

EcoBytes: Enhancing Teaching and Learning in Economics through Short-Form Microlearning Videos

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Abstract: The fast pace of the digital revolution in education and the changing learning habits of Generation Z learners have presented challenges to the traditional methods of teaching economics. Students accustomed to concise, visual and mobile content may be less receptive to lecture-based instruction when faced with abstract and conceptually demanding topics. This research examines EcoBytes, a microlearning platform that offers short videos on economics through TikTok and YouTube Shorts, connecting to additional learning resources such as QR-coded links to full lectures, quizzes, case studies on Universiti Teknologi MARA's UFuture learning management system, PowerPoint summaries and printable worksheets. A quasi-experimental pre-test/post-test design was used in which undergraduate students completed structured assessments before and after use of EcoBytes. Descriptive statistics were employed to contrast item-level error percentages and overall score distributions. The results show a reduction in the number of errors in the selected items and an upward shift in the distribution of scores on the post-test. This indicates an improvement in conceptual performance as a consequence of the intervention. Student engagement was not directly measured and is discussed as a possible benefit. The study is based on the Cognitive Load Theory, Microlearning Theory, Constructivist Learning Theory and Technology Acceptance Model and presents EcoBytes as a flexible supplementary approach to support economics learning with short-form digital content.

Keywords: *Micro-learning, SDG 4, Academic Integrity, Blended Learning, Digital Pedagogy*

1. Introduction

The fast digitalization of education has revolutionized teaching and learning in higher education globally. The advent of digital technologies, web-based learning, and mobile applications has created new ways for the distribution, access, and interaction with knowledge, making learning environments more interactive and flexible (Kumar & Priyanka, 2023; Mateo-Guillen & Cortijo Ocaña, 2025). The rise in blended and virtual learning environments has supported the continuity of academic activities and increased access to learning resources, thus intensifying this shift (Khilji, 2022). There is thus an increasing trend toward digitally mediated learning models that emphasize flexibility, personalization and student-centred engagement alongside regular classroom-based teaching (Belanova & Popok, 2025; Mateo-Guillen & Cortijo Ocaña, 2025). These developments are especially important in disciplines which have complex theoretical concepts and therefore require pedagogical approaches that foster understanding and motivation.

But even with these advances the pedagogical problems of economics education are not solved. Traditional lecture-based approaches are still common, but they can generate passive learning environments where students depend heavily on instructors instead of actively engaging with course content (Adnan et al., 2025). Such approaches may also constrain opportunities to critically assess economic concepts and apply theoretical knowledge to real-world contexts. Economics classes are also frequently heavily dependent on textbooks and static teaching resources that might not be appropriate for the multimedia-rich learning environments that today's students are accustomed to. Previous research has demonstrated that abstract economic concepts cannot be easily understood by traditional teaching methods alone, highlighting the need for more interactive and engaging approaches (Wong et al., 2024; Fanni & Lakrarsi, 2026).

Another challenge in economics education is student motivation and engagement. Studies show that students perform moderately in economics-related courses and show low motivation in their studies (Adnan et al., 2025). One reason could be that students perceive the subject as hard, and they may not have many opportunities to learn interactively. In response, mobile gamification, simulated environments and game-based learning have been proposed as a means of promoting more active learning. Simulation games and metaverse environments can provide immersive experiences that model real economic conditions and can foster learning

outcomes and student interest (Wong et al., 2024). Such developments show the potential of digital technologies to make economics education more interactive and experience-based.

At the same time, the wider digitalization of higher education has brought opportunities and challenges. Artificial intelligence (AI), virtual reality (VR), and adaptive learning systems are used more and more in support of personalized learning (Fanni & Lakrarsi, 2026; Bautista, 2026). These technologies can allow for active learning and more customized instructional pathways. However, their use also raises questions of access, infrastructure preparedness, staff capability and ethical use of AI-powered tools in academic settings (Bautista, 2026; Pretorius, 2025). An over-reliance on automated systems may also undermine independent learning if students uncritically engage with such tools. Educators then need to balance technological innovation with learning experiences that continue to promote conceptual understanding and critical thinking.

The digital transformation has also altered the roles of teachers and students in the learning ecosystem. The use of digital learning tools is becoming more widespread, and so educators are becoming facilitators who guide students through interactive and technology-supported learning environments instead of transmitters of knowledge (Belanova & Popok, 2025). At the same time, students are taking greater ownership of their learning through digital resources, collaborative tools and independent learning activities. Consequently, more importance has been attached to self-guided learning, online literacy, and the intentional use of technologies to foster participation in the learning process (Kumar & Priyanka, 2023; Tapia et al., 2023).

The learning environment has changed with the increased use of social media and mobile platforms for education. Besides communication, social media platforms are also used for knowledge sharing, professional networking, and informal learning in higher education (Al-Hail et al., 2024). They enable students to find information and interact with learning content quickly on digital platforms they are familiar with. The widespread use of smartphones by university students has also increased the opportunities for mobile learning, through which students can get access to educational materials across locations and at different times.

But the use of social media in teaching and learning is still limited in a formal way. Social media platforms are used extensively for communication and sharing knowledge, but there is still a lack of structured pedagogical frameworks for integrating them into formal learning and assessment (Al-Hail et al., 2024). The literature has also explored digital innovations such as gamification, virtual learning environments, and immersive technologies, but the systematic use of short-form social media video as a structured learning tool in academic disciplines such as economics has been relatively less studied.

This gap has particular relevance for Generation Z learners, who have grown up in digitally connected environments and are familiar with mobile devices, social media and instant access to information. Research shows that such learners have a preference for visual, interactive, and concise learning materials available on demand (Ninčević & Jurić Vukelić, 2025; Priyanshu et al., 2025). Thus, short-form video formats on platforms like TikTok and YouTube Shorts provide a potentially useful vehicle for the delivery of condensed educational content in ways that fit with current digital learning behaviors.

These changing learning dynamics within economics education led to the development of EcoBytes as a microlearning ecosystem. Short videos on TikTok and YouTube Shorts are used to describe economic concepts in brief, digestible segments. Besides the short-form content, more extensive learning resources are available such as QR-coded links to full lectures, quizzes and case studies via Universiti Teknologi MARA's UFuture learning management system, PowerPoint summaries and printable worksheets. These materials are designed for mobile access, so students can review content in a flexible manner, and the short videos can serve as entry points into more detailed learning activities.

Although microlearning and social media are used more and more in informal learning, research on the systematic use of TikTok and YouTube Shorts in economics education is limited. Thus, this research studies the implementation of EcoBytes as a systematic microlearning ecosystem and investigates the effects on students' performance with a quasi-experimental pre-test/post-test design. The study examines whether the item-level error rates and distributions of total scores improve after students use the EcoBytes intervention.

2. Literature Review

Economics Education Challenges

For many years, economics education has been associated with issues of student engagement, conceptual understanding and effective pedagogy. Many economic theories and models are abstract and demand that learners understand relations among several variables. Therefore, students may face significant cognitive loads when learning concepts such as market equilibrium, elasticity, and macroeconomic fluctuations, particularly when these are primarily taught using lecture-based methods (Adnan et al., 2025). This can make it difficult for some students to retain these ideas, or to apply economic reasoning to real-world situations.

Concept overload can also arise from the complexity of economic theory, where students may have to process several abstract concepts simultaneously, leading to concept overload. Dense textual materials and long lectures may make it difficult for learners to integrate new information with their existing knowledge. Research into higher education has criticized approaches to pedagogy that are too passive and give students few opportunities to take an active role in the learning process (Adnan et al., 2025; Kendaganna Swamy et al., 2026) as a consequence.

Passive learning remains a concern in economics classrooms, especially in large lecture-based courses where interaction between instructors and students may be limited. In such contexts, students may become reliant on explanations provided by the instructor and may have fewer opportunities to develop their own interpretations of economic concepts. Research has suggested that students accustomed to interactive and technology-enhanced learning experiences might find traditional lecture formats less engaging (Adnan et al., 2025; Kendaganna Swamy et al., 2026). This can lead to the subject of economics being seen as abstract and a case of memorizing rather than understanding concepts.

Low motivation and low engagement are also frequently cited in economics education. Research has shown that students may only perform and be motivated to a certain degree due to the difficulty of the subject and the sporadic use of engaging instructional strategies (Adnan et al., 2025). In response to these concerns, educators have explored technology-supported approaches such as gamification. When designed with the right challenges, feedback and rewards, gamified learning can support motivation and self-directed learning (Adnan et al., 2025).

In general, the literature emphasizes the need for pedagogical strategies that make learning economics more interactive, more accessible, and more closely linked to application. As higher education responds to digital transformation and changing student expectations, educators are blending technology-enhanced learning tools, collaborative activities and real-world examples to overcome abstract theory, overload of concepts and student disengagement.

Microlearning in Higher Education

Microlearning is an emerging instructional approach that has the potential to address some of the limitations of traditional teaching in higher education. It's about packaging educational content in small, focused chunks that can be consumed in a relatively short period of time. Microlearning is not similar to long lectures or extensive reading materials. It is focused on specific concepts or skills and aims to facilitate the processing and revisiting of learning content (Susilana et al., 2022).

One theoretical framework for microlearning is Cognitive Load Theory. The theory states that learning is limited by the capacity of the working memory. Cognitive overload occurs when instructional materials contain too much information at once which may hinder comprehension and retention (Susilana et al., 2022). This is where microlearning comes in as it breaks complicated content into smaller units so that learners can focus on the key ideas with less extraneous cognitive load.

Empirical studies have reported positive results of microlearning in higher education. Studies on online learning have found that segmenting instruction into smaller chunks can reduce cognitive load and promote student performance (Susilana et al., 2022). In a similar vein, research on microlearning course design indicates better student engagement, satisfaction and academic performance when learning materials are organized into focused, manageable segments (Kossen & Ooi, 2021).

Microlearning also fits very well with mobile learning environments. Research has found that mobile microlearning, delivered via smartphones and other portable devices, has been linked to greater cognitive efficiency and reduced learner fatigue than more traditional forms of mobile learning (Yuca & Dabaj, 2025). Short, interactive modules can give students more flexibility in deciding when and how to interact with learning materials, which is especially important for learners who often use mobile devices to access information.

Another benefit of microlearning is that it encourages ongoing and self-directed learning. The individual modules usually focus on one concept or skill, allowing students to revisit particular topics when they need reinforcement. Microlearning can also be embedded in learning management systems, mobile apps and social media platforms, allowing it to be adapted to different learning contexts.

With the demand for flexible and accessible learning resources growing, microlearning is receiving more and more attention in higher education. Chunking content into smaller units could reduce unnecessary cognitive load and provide for active review and retention of knowledge. These traits make microlearning a relevant approach for subjects in which students need repeated exposure to complex ideas.

Social Media as Learning Platforms

Recently, social media platforms have been increasingly considered as additional tools for teaching and learning in higher education. Platforms like YouTube, TikTok, Instagram and WhatsApp were originally designed for communication and social interaction but now they are used for knowledge sharing, collaboration and informal learning (Sadrul Huda & Shupti, 2025). Educational material can be viewed by learners via multimedia features such as videos, discussions and interactive posts.

Particularly important for knowledge dissemination and informal learning are video-sharing sites. For example, YouTube allows educators and content creators to share instructional videos with large audiences worldwide. The research on the educational value of YouTube demonstrates that user-generated video content and interaction via comment features can enable knowledge exchange and collaborative learning (Dubovi & Tabak, 2019). These platforms also allow students to review the content at their own pace.

Social media can also help foster collaborative learning and peer interaction in educational environments. Studies on WhatsApp use in university courses indicate that the platform can improve communication, information sharing and collaborative problem-solving outside the classroom (Basitere et al., 2019). Similarly, peer-tutoring activities on social media demonstrate the ways the online environment can aid in the interaction between the students and the instructors (Campbell, 2019).

The explosive growth of short-form video platforms like TikTok, Instagram Reels and YouTube Shorts has expanded the educational potential of social media. These platforms enable users to share information concisely, in attractive visual forms that are accessible through mobile devices (Sadrul Huda & Shupti, 2025). So educators have started turning to short-form videos for tutorials, quick explanations and other bite-sized instructional content.

Nevertheless, the formal incorporation of social media into educational practice is uneven. Past studies have highlighted the need for pedagogical models that facilitate intentional social media use for teaching and learning (Campbell, 2019; Dubovi & Tabak, 2019). As social media becomes more entrenched in the everyday digital practices of students, the role of social media in formal academic learning remains an important area for future research.

Generation Z Learning Behavior

Understanding Generation Z's learning preferences is important to design modern higher education environments. Generation Z, usually defined as those born from the mid-1990s to the early 2010s, has grown up in a highly interconnected digital environment and has a great deal of experience with digital technologies, social media and mobile devices (Ninčević & Jurić Vukelić, 2025). Many learners' experiences affect the ways they access information and engage with educational content.

One of the often cited features of Gen Z learners is their preference for visual and interactive learning aids. Research indicates that these students are more receptive to multimedia tools like videos, infographics, and interactive applications, rather than solely text-based resources (Ninčević & Jurić Vukelić, 2025; Priyanshu et al., 2025). This preference is directly related to their knowledge of digital media and their use of mobile devices as a common source of information.

Generation Z learners are also often associated with a preference for short and focused learning content that can be accessed efficiently in digitally rich environments (Ninčević & Jurić Vukelić, 2025). This is not to say that complex learning should be oversimplified; rather, instructional content can be chunked into manageable pieces that allow for sustained attention and progressive understanding. Therefore, long lecture-only formats could be supplemented with shorter digital resources.

Digital learning tools and microlearning methods are well-suited to these preferences. Short videos and interactive micro-content can offer short learning units supporting engagement and knowledge acquisition (Priyanshu et al., 2025; van Wyk, 2022). Furthermore, mobile learning apps enable students to access learning materials across locations and at different times, thereby increasing the flexibility of study (Subbarao & Khan, 2024).

Research also shows that Generation Z learners may favour learning environments that incorporate technology with opportunities for interaction and collaboration. Online platforms can foster motivation and participation in academic activities through social learning, peer communication and timely feedback (Piatrov & Krajčovič, 2025). The relevance of smartphones is particularly high as they are often a key tool for accessing educational content and participating in online learning (Piatrov & Krajčovič, 2025).

Such features demonstrate the need for the design of learning environments that respond to current digital practices, but still have clear pedagogical goals. Conventional teaching can be merged with visual resources, mobile access, and interactive learning activities to produce more flexible and accessible learning experiences. EcoBytes brings together short educational videos and additional digital learning materials in this context. Focused economics content is delivered through TikTok and YouTube Shorts, with other materials allowing for more detailed study and application. Thus the platform is designed to supplement rather than supplant traditional economics teaching.

The potential of EcoBytes as a micro-learning ecosystem in teaching economics can be discussed with reference to a number of well-developed educational and technology adoption theories. Specifically, Cognitive Load Theory, Microlearning Theory, Constructivist Learning Theory and the Technology Acceptance Model (TAM) provide useful theoretical insights into why short-form video learning environments, such as EcoBytes, are effective in enhancing student engagement and learning in higher education.

Cognitive Load Theory

According to the Cognitive Load Theory, the best learning happens when instructional resources are designed to fit the limited processing capacity of the human working memory. If the learners are given too much information at one time, it can lead to cognitive overload, which will hinder later understanding and retention of what was learned. In the traditional lecture-based approach, students are often bombarded with a lot of information in one session which can lead to cognitive overload and less learning efficacy.

This is where short-form learning such as EcoBytes, which distils information into smaller and manageable chunks, can help. Micro-learning techniques with small content help students to focus on one concept at a time which reduces the extraneous cognitive load and improves retention. Research on micro- and nano-learning indicates that short, intense learning modules based on cognitive science could be very successful for knowledge retention and just-in-time learning (Misra et al., 2026). EcoBytes provides short video clips that are easy for students to consume as they are presented in digestible bites, allowing students to better process information rather than be bombarded with theoretical material.

Theoretical Foundations of EcoBytes

Using a number of established educational and technology adoption theories, the potential contribution of EcoBytes to economics education can be examined. The Cognitive Load Theory, Microlearning Theory,

Constructivist Learning Theory, and the Technology Acceptance Model (TAM) offer complementary explanations of the potential of a short-form digital learning environment to support learning and promote the use of educational technologies in higher education.

Cognitive Load Theory

According to the Cognitive Load Theory, learning is improved in the case of instructional materials adapted to the limited processing load of working memory. Too much information presented to the learner at one time can cause cognitive overload, making it harder to remember and understand the information. In a traditional lecture setting a large amount of information may be provided in one session and the likelihood of cognitive overload increases.

Short-form learning is a solution to this problem where information is delivered in smaller digestible chunks. Microlearning lets students focus on one concept at a time, which can reduce extraneous cognitive load and support retention. Research on micro-learning and nano-learning suggests that short, focused units can assist in knowledge retention and just-in-time learning (Misra et al., 2026). This is the approach of EcoBytes, which offers economic concepts in brief video clips that can be studied independently or linked to the more comprehensive course content.

Microlearning Theory

The theory of microlearning is that learning content is delivered in small, targeted learning units that are easily accessible and digestible. Microlearning focuses on discrete concepts or skills rather than long lectures or large reading assignments, so learners can work through content in digestible chunks. This is consistent with the flexible learning practices of students who regularly use digital resources.

Research in higher education indicates that microlearning can support student engagement and learning outcomes by reducing extraneous cognitive loads and facilitating retrieval of content. Microlearning approaches can also allow learners to study across locations and times, increasing flexibility and allowing for greater autonomy (Skalka & Drlík, 2018). Microlearning pedagogy also highlights clear objectives, individualized learning paths, continuous feedback, and interactive digital resources (Alias, 2025).

EcoBytes follows these microlearning principles, curating economics content into short videos around specific themes. Each video has a short explanation with visual aids so students can review a key concept before moving on to more in-depth learning materials. This structure also allows learners to go back to topics when they need further reinforcement and thus promotes self-directed learning.

Constructivist Learning Theory

Constructivist Learning Theory views learners as active participants who construct understanding through interaction, collaboration, reflection, and experience, rather than passively receiving information from instructors. From this perspective, effective learning environments offer students opportunities to interact with content and relate it to prior knowledge and to construct meaning through active learning processes.

Microlearning environments may facilitate constructivist learning if they offer opportunities for interaction, practice and collaboration. Increased interaction and knowledge construction have been linked to participatory approaches in which learners are involved in developing or employing digital microlearning resources (Manrique-Losada et al., 2026). Similarly, digital microlearning systems combined with practice-based learning can assist learners to link theoretical concepts with applied skills (Su et al., 2026).

EcoBytes promotes constructivist principles by connecting short-form content with quizzes, worksheets, longer lecture materials and other learning activities. This combination allows students to move beyond passive watching of videos and to engage with economic ideas through a variety of formats and multiple learning pathways.

Technology Acceptance Model (TAM)

The Technology Acceptance Model (TAM) offers a framework to understand students' adoption and use of educational technologies. According to TAM, the use of technology is largely determined by perceived

usefulness and perceived ease of use. Technology use is more likely to be adopted by learners when they perceive the technology as being supportive of their learning and easy to use.

Research on digital and microlearning contexts has suggested that perceived usefulness can affect learners' intention to adopt educational technologies. When students see a microlearning platform as useful for flexible and autonomous learning, their motivation to use the platform could be increased (Zambrano Verdesoto & Caicedo, 2025). There may also be lower barriers to adoption due to familiarity with mobile interfaces and short-form video formats.

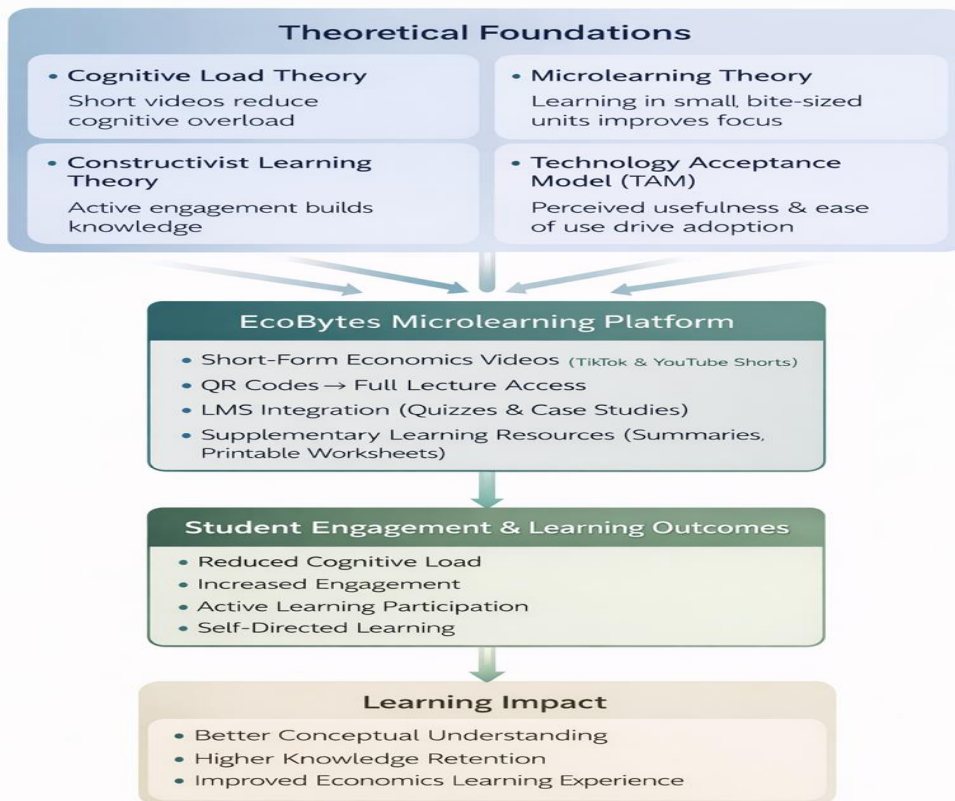
EcoBytes is in line with TAM because it uses platforms like TikTok and YouTube Shorts, which the audience is familiar with and delivers content in a fast-to-access format. This way, students can interact with learning resources using interfaces that are already widely adopted for consuming digital media. The short-video format might also enhance perceived convenience for learners who enjoy flexible, bite-sized study resources.

Integrating Theoretical Perspectives

The theoretical perspectives presented together provide a coherent foundation for EcoBytes. Cognitive Load Theory explains how segmenting information may reduce unnecessary processing demands. Microlearning Theory emphasizes the value of brief and focused learning units. Constructivist Learning Theory emphasizes the need for active engagement with content. TAM explains how perceived usefulness and ease of use may influence students' adoption of digital learning tools

This incorporation of perspectives makes EcoBytes a pedagogically informed approach to delivering economics content in brief-form digital media. The platform combines microlearning, additional learning activities and familiar social media interfaces to create a flexible ecosystem that can complement traditional economics teaching.

Figure 1: Conceptual Framework of the EcoBytes Microlearning Ecosystem



3. Research Methodology

The current study used a quasi-experimental pre-test/post-test design to examine the change in students' economics performance following the EcoBytes learning intervention. This design allows for a comparison of performance before and after an instructional intervention in an educational setting (Creswell & Creswell, 2018).

The participants were undergraduates who used EcoBytes for their course activities. Their learning performance was assessed before and after the intervention using structured assessments. The study was concerned with changes in assessment performance rather than with measures of student engagement, such as behaviour or attitudes.

Five test items (Q2, Q3, Q8, Q13, and Q16) were selected for item-level analysis to identify specific areas of conceptual difficulty since these items covered concepts that students commonly found challenging. Total test scores were also recorded and analysed by score category. This two-level approach allowed the study to describe both changes in errors on particular concepts and more general changes in the distribution of student performance.

Students completed a baseline assessment (pre-test) before the EcoBytes intervention. They took the same or similar assessment (post-test) after using EcoBytes. Pre- and post-intervention changes in performance were identified by comparing the percentage of errors in specific items and the distribution of total scores at the two time points of assessment.

Descriptive statistics were used for data analysis. Errors were expressed as percentages for each item and the distributions of total scores were compared to get some idea of the general changes in performance. This methodological approach adheres to the guidelines offered by Shadish et al. (2002) on program evaluation and causal inference in quasi-experimental designs.

4. Results

The results show an improvement in student learning performance after the intervention of EcoBytes. As shown in Figure 2, the error rates of the selected test items were reduced. For instance, the errors in Q2 were lowered from 12.12% in the pre-test to 6.98% in the post-test and the errors in Q8 fell from 18.18% to 9.30%. The most notable improvements were in Q3 and Q13 where the post-test errors went to zero. The descriptive changes suggest that the intervention might have assisted students in overcoming certain conceptual difficulties, which is consistent with prior research on the potential of well-designed multimedia learning materials in aiding understanding (Clark & Mayer, 2016).

Figure 2: Error rates before and after Ecobytes

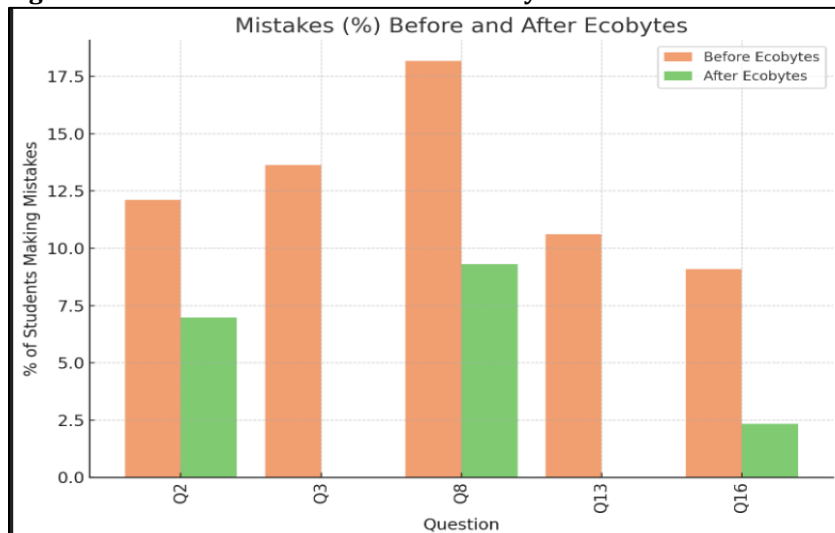
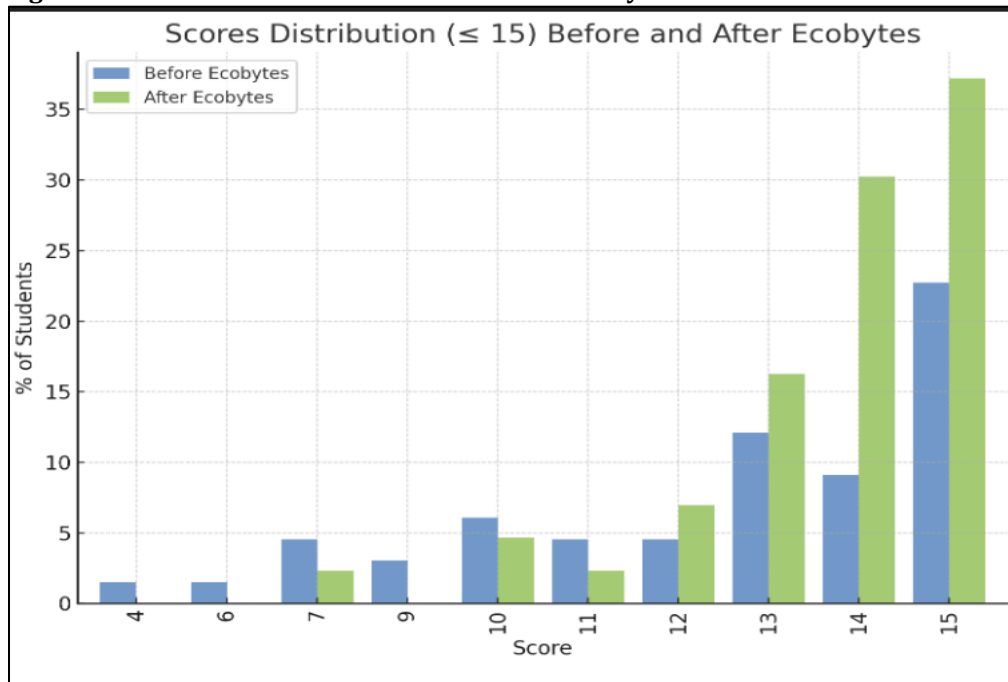


Figure 3 shows overall changes in test performance. The distribution of scores has moved upwards after the intervention. In the post-test distribution, there were no pre-test scores as low as 4, 6 and 9. There was also a decrease in the frequencies of several mid-range scores such as 7, 10 and 11. The proportion of students who scored 12 and above increased. These descriptive patterns suggest that some of the students moved from lower or middle score categories to higher performance categories after the use of EcoBytes. The trend of this change is consistent with previous research reporting improved academic achievement following well-designed digital learning interventions (Bernard et al., 2009).

To summarize, the patterns seen in Figures 2 and 3 suggest lower item-level error rates and an overall higher posttest score distribution following the EcoBytes intervention. Since the analysis is descriptive, these findings are best understood as observed pre-test/post-test improvements rather than statistically significant or causal effects. The findings, however, do lend support to further research into short-form, technology-enhanced learning as a complementary approach to improve conceptual understanding in economics (Laurillard, 2012).

Figure 3: Scores Distribution before and after EcoBytes



Discussion

The results suggest that microlearning tools like EcoBytes can facilitate economics learning by providing students with additional opportunities to access and review course content. The reductions in selected item-level errors and the rightward shift of the post-test score distributions indicate an improvement in learning performance after the intervention. These findings are consistent with the wider literature of flexible and student-centred digital learning environments.

In this study, we did not directly measure student engagement. Therefore, the results do not show that engagement increased because of EcoBytes. However, the platform's visual, short-form nature aligns with literature that indicates that Generation Z learners tend to prefer short, multimedia-rich learning resources. Engagement should thus be considered a theoretically plausible benefit which requires to be directly measured in future research, rather than an outcome demonstrated by the present data.

The improvement in assessment performance observed is also in line with principles from microlearning and Cognitive Load Theory. EcoBytes reduces the information load by breaking economic concepts into smaller and more focused segments to help learners focus on the essential ideas. Cognitive load was not directly measured in the present study, so this explanation should be seen as a theoretically motivated interpretation, rather than a directly tested mechanism.

More generally, EcoBytes shows how familiar social media platforms can be integrated into formal economics education when short-form content is linked to structured learning materials and assessments. The intervention should be seen as a supplementary learning ecosystem, not a substitute for lectures or other course activities. Since the study was based on descriptive pre-test/post-test comparisons and did not directly measure engagement, the results should be interpreted with caution and verified with further research employing stronger comparative designs and direct measures of student experience.

5. Managerial Implications and Recommendations

The study provides real practical implications for higher education institutions, lecturers and students. For universities, EcoBytes demonstrates the potential of social-media-based microlearning as a complementary learning approach alongside traditional teaching. Institutions may consider adding short-form learning resources to existing digital learning environments to enhance flexibility and provide students with more opportunities to review course material. However, claims of engagement should be evaluated by direct measurement in future implementation studies.

For lecturers, EcoBytes demonstrates the value of breaking complicated economics content into short, focused explanations linked to broader learning materials. Short educational videos can reinforce concepts introduced in lectures and contribute to blended learning by enabling students to review difficult concepts at their own pace. They are likely to be most effective when the videos are aligned with well-specified learning outcomes, assessment activities and opportunities for more in-depth application.

EcoBytes provides an easily accessible mobile resource for students that can be used for revision and reinforcement outside the classroom. Self-directed learning is supported by short videos accompanied by quizzes, worksheets and more extensive lecture materials, all while keeping students connected to the formal course structure.

Conclusion

This study explores the design and implementation of EcoBytes, a microlearning ecosystem that uses short digital content to support learning economics. EcoBytes offers brief explanations of economic concepts and connects them to extra learning resources for further research and application through platforms like TikTok and YouTube Shorts.

Employing a quasi-experimental pre-test/post-test design and descriptive analysis, the study found declines in error rates for selected assessment items and an upward shift of overall post-test score distributions. These results reflect an improvement in conceptual performance after the intervention. Results should not be interpreted as statistically significant or definitive causal effects, as no inferential statistical tests were performed. The study did not measure student engagement directly and therefore cannot be reported as an observed outcome.

More broadly, EcoBytes adds to the expanding literature on digital pedagogy by demonstrating how microlearning can be integrated into the teaching of economics using popular short-form video platforms. The approach may also be a useful model in other disciplines where students benefit from short explanations that are linked to structured learning activities and more detailed resources.

Future studies should employ larger samples, comparison or control groups where possible, and inferential statistical analysis to determine the strength of the learning effects observed. Student engagement should also be directly measured with appropriate instruments or behavioral indicators. Future studies might explore knowledge retention, perceived usefulness, ease of use and the application of the approach in other areas of higher education.

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