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EDUVERSE: A CROSS-DISCIPLINARY GAMIFIED LEARNING PLATFORM FOR 21ST-CENTURY EDUCATION

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ABSTRACT

EduVerse is a mobile-accessible educational tool developed to enhance student engagement and understanding across multiple university-level courses offered at Universiti Teknologi MARA (UiTM). Designed using a no-code platform, the app provides structured subtopic-based notes and a range of interactive learning games that support both classroom use and self-directed study. This innovation addresses common challenges in higher education, including low motivation, difficulty understanding abstract content, and limited access to engaging digital resources. EduVerse focuses on four selected subtopics: Time Series Data Analysis from STA104 (Introduction to Statistics), Early Theories of Motivation from MGT321 (Organizational Behaviour), Types of Innovation from MGT315 (Creative and Critical Thinking), and Arabic Fruit Vocabulary and Interrogative Words from TAC151 (Foundation Arabic Level II). These subtopics are gamified using platforms such as Wordwall, Genially, Educaplay, and Blooket to enhance student recall, visualization, and interaction through quizzes, puzzles, and matching tasks. The platform is compatible with smartphones, tablets, and laptops, and can be accessed via a single shareable link without the need for installation. EduVerse was developed using the Glide App, a no-code development platform that enabled rapid prototyping and the integration of interactive learning modules across various subjects. By promoting digital literacy, learner autonomy, and meaningful engagement, EduVerse contributes to the advancement of 21st-century education through inclusive and gamified learning experiences.

***Keywords:** Digital learning, Gamified education, Cross-disciplinary platform, Student Engagement, No-code tools*

INTRODUCTION

Students in higher education continue to face a range of learning challenges that affect their engagement, comprehension, and academic performance. One common issue is the difficulty in understanding abstract and theoretical content, particularly in subjects that require conceptual differentiation without immediate real-world application (Saha et al., 2024). Additionally, language proficiency limitations can further hinder comprehension, especially in courses that involve the acquisition of grammar and vocabulary (Woldegiorgis & Chiramba, 2025).

Many educators still rely heavily on traditional lectures and static notes, which may not effectively engage today's students, learners who tend to prefer more interactive, visual, and exploratory teaching strategies (Padilla-Petry et al., 2025). This mismatch between instructional delivery and student learning preferences often contributes to low motivation, particularly in general education courses that students perceive as less relevant to their interests or future careers (Pacadaljen, 2024).

Although gamified and interactive learning tools have gained recognition for their positive impact on student engagement, their integration into the classroom remains limited (Hwang et al., 2023). This is largely due to time constraints and a lack of access to user-friendly digital tools that educators can easily adopt into their teaching practices (Jia-Chi & Lin-Wen, 2012; Khelifi et al., 2022).

EduVerse was developed to address these challenges by offering a gamified educational platform that transforms traditionally passive learning into an engaging and interactive experience. The platform features course-specific digital games that reinforce key concepts, promote active recall, and accommodate diverse learning styles. The following subjects and subtopics were selected for their direct alignment with the general problems described:

STA104 (Introduction to Statistics) – Subtopic: Time Series Data Analysis

Students often struggle to differentiate between time series components such as trend, seasonal, cyclical, and irregular patterns. EduVerse addresses this issue through visually guided games, including true or false quizzes, jump-style MCQs, and escape room challenges that support conceptual clarity in an engaging and interactive format.

MGT321 (Organizational Behaviour) – Subtopic: Early Theories of Motivation

Motivation theories can appear repetitive and disconnected from real-life applications. EduVerse makes this content more accessible through gamified video lessons and interactive games that promote active recall and enhance student understanding of Maslow, Herzberg, and McClelland's theories.

MGT315 (Creative and Critical Thinking) – Subtopic: Types of Innovation

Students often struggle to distinguish and apply various types of innovation. EduVerse simplifies these concepts using Minecraft-style animated video storytelling, multiple-choice quizzes, and classification tasks that encourage visual recognition and deeper comprehension.

TAC151 (Foundation Arabic Level II) – Subtopic: Arabic Fruit Vocabulary and Interrogative Words

Language learning frequently relies on memorization without meaningful reinforcement. EduVerse supports Arabic learning through word search and quiz-based games that enhance vocabulary recognition and reinforce the use of basic interrogative structures.

By addressing these subtopic-specific challenges through gamified learning tools, EduVerse offers a unified solution that supports student motivation, enhances learning outcomes, and fosters inclusive, student-centered education across disciplines.

METHODOLOGY

The development of EduVerse followed a structured, student-centered approach to support teaching and learning across multiple university-level courses, including STA104, MGT321, MGT315, and TAC151 at Universiti Teknologi MARA (UiTM). The process involved four main phases: planning, development, implementation, and evaluation. During the planning phase, course syllabi were reviewed to identify key subtopics that are essential, frequently misunderstood, or conceptually difficult for students. The selected subtopics were mapped out for gamification and content integration. These subtopics were chosen for their potential to be enhanced through visuals, interactivity, and gamified learning strategies.

In the development phase, EduVerse was built using Glide Apps, a no-code mobile-responsive platform. The platform's interface was designed to be intuitive and modular, allowing students to access structured notes, short video content, and embedded educational games seamlessly. Gamified activities were developed using third-party tools, including Genially, Blooket, Wordwall, Educaplay, and LearningApps, to ensure rich multimedia experiences. Each subject module featured a combination of structured content and game-based learning to promote active engagement and mastery of concepts.

The implementation phase took place in actual class settings, where lecturers introduced EduVerse as a supplementary learning tool. Students were encouraged to access the platform during and beyond lecture hours, using it for revision, collaborative activities, and independent practice. For the evaluation phase, feedback was collected from 30 students using the Mentimeter platform. They were asked to describe their experience with EduVerse in three words. The responses were visualized using a word cloud to identify common themes and assess the platform's overall impact on student motivation, interactivity, and learning engagement. Figure 1 shows the user interface of EduVerse.
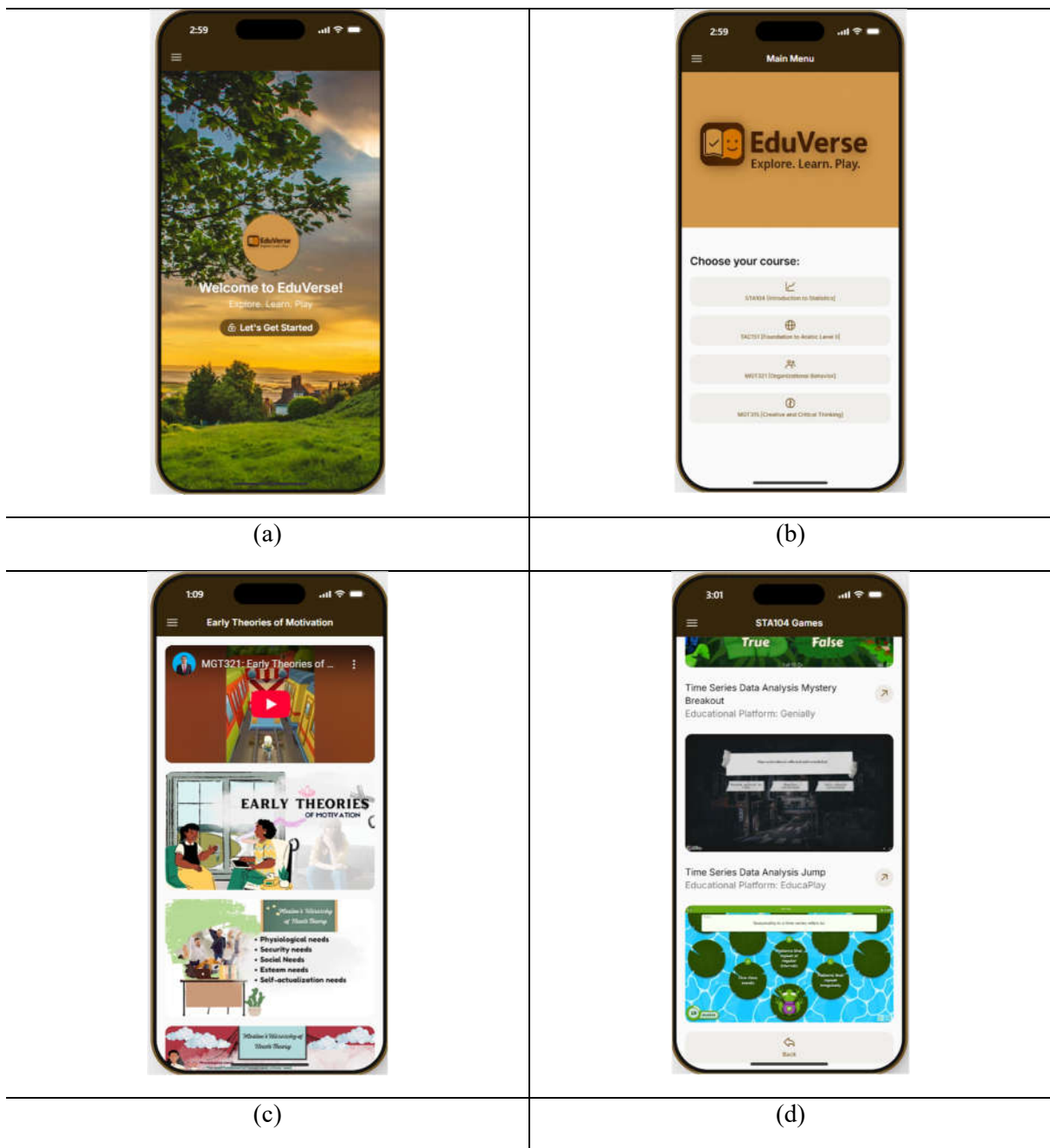
| (a) | (b) |
| (c) | (d) |

Figure 1.: User Interface of EduVerse

Figure 1 illustrates the user interface of the EduVerse app, designed to support student learning in a fun and organized manner. Screen (a) welcomes users to the platform. Screen (b) is the main menu where students can choose their course. Screen (c) displays learning subtopics, accompanied by helpful videos and notes. Screen (d) features game-based activities that make learning more interactive and enjoyable, helping students better understand key subtopics.

RESULTS AND DISCUSSION

The qualitative feedback gathered from 30 students was analyzed to explore their initial impressions of the EduVerse platform. Students were asked to describe their experience using three words, and their responses were compiled into a word cloud, as shown in Figure 2.

Figure 2.: Mentimeter Results for EduVerse

Figure 2 presents the most frequently mentioned words from students regarding their experience with EduVerse. Among the most common responses were "interesting," "fun," and "innovative," indicating that students found EduVerse engaging and creatively designed. Other notable words included "interactive," "user-friendly," "educational," and "motivational," reflecting positive perceptions of its usability and learning value. The feedback highlights EduVerse's potential as a meaningful digital learning tool. The platform was generally seen as enjoyable and interactive, which supports its aim of enhancing student engagement through game-based and structured learning. Future iterations of EduVerse could benefit from expanded features and wider implementation to further evaluate its impact on learning outcomes.

CONCLUSION

EduVerse is an innovative, multi-platform digital learning solution designed to boost student engagement through interactive, syllabus-aligned games. It not only supports content mastery but also cultivates essential 21st-century skills such as critical thinking, digital literacy, and self-directed learning. Developed using free no-code tools, EduVerse is accessible across devices and requires no technical expertise, making it both scalable and cost-effective for broader educational use.

The platform contributes to the goal of quality education (Sustainable Development Goal 4) by offering an inclusive and engaging alternative to traditional learning methods. By going fully digital, EduVerse also supports environmental sustainability and broadens access to quality resources. Student feedback has been overwhelmingly positive, with responses highlighting its enjoyable, innovative, and user-friendly nature. These outcomes underscore EduVerse's potential to transform higher education by delivering effective, meaningful, and future-ready learning experiences.

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