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INTEGRATING CRITICAL THINKING INTO LMS-SUPPORTED TOEIC INSTRUCTION: TRANSFORMING WASHBACK IN EFL LEARNING

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ABSTRACT

The integration of Learning Management Systems (LMS) in English language learning has become increasingly common in higher education. This study investigated the implementation of critical-thinking-oriented activities in LMS-supported TOEIC instruction and its influence on students' TOEIC achievement, critical thinking skills, washback effects, and learning perceptions. The study employed a mixed-methods quasi-experimental design involving 60 undergraduate students enrolled in TOEIC preparation classes at a private university in Indonesia. Quantitative data were collected through TOEIC tests and a washback questionnaire, while qualitative data were obtained through semi-structured interviews. The findings showed that students in the experimental group achieved higher TOEIC score gains and demonstrated better critical thinking performance than those in the control group. The questionnaire results indicated high levels of learning orientation, deep learning behavior, learner autonomy, reflective learning, and engagement in LMS-supported activities, while negative washback tendencies were relatively low. Interview findings revealed positive student perceptions of the learning approach.

Keywords: Critical Thinking; Learning Management System; TOEIC; Washback; EFL Learning.

INTRODUCTION

In recent years, the integration of digital technology into educational settings has become increasingly, particularly in higher education. The use of technology is no longer limited to supporting administrative tasks but has also become an important part of teaching and learning processes. As a result, many universities have adopted various digital learning platforms to facilitate instructional activities and provide students with greater access to learning resources. Among the digital platforms widely used in higher education is the Learning Management System (LMS). An LMS allows instructors to organize course materials, manage assessments, monitor students' progress, and facilitate communication both inside and outside the classroom. In addition to supporting course management, LMS platforms may also create opportunities for more interactive and student-centered learning when they are integrated with appropriate learning activities. For this reason, LMS has received growing attention in educational research as a platform that can support student engagement and participation in the learning process.(Vildósola et al., n.d.)

Within the field of English as a Foreign Language (EFL), the integration of LMS platforms has gained considerable attention due to their potential to support learner autonomy, flexibility, and continuous access to learning resources. Unlike traditional classroom settings that often restrict learning to scheduled instructional sessions, LMS-supported environments enable learners to interact with materials, peers, and instructors beyond classroom boundaries. Through discussion forums, collaborative tasks, reflective journals, and digital assessments, learners are provided with opportunities to engage more actively in language learning processes. Previous studies have suggested that technology-enhanced language learning environments can facilitate deeper learner engagement and encourage students to participate more meaningfully in language-related activities. Furthermore, digital learning environments may provide scaffolding that helps learners develop analytical and reflective learning behaviors, which are essential for successful language acquisition (Muslem et al., 2022)

At the same time, English language proficiency continues to be a critical requirement in academic, professional, and international communication contexts. As globalization increases the demand for workplace communication skills, standardized English proficiency tests remain important tools for evaluating language competence. One of the most widely recognized assessments is the Test of English for International Communication (TOEIC), which is commonly used by educational institutions, employers, and organizations to assess individuals' readiness to function effectively in English-speaking workplace environments. Due to its extensive use, TOEIC has become more than a measurement instrument; it also exerts considerable influence on teaching practices, learning behaviors, and curriculum design in many EFL contexts.

The influence of language testing on educational practices is commonly conceptualized through the notion of washback. Washback refers to the extent to which language assessments shape teaching practices, learning behaviors, instructional materials, and educational outcomes. Research has consistently demonstrated that washback may generate either beneficial or detrimental consequences depending on how assessments are integrated into classroom instruction. Positive washback encourages meaningful language use, higher-order thinking, learner autonomy, and communicative competence, whereas negative washback often narrows instructional focus toward repetitive test-taking strategies, memorization, and intensive drilling aimed primarily at improving examination scores rather than developing language proficiency. Empirical studies investigating high-stakes language assessments have shown that excessive emphasis on test preparation frequently promotes surface-level learning, reduces opportunities for authentic language use, and limits students' critical engagement with learning tasks (Khan et al., 2025; Green, 2023; Cheng & Curtis, 2024). These findings suggest that washback is not an inherent characteristic of a test itself but is largely mediated by instructional practices, indicating that assessment-oriented instruction can generate more positive educational outcomes when learning activities intentionally promote meaningful engagement, cognitive development, and reflective language use.

In many TOEIC-oriented classrooms, instructional practices continue to emphasize speed, accuracy, and familiarity with test formats. Students are frequently trained to identify keywords, eliminate incorrect options, and maximize test performance through strategic techniques. Although such practices may contribute to higher test scores, they do not necessarily promote deeper language understanding or communicative competence (Green, 2020; Cheng & Sultana, 2022). Instead, learners may become proficient at recognizing recurring patterns in test items without developing the ability to analyze information critically, evaluate evidence, or apply language knowledge in authentic

communicative contexts. Recent studies have shown that excessive emphasis on test preparation often encourages memorization, procedural test-taking strategies, and surface approaches to learning while limiting opportunities for meaningful language use and higher-order cognitive engagement (Masrul & Rasyidah, 2023; Chak, 2024). Furthermore, assessment-driven instructional practices may narrow the curriculum and shift teachers' and students' attention from broader educational objectives toward examination performance alone, thereby reducing opportunities for communicative language development and critical thinking (Green, 2020; Xie & Jia, 2025). Consequently, TOEIC preparation courses are frequently criticized for fostering surface-level learning rather than meaningful cognitive engagement, illustrating a form of negative washback in which assessment practices constrain instructional innovation and holistic language development (Cheng & Sultana, 2022; Xie & Jia, 2025).

Contemporary educational paradigms increasingly emphasize the importance of higher-order thinking skills as essential competencies for the twenty-first century. Among these competencies, critical thinking has received substantial attention due to its role in enabling learners to analyze information, evaluate arguments, make informed judgments, and solve complex problems. In language learning contexts, critical thinking supports learners in interpreting texts, constructing meaning, synthesizing information, and engaging in meaningful communication. Rather than merely understanding linguistic forms, learners are expected to develop the capacity to question assumptions, assess evidence, and generate reasoned interpretations. Research has consistently shown that critical thinking contributes significantly to language development, communication skills, and learners' ability to engage with authentic language use (Harefa, 2024; Ilyas & Istaryatiningtias, 2025)

The importance of critical thinking has also been highlighted within the framework of twenty-first-century education. Critical thinking is considered one of the core competencies that should be integrated into EFL instruction alongside collaboration, communication, creativity, and character development. Recent studies have demonstrated that integrating critical thinking into language learning promotes deeper engagement, reflective learning, and more meaningful participation in classroom activities (Bulkis et al., 2025; Hapsari & Prasetyarini, 2025)

Despite the growing recognition of critical thinking as a fundamental educational objective, its integration into TOEIC-oriented instruction remains limited. Traditional TOEIC preparation frequently prioritizes test performance over cognitive development, creating a tension between assessment requirements and broader educational goals. While educators seek to cultivate analytical and reflective learners, the demands of standardized testing often encourage instructional practices centered on efficiency and score achievement. As a result, opportunities for students to engage in reasoning, evaluation, and reflective learning may be reduced within TOEIC preparation courses. This misalignment suggests a need to reconsider how TOEIC instruction is designed and implemented in EFL classrooms.

One promising approach to addressing this challenge involves integrating critical thinking activities within LMS-supported learning environments. LMS platforms offer interactive features that can facilitate discussion, collaboration, reflection, and inquiry-based learning. Through asynchronous discussions, peer feedback, reflective journals, and problem-solving activities, learners can be encouraged to justify their responses, evaluate alternative perspectives, and engage in deeper analysis of language-related tasks. Technology-enhanced learning environments thus provide opportunities for instructors to move beyond traditional test-oriented instruction and create learning experiences that emphasize reasoning and meaning-making. Previous studies have reported that reflective and collaborative digital learning activities can strengthen critical thinking development and support deeper engagement in EFL learning contexts (Afriyeni et al., 2025; Muslem et al., 2022)

From a washback perspective, the integration of critical thinking into LMS-supported TOEIC instruction may provide a mechanism for transforming assessment-driven learning behaviors. Rather than treating TOEIC solely as a tool for score attainment, instructors can utilize LMS environments to encourage students to analyze questions critically, evaluate distractors, justify their reasoning, and reflect on learning strategies. Such practices may contribute to positive washback by aligning assessment preparation with meaningful learning objectives. In this context, the impact of TOEIC is no longer restricted to shaping test-taking behaviors but may also support the development of critical thinking, learner autonomy, and deeper language competence.

Although previous studies have investigated washback, Recent studies conducted in Indonesian EFL contexts have emphasized the importance of learner autonomy, critical thinking, and technology-

enhanced learning. (Daflizar, 2023) reported that students' readiness for autonomous English learning significantly influenced their engagement and learning achievement. Similarly, Daflizar (2023) argued that technology-supported learning environments could foster learner autonomy by encouraging self-regulated learning practices. In addition, (Alfira et al., 2022) found that both teachers and students perceived critical thinking as an essential component of successful EFL learning. These findings suggest that learner autonomy and critical thinking represent important dimensions of meaningful language learning that may be strengthened through LMS-supported instructional practices. in language assessment and explored the pedagogical benefits of technology-enhanced learning, limited research has examined the intersection of LMS-supported instruction, critical thinking development, and washback transformation in TOEIC-oriented EFL classrooms. Existing research tends to focus either on washback phenomena or on technology-enhanced language learning independently, leaving insufficient understanding of how LMS-mediated instructional practices may influence assessment-related learning behaviors (Mariam et al., 2025). Furthermore, there remains a lack of empirical evidence regarding how critical thinking activities embedded within LMS environments affect students' cognitive engagement and perceptions during TOEIC preparation. This gap indicates the need for further investigation into how technology-supported learning environments can mediate the relationship between language assessment and meaningful learning outcomes.

Addressing this gap, the present study aims to investigate the impact of integrating critical thinking into LMS-supported TOEIC instruction on EFL learning. Specifically, the study seeks:

1. To examine the effect of LMS-supported TOEIC instruction integrated with critical thinking on students' TOEIC achievement.
2. To determine the extent to which LMS-supported TOEIC instruction enhances students' critical thinking skills.
3. To investigate how the integration of critical thinking into LMS-supported TOEIC instruction transforms washback effects in EFL learning.
4. To explore students' perceptions of LMS-supported TOEIC instruction integrated with critical thinking activities.

Through these objectives, the study finds to provide empirical evidence on the potential of LMS-supported learning environments to promote meaningful learning, foster critical thinking development, and transform assessment-driven learning behaviors from negative to positive washback in TOEIC-oriented EFL contexts.

Theoretical Foundation of the Washback

The Washback used in this study was developed based on a synthesis of theories and empirical research in language assessment, washback studies, critical thinking, learner autonomy, and technology-enhanced learning. The instrument was designed to measure the extent to which the integration of critical thinking into LMS-supported TOEIC instruction influences students' learning behaviors and transforms washback effects in EFL learning contexts. The primary theoretical foundation of the questionnaire is derived from washback theory, which conceptualizes washback as the influence that tests exert on teaching and learning practices (Alderson & Wall, 1993; Cheng, 2005; Watanabe, 2004). According to these scholars, washback may be positive when assessment promotes meaningful learning and skill development, or negative when learning becomes excessively focused on test-taking strategies, memorization, and score attainment. Therefore, the questionnaire was designed to capture both positive and negative manifestations of washback in students' learning behaviors.

The dimensions of Learning Orientation, Deep Learning Behavior, and Reflective Learning were informed by Biggs' theory of student approaches to learning. Biggs and Tang (2011) argue that deep learning occurs when learners actively seek meaning, connect new information to prior knowledge, and engage in reflective thinking. In contrast, surface learning is characterized by rote memorization and a focus on assessment requirements rather than genuine understanding. These dimensions were included to examine whether students engaged in meaningful learning during TOEIC preparation.

The Critical Learning Behavior dimension was developed based on the critical thinking framework proposed by Facione (2020). According to Facione, critical thinking encompasses a set of cognitive skills, including analysis, inference, evaluation, explanation, and self-regulation. Since the intervention integrated critical-thinking-oriented activities into TOEIC instruction, this dimension was intended to assess the extent to which students demonstrated analytical reasoning, evidence-based judgment, and reflective decision-making during learning activities.

The Learner Autonomy dimension was adapted from theories of learner autonomy and self-directed learning. Holec (1981) defines learner autonomy as the ability to take responsibility for one's own learning, including setting goals, selecting learning strategies, and evaluating learning outcomes. In technology-enhanced learning environments, learner autonomy becomes increasingly important as students are required to manage their learning processes independently. Consequently, this dimension was included to measure students' self-regulated learning behaviors within the LMS environment.

The LMS-Supported Engagement dimension was informed by constructivist learning theory and research on technology-enhanced learning. Constructivist perspectives emphasize that learning occurs through active engagement, social interaction, and knowledge construction (Vygotsky, 1978). Recent studies have shown that LMS environments can facilitate collaborative learning, reflective dialogue, and higher-order thinking when instructional activities are designed appropriately . Therefore, this dimension was developed to evaluate the extent to which LMS-mediated activities encouraged meaningful participation and cognitive engagement.

Finally, the Negative Washback dimension was specifically developed from washback literature identifying undesirable consequences of high-stakes testing. Previous research has demonstrated that excessive test orientation may encourage memorization, strategic guessing, and an overemphasis on score attainment rather than language development (Alderson & Wall, 1993; Cheng, 2005). Accordingly, reverse-coded items were included to determine whether the intervention reduced such negative learning behaviors.

Overall, the questionnaire conceptualizes washback as a multidimensional construct encompassing learning orientation, deep learning behavior, critical learning behavior, reflective learning, learner autonomy, LMS-supported engagement, and negative washback. By integrating these dimensions, the instrument provides a comprehensive framework for examining how critical-thinking-oriented LMS-supported TOEIC instruction transforms assessment-driven learning behaviors and promotes positive washback in EFL learning contexts.

RESEARCH METHODS

This study employed a mixed-methods quasi-experimental design to investigate the effects of integrating critical thinking into LMS-supported TOEIC instruction on washback in EFL learning. The mixed-methods approach was selected because it allows researchers to obtain a comprehensive understanding of both measurable learning outcomes and students' experiences during the instructional process. The quantitative component focused on examining changes in students' critical thinking skills, cognitive engagement, TOEIC achievement, and washback-related learning behaviors. Meanwhile, the qualitative component explored students' perceptions of LMS-supported learning activities and their experiences with critical-thinking-oriented TOEIC instruction. The study was conducted over eight weeks. During the treatment period, students in the experimental group participated in LMS-based learning activities. Meanwhile, students in the control group received conventional TOEIC preparation emphasizing repetitive practice, teacher explanations, and test-taking techniques. The comparison of pretest and posttest scores between the two groups enabled the researcher to determine whether integrating critical thinking into LMS-supported TOEIC instruction contributed to more positive washback effects and improved learning outcomes in EFL contexts.

This study was conducted Institut Teknologi dan Bisnis Bina Sarana Global, Indonesia. The institution utilizes a Learning Management System (LMS) lms.global.ac.id to support teaching and learning activities across various courses, including English language courses. The LMS provides facilities for content delivery, online discussions, assignment submission, assessment, and learning progress monitoring.

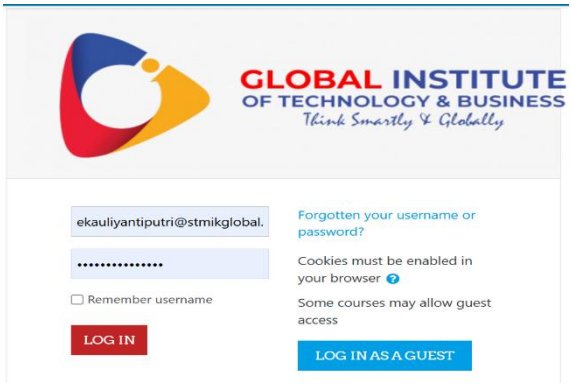


Figure 1. Learning Management System (LMS) lms.global.ac.id

The study was implemented in TOEIC preparation classes offered to undergraduate students as part of the institution's English proficiency development program. The intervention was conducted over eight weeks during the 2025/2026 academic year. The participants of this study were undergraduate students enrolled in TOEIC preparation courses at Institut Teknologi dan Bisnis Bina Sarana Global, Indonesia. A purposive sampling technique was employed to select participants who met the following criteria such as currently enrolled in a TOEIC preparation course, actively used the institutional LMS for learning activities. And students had completed basic English courses offered by the institution. A total of 60 students participated in the study. The participants were divided into two intact classes: Experimental Group (n = 30): received LMS-supported TOEIC instruction integrated with critical thinking activities. And the other one is control Group (n = 30): received traditional TOEIC instruction.

RESULTS AND DISCUSSION

Results

To determine the effectiveness of LMS-supported TOEIC instruction integrated with critical thinking, students' TOEIC scores before and after the intervention were compared. Descriptive statistics revealed improvements in both groups; however, the experimental group demonstrated substantially greater gains than the control group.

Table 1. Comparison of Pre-Test and Post-Test TOEIC Scores

Group	N	Pre-Test Mean	Post-Test Mean
Experimental Group	30	428.03	570.50
Control Group	30	423.23	485.67

As shown in Table 3, both groups improved their TOEIC scores after the intervention. However, the experimental group demonstrated substantially greater improvement than the control group. Paired-samples t-tests were conducted to determine whether the improvements within each group were statistically significant.

Table 2. Paired-Samples t-Test

Group	Mean Difference	t	df	Sig. (2-tailed)
Experimental Group	142.47	35.82	29	< .001
Control Group	62.44	18.65	29	< .001

The paired-samples t-test revealed a statistically significant increase in TOEIC scores for both groups. The experimental group showed a significant improvement from pre-test to post-test, $t(29) = 35.82$, $p < .001$. Similarly, the control group demonstrated a significant increase in TOEIC scores, $t(29) = 18.65$, $p < .001$.

Although both groups improved, the magnitude of improvement was considerably greater in the experimental group. This finding suggests that integrating critical thinking activities into LMS-supported TOEIC instruction contributed to greater gains in TOEIC achievement. Overall, the findings suggest that integrating critical thinking activities into LMS-supported TOEIC instruction contributed substantially to students' TOEIC achievement and produced greater learning gains than conventional TOEIC preparation. The improvement in TOEIC achievement may also be associated with the development of learner autonomy promoted through the LMS environment. Consistent with (Daflizar, 2023), students were provided with opportunities to regulate their own learning, access

resources independently, and monitor their progress. Such autonomous learning behaviors may have contributed to greater learning gains among students in the experimental group.

The findings indicate that LMS-supported TOEIC instruction integrated with critical thinking activities effectively enhanced students' critical thinking skills. The substantial gains observed in the experimental group may be attributed to the instructional design implemented within the LMS environment. Through discussion forums, reflective journals, peer feedback, distractor analysis, and collaborative problem-solving activities, students were required to justify their answers, evaluate alternative responses, and reflect on their learning processes. Such activities encouraged learners to move beyond memorization and engage in higher-order cognitive processes.

The findings of the present study are generally in line with previous studies highlighting the potential of digital learning environments to support the development of students' critical thinking skills. (Ilyas & Istaryatiningtias, 2025) found that reflective activities in online learning environments encouraged students to become more aware of their learning processes and develop their analytical thinking. Similarly, (Vildósola et al., n.d.) reported that technology-supported learning environments could provide opportunities for learners to engage in reflection and collaborative learning, which may contribute to the development of critical thinking.

The findings also appear to support previous studies emphasizing the importance of integrating critical thinking into language learning. (Bulkis et al., 2025) suggested that critical thinking is one of the essential competencies needed in twenty-first-century education, while(Hapsari & Prasetyarini, 2025) reported that the incorporation of critical thinking activities in EFL classrooms helped increase students' engagement and understanding of learning materials. In the context of the present study, students who participated in LMS-supported TOEIC instruction integrated with critical thinking activities demonstrated higher critical thinking scores after the intervention, suggesting that such activities may have provided opportunities for students to engage more actively with the learning content.

From an EFL learning perspective, the findings are also consistent with those of (Harefa, 2024; Ilyas & Istaryatiningtias, 2025), who found that learning activities involving argumentation, evaluation, and evidence-based reasoning could support the development of students' critical thinking skills. Although TOEIC preparation is often associated with test-oriented learning, the results of this study indicate that the integration of critical thinking activities through the LMS may encourage students to go beyond memorization and focus more on understanding, reasoning, and reflection. Therefore, the use of LMS-supported TOEIC instruction integrated with critical thinking can be viewed as a promising approach to supporting both language learning and critical thinking development in EFL contexts.

Overall, the findings indicate that students in the experimental group showed greater improvement in critical thinking skills than those in the control group. Improvements were observed across all dimensions of critical thinking, suggesting that the integration of critical thinking activities within LMS supported TOEIC instruction may contribute positively to the development of higher-order thinking skills. While the findings should be interpreted within the context of the present study, they provide preliminary evidence that combining TOEIC preparation with critical-thinking-oriented activities can support more meaningful learning experiences in EFL classrooms.

This questionnaire aims to investigate how the integration of critical thinking into LMS-supported TOEIC instruction influences students' learning behaviors and transforms washback in EFL learning. The Positive Washback Questionnaire was designed to examine students' learning orientation toward TOEIC preparation as one of the core dimensions of washback. This dimension evaluates whether students perceive TOEIC learning as a meaningful process for developing English language proficiency or merely as preparation for achieving higher test scores. The items presented in Table 3 assess students' motivations, learning goals, and perceptions regarding the educational value of TOEIC instruction. Higher levels of agreement with Items 1–4 indicate stronger positive learning orientation, whereas Item 5 is negatively oriented toward score-driven learning and was reverse-coded during data analysis. Examining this construct enables the study to determine whether integrating critical thinking into LMS-supported TOEIC instruction promotes a more meaningful and sustainable approach to language learning

Table 3. Learning Orientation

No.	Item
1	I study TOEIC to improve my overall English proficiency.
2	I focus on understanding language use rather than memorizing answers.
3	TOEIC preparation helps me develop skills that are useful beyond the test.
4	I view TOEIC learning as an opportunity to improve my communication skills.
5	I learn TOEIC primarily to gain a higher score.

Deep learning behavior was included in the questionnaire to examine the extent to which students engaged in meaningful cognitive processing during TOEIC learning. This construct reflects students' tendency to understand underlying concepts, connect learning materials with authentic contexts, and apply analytical reasoning when completing language tasks. As the present study investigates whether integrating critical thinking into LMS-supported TOEIC instruction promotes positive washback, measuring deep learning behavior provides important evidence of students' cognitive engagement beyond rote memorization. The items presented in Table 4 were therefore designed to capture students' conceptual understanding and analytical approaches to TOEIC learning.

Table 4. Deep Learning Behavior

No.	Item
1	I try to understand why an answer is correct before selecting it.
2	I connect TOEIC materials with real-life situations.
3	I analyze TOEIC questions carefully before answering.
4	I seek explanations rather than memorizing answer patterns.
5	I try to understand the reasoning behind test items.

Critical learning behavior represents one of the primary outcomes expected from integrating critical thinking into TOEIC instruction. This construct assesses students' ability to evaluate information, justify decisions with evidence, consider alternative perspectives, and critically analyze language input before selecting responses. These behaviors are closely associated with higher-order thinking skills that support meaningful language learning and positive washback. The questionnaire items presented in Table 5 were developed to measure the extent to which students demonstrated critical thinking during TOEIC learning activities.

Table 5. Critical Learning Behavior

No.	Item
1	I evaluate different answer options before making a decision.
2	I justify my answers using evidence from the text or audio.
3	I question information before accepting it as correct.
4	I consider alternative interpretations of TOEIC materials.
5	I examine the strengths and weaknesses of different answer choices.

Reflective learning was measured to investigate students' ability to evaluate their own learning processes and continuously improve their performance throughout the instructional intervention. Reflection is considered an essential component of self-regulated learning because it enables learners to identify strengths, recognize weaknesses, and adjust learning strategies accordingly. Within LMS-supported learning environments, reflective activities are expected to encourage deeper engagement with TOEIC materials and promote positive learning behaviors. The items presented in Table 6 assess students' reflective practices following TOEIC learning activities

Table 6. Reflective Learning

No.	Item
1	I reflect on my mistakes after completing TOEIC activities.
2	I identify areas that need improvement after each learning session.
3	I evaluate the effectiveness of my learning strategies.
4	I think about how I can improve my performance in future tasks.
5	LMS activities encourage me to reflect on my learning process.

Learner autonomy was included as an indicator of positive washback because autonomous learners are more likely to assume responsibility for their own learning and engage in independent language development beyond classroom instruction. LMS-supported learning environments provide

opportunities for students to access learning resources, monitor progress, and establish personal learning goals according to their individual needs. The questionnaire items presented in Table 7 examine students' independent learning behaviors and self-directed engagement throughout the TOEIC preparation process.

Table 7. Learner Autonomy

No.	Item
1	I take responsibility for my own TOEIC learning.
2	I actively seek additional resources when I encounter difficulties.
3	I use LMS resources independently to improve my TOEIC skills.
4	I set personal learning goals for TOEIC improvement.
5	I monitor my own learning progress regularly.

LMS-supported engagement was assessed to examine how students interacted with the online learning environment during the instructional intervention. Active participation in online discussions, collaborative learning, reflective activities, and digital learning tasks has been widely recognized as an important factor influencing cognitive engagement and positive washback in technology-enhanced language learning. The items presented in Table 8 evaluate students' perceptions of how LMS features supported their participation, interaction, and critical engagement throughout TOEIC instruction.

Table 8. LMS-Supported Engagement

No.	Item
1	LMS discussion forums help me understand TOEIC materials more deeply.
2	Peer discussions in the LMS encourage me to think critically.
3	Reflective activities in the LMS improve my learning.
4	LMS-based learning increases my participation in TOEIC activities.
5	LMS activities help me engage more actively in learning.

Negative washback was included in the questionnaire to identify learning behaviors that emphasize test-oriented preparation rather than meaningful language development. Such behaviors typically involve memorization, excessive reliance on test-taking strategies, and limited attention to conceptual understanding or communicative competence. Assessing this construct enables the study to determine whether integrating critical thinking into LMS-supported TOEIC instruction can reduce undesirable learning practices commonly associated with conventional test preparation. The items presented in Table 9 therefore measure the extent to which students exhibit negative washback behaviors during TOEIC learning.

Table 9. Negative Washback

No.	Item
1	I memorize answers without understanding them.
2	I focus only on test-taking tricks.
3	My primary goal is to obtain a high TOEIC score.
4	I rarely think about why an answer is correct.
5	I prefer memorizing patterns rather than understanding concepts.

The findings indicate that the integration of critical thinking into LMS-supported TOEIC instruction generated positive washback effects on students' learning behaviors. Overall, students reported high levels of learning orientation, deep learning behavior, critical learning behavior, reflective learning, learner autonomy, and LMS-supported engagement. Among these dimensions, LMS-supported engagement obtained the highest mean score (M = 4.47, SD = 0.39), suggesting that the LMS provided opportunities for students to participate actively in discussions, reflections, and collaborative learning activities. In addition, the overall washback score was categorized as high (M = 4.04, SD = 0.37), indicating that the instructional approach encouraged more meaningful learning experiences during TOEIC preparation.

Table 10. Descriptive Statistics of Washback Questionnaire (Experimental Group)

Dimension	Mean	SD	Interpretation
Learning Orientation	4.42	0.41	Very High
Deep Learning Behavior	4.38	0.46	Very High
Critical Learning Behavior	4.35	0.43	Very High
Reflective Learning	4.29	0.48	Very High
Learner Autonomy	4.31	0.45	Very High
LMS-Supported Engagement	4.47	0.39	Very High
Negative Washback	2.08	0.52	Low
Overall Washback Score	4.04	0.37	High

The results further show that students tended to focus on understanding and analyzing TOEIC materials rather than merely completing practice tests. High scores in deep learning behavior (M = 4.38, SD = 0.46) and critical learning behavior (M = 4.35, SD = 0.43) suggest that students increasingly evaluated answer choices, reflected on their reasoning, and sought to understand why particular responses were correct. Similarly, the high scores for learner autonomy (M = 4.31, SD = 0.45) and reflective learning (M = 4.29, SD = 0.48) indicate that students became more responsible for monitoring their own learning and evaluating their progress throughout the course. The Negative Washback dimension obtained a low mean score (M = 2.08, SD = 0.52), suggesting that students showed lower tendencies toward memorization and test-oriented learning practices. Rather than focusing solely on obtaining higher scores, students appeared to engage more actively in understanding TOEIC materials and evaluating their responses. This finding indicates that the integration of critical thinking activities through the LMS may have supported the development of more positive learning behaviors. As a result, TOEIC preparation was not only viewed as a test preparation activity but also as an opportunity to develop language proficiency and critical thinking skills.

Discussion

The fourth research question aimed to explore students' perceptions of LMS-supported TOEIC instruction integrated with critical thinking activities. To address this question, semi-structured interviews were conducted with ten students from the experimental group after the intervention. The interview data were analyzed using thematic analysis, resulting in three major themes: (1) improved understanding of TOEIC materials, (2) increased engagement and motivation in learning, and (3) positive perceptions of LMS-supported learning. The first revealed that students perceived the learning activities as helpful in improving their understanding of TOEIC materials. Many participants reported that they no longer focused solely on finding the correct answer but also tried to understand the reasons behind their responses. The critical thinking activities encouraged them to analyze questions, evaluate answer options, and discuss their reasoning with peers. One student stated, "Previously, I usually focused on choosing the correct answer as quickly as possible. Through the discussions and reflection activities, I learned to understand why an answer was correct and why the other options were incorrect." Another participant mentioned that the activities helped them become more confident when answering unfamiliar TOEIC questions because they had learned to apply reasoning rather than rely on memorization. These findings suggest that the integration of critical thinking activities supported students' comprehension of TOEIC materials and encouraged more meaningful learning processes.



Figure 2. The display of LMS

The second concerned on students' engagement and motivation during the learning process. Most participants described the LMS-supported activities as interactive and interesting. The discussion forums, peer feedback, and reflective tasks encouraged students to participate actively and share their ideas with classmates. Several students reported that they were more motivated to complete learning activities because they could access materials, discussions, and feedback at any time through the LMS. One participant explained, "The LMS made it easier for me to review materials and participate in discussions outside the classroom. I became more active because I could learn at my own pace." This finding indicates that the LMS environment provided opportunities for continuous learning and increased students' involvement in TOEIC preparation.

More over, the third is highlighted the students' positive perceptions of the LMS-supported TOEIC instruction. Overall, participants viewed the LMS as a useful platform that facilitated learning, communication, and collaboration. Students appreciated the flexibility of accessing learning resources, submitting assignments, and receiving feedback through a single platform. More importantly, they perceived that the combination of LMS-supported learning and critical thinking activities helped them understand TOEIC more effectively. Several students stated that they became more aware of their strengths and weaknesses and developed better learning strategies throughout the course. These responses suggest that students perceived the LMS not only as a technological tool but also as a learning environment that supported their academic development.

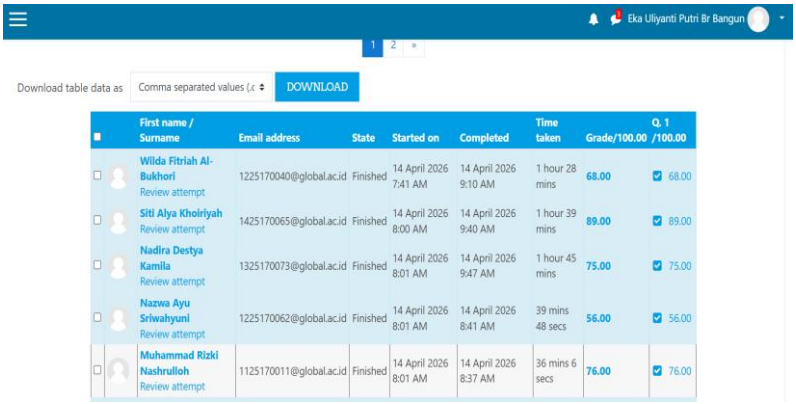


Figure 3. The feedback of LMS activities

The findings of the present study are generally consistent with previous research on technology-enhanced language learning. (Muslem et al., 2022) reported that reflective activities in digital learning environments promoted students' awareness of their learning processes and supported deeper engagement with learning materials. Similarly, Vildósola et al. (2025) found that technology-supported learning environments could facilitate critical thinking development through collaborative learning and reflective inquiry. The positive perceptions reported by students in the present study appear to support these findings, as participants emphasized the benefits of discussion, reflection, and interaction within the LMS environment.

The findings also align with previous studies highlighting the importance of integrating critical thinking into EFL instruction. Bulkis et al. (2025) argued that critical thinking is an essential competency in twenty-first-century learning, while (Hapsari & Prasetyarini, 2025) found that critical-thinking-oriented activities increased students' engagement and understanding of learning materials. In the present study, students perceived that the critical thinking activities helped them understand TOEIC materials more deeply and encouraged them to become more active learners. This suggests

that the integration of critical thinking into TOEIC preparation may provide additional learning benefits beyond test preparation itself. Overall, the interview findings indicate that students responded positively to LMS-supported TOEIC instruction integrated with critical thinking activities. They perceived the learning approach as helpful for improving their understanding of TOEIC materials, increasing their engagement in learning, and supporting their development as more reflective and independent learners. These findings suggest that the integration of critical thinking within an LMS environment may contribute to creating a more meaningful and supportive learning experience for EFL students preparing for TOEIC.

CONCLUSIONS

This study examined the implementation of critical-thinking-oriented activities in LMS-supported TOEIC instruction and its influence on students' TOEIC achievement, critical thinking skills, washback effects, and learning perceptions. The findings showed that students who participated in LMS-supported TOEIC instruction integrated with critical thinking activities achieved higher TOEIC score improvement than those who received conventional TOEIC instruction. The results also indicated that students in the experimental group demonstrated better critical thinking performance after the intervention. In addition, the findings suggest that the integration of critical thinking activities within the LMS environment encouraged more positive learning behaviours. Students reported high levels of learning orientation, deep learning behaviour, reflective learning, learner autonomy, and engagement in learning activities, while negative washback tendencies were relatively low. These findings indicate that TOEIC preparation can be designed not only to improve test performance but also to support meaningful learning experiences and the development of higher-order thinking skills. The interview findings further revealed that students responded positively to the instructional approach. They perceived the LMS as a helpful learning platform that facilitated access to learning materials, discussion, reflection, and collaboration. Students also reported that the critical thinking activities helped them understand TOEIC materials more deeply and become more actively involved in the learning process. Overall, the findings suggest that integrating critical thinking into LMS-supported TOEIC instruction may provide a useful approach for supporting TOEIC learning while simultaneously encouraging critical thinking development and positive learning behaviors. Nevertheless, this study was conducted within a limited context and involved a relatively small number of participants. Therefore, further studies involving larger samples, longer intervention periods, and different educational settings are recommended to provide a broader understanding of the effectiveness of this instructional approach.

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