design, the platform democratizes financial literacy through a scalable Freemium B2B/B2C model (Bitrián et al., 2021; Prasad, 2021). This innovative solution aligns with SDGs 4 and 9, providing high-quality, sustainable digital education globally (Novo et al., 2024). In **Figure 2**, GASAC also provides simple questions with real-world transaction scenarios to test students' understanding of debit and credit concepts, while simultaneously stimulating practical accounting decision-making in an engaging, time-pressured environment.

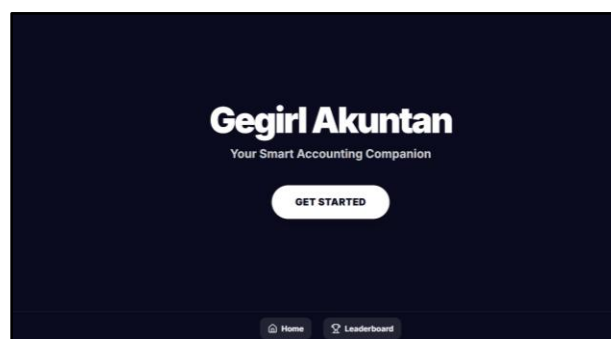


Figure 1: GASAC App Interface

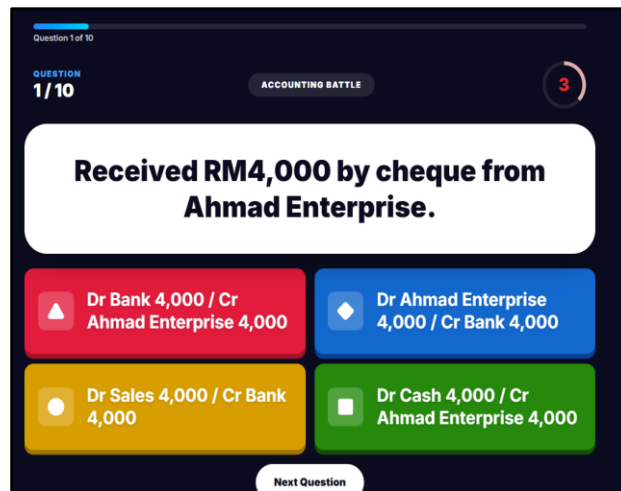


Figure 2: GASAC App Sample Question

NOVELTY AND UNIQUENESS

GASAC distinguishes itself from traditional Learning Management Systems (LMS) by moving away from linear, text-heavy modules and toward a **high-interaction "battle" ecosystem**. Existing solutions view accounting software as a tool for professionals, but GASAC is designed as an educational bridge for those with no background. The innovation is that it uses QR codes to connect with other players in real time, so it can instantly sync in a classroom or remotely, without requiring high-end hardware. It also replaces the anxiety of “getting it wrong” with the dopamine-fueled engagement of a game (Bitrián et al., 2021; Prasad, 2021) by pairing competitive mechanics with instant, in-depth explanations for every mistake.

BENEFITS TO MANKIND

GASAC promotes financial literacy by making the complex "language of business" accessible to students from all socio-economic backgrounds. It also supports Sustainable Development Goal 4 (Quality Education) by bridging the educational gap for non-accounting students who often feel isolated from financial discourse (Novo et al., 2024). This tool improves learners' quality of life by reducing academic stress and increasing career readiness. In a global economy, providing a scalable and free-to-access digital tool ensures that foundational financial knowledge is a right, not a privilege, empowering the next generation of entrepreneurs and professionals.

Based on **Figure 3**, most respondents rated above 4 and 5. The majority (71.4%) gave it the highest rating of 5, followed by 28.6% who rated it 4, indicating that GASAC helped them better understand and grasp the concepts of debit and credit. This shows that the gamified approach successfully simplified a concept that students traditionally find intimidating. According to **Figure 4**, the respondents felt more confident in applying debit and credit concepts in accounting entries after using GASAC. This is particularly meaningful because when students feel more confident, they are more likely to engage more deeply in the subject and perform better academically.

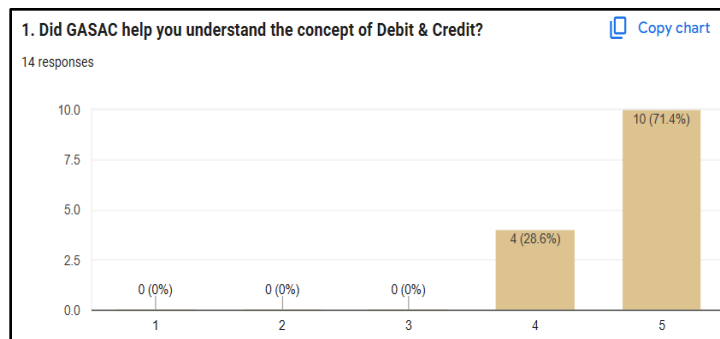


Figure 3: Responses to Understanding of Debit and Credit Concept

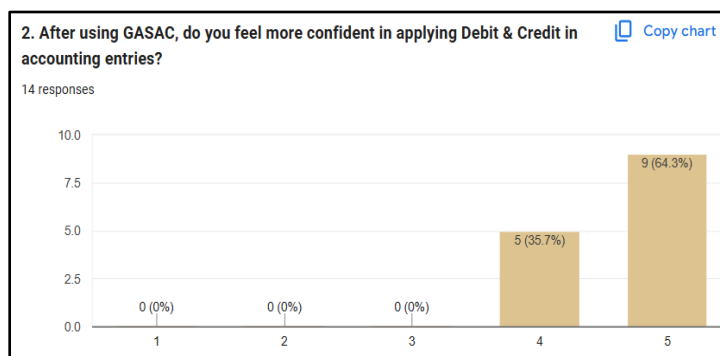


Figure 4: Responses to Confidence in Applying the Debit and Credit Concept

GASAC democratizes financial literacy by making the complex "language of business" accessible to students from all socio-economic backgrounds. By aligning with **Sustainable Development Goal 4 (Quality Education)**, it reduces the educational gap for non-accounting students who often feel excluded from discussions about finance. This tool improves learners' quality of life by reducing academic stress and increasing career readiness. In a global economy, providing a scalable and free-to-access digital tool ensures that foundational financial knowledge is a right, not a privilege, empowering the next generation of entrepreneurs and professionals.

COMMERCIAL POTENTIAL

The market potential for GASAC is significant, targeting the global **EdTech sector**, specifically higher education and vocational training. Its competitive advantage lies in its lightweight, web-based infrastructure, which enables rapid scaling across institutions with minimal overhead (Prasad, 2021). A **Freemium Business Model** could be implemented, offering the core "Battle" modes for free while providing premium data analytics for instructors to track student progress. With the increasing shift toward hybrid and remote learning, GASAC is positioned as a highly marketable B2B (to universities) or B2C (to independent learners) solution (Bitrián et al., 2021).



CONCLUSION

The Gegirl Akuntan Smart Accounting Companion (GASAC) successfully addresses the long-standing hurdle of learning debits and credits through a gamified, inclusive platform. By utilizing digital innovation to foster engagement, the project has proven its effectiveness, with a majority of participants reporting measurable improvements in both comprehension and confidence. GASAC moves accounting from the passive page to the active screen, aligning with global goals for quality education and infrastructure. Looking ahead, future iterations could include **AI-powered tutoring bots** for personalized feedback and expand into more complex topics such as financial statement analysis and tax accounting. This advancement will ensure GASAC remains a vital tool for preparing students to meet the challenges of a rapidly evolving digital economy.

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