

Self-Regulated Learning and Motivation in CALL: A Washback Perspective


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ABSTRACT

Keywords: Self-Regulated Learning, Motivation, Washback, CALL, EOP

This study investigates learners' self-evaluation of self-regulated learning and motivation in Computer-Assisted Language Learning (CALL) from a washback perspective. Data was collected via an online survey, and 530 English for Occupational Purposes (EOP) students at a public university in Vietnam participated. This study employed a quantitative approach and utilized partial least squares structural equation modeling (PLS-SEM) to test the hypotheses and measure the extent to which CALL influences students' motivation and self-regulated learning. Findings indicate that positive washback has a significant impact on students' motivation and self-regulated learning. Negative washback has an inverse but statistically insignificant effect on students' self-regulated learning. These variables accounted for 75.4% of the variance, confirming the washback effects of CALL on students' self-regulated learning. The study offers pedagogical insights for university administrators and provides a basis for optimizing the implementation of CALL in educational settings.

Introduction

The processes of economic and social globalization have rendered multilingual communication an essential competitive asset in the labor market (Stein-Smith, 2017). The surging desire for acquiring a second language signifies the escalating trend of global integration and the imperative of linguistic proficiency across diverse domains (Zhang, 2022). In the digital age, language acquisition has been transformed through technological integration, modifying the conventional learning environment and offering learners new opportunities to explore diverse styles and types that align with their preferences (Heard, 2019; Butler, 2022). Educational models have shifted towards a learner-centered teaching approach (Reigeluth et al., 2016), focusing on learner personalization, fostering positive self-discovery experiences, encouraging self-management, creative thinking, and technological advancement (Ahmed & Mikail, 2022; An & Mindrila, 2020).

Computer-Assisted Language Learning (CALL) has attracted considerable interest from language educators over time, as it offers learners a flexible online learning environment

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equipped with diverse tools and resources to facilitate autonomous learning (Heard, 2019; Selvaraj et al., 2024). CALL is a technology-driven setting that employs software and applications to enhance language acquisition (Mirani et al., 2019). Autonomous learning via Computer-Assisted Language Learning (CALL) is genuinely effective only when learners cultivate motivation and the capacity for self-regulation in their development (Wang et al., 2023). Puntularb et al. (2021) demonstrated the efficacy of Computer-Assisted Language Learning (CALL) through a case study examining students' characteristics and self-regulation skills in online language acquisition, revealing that computer support enhances learning motivation; greater motivation correlates with improved application of self-regulated learning. Learning motivation influences the degree of effort and the outcomes of language learners (Al-Hoorie & Szabó, 2022), whereas self-regulation capacity governs whether learners actively monitor or disregard their learning process, evaluate the quality of their work, and take corrective measures when discrepancies arise between expectations and actual results (Hamdan et al., 2021; Li & Zhang, 2021). This indicates that CALL's washback might exert both beneficial and detrimental effects on learners' motivation and self-regulated learning.

Theories of washback in language assessment have been extensively examined across several educational settings, predominantly in relation to paper-based language assessments conducted in classrooms or online via computers (Green, 2013; Rahimi et al., 2016). To the author's knowledge, no research has yet been conducted on motivation and self-regulated learning in Computer-Assisted Language Learning (CALL) from the standpoint of washback. This study seeks to address the research gap by assessing how the positive and negative washback effects in the CALL environment influence students' motivation and self-regulated learning capabilities. Ultimately, this study offers various recommendations for university administrators to maximize the implementation of Computer-Assisted Language Learning (CALL) in improving language competency and promoting sustainable learning practices, based on the evaluation results.

Literature review

Self-Regulated Learning in Online Environments

Numerous nations consider self-regulated learning (SRL) a distinct educational technique to enhance students' academic achievement, particularly in light of increasing apprehensions regarding the quality of online education (Boekaerts & Cascallar, 2006). Zimmerman (2002) was among the pioneers in formalizing this notion, characterizing self-regulated learning (SRL) as a cyclical process encompassing self-observation, self-judgment, and self-reaction. SRL is a dynamic, multifaceted process wherein learners endeavor to oversee and regulate their cognition and behaviors, modifying their learning activities according to objectives and contextual limitations. Self-regulated learning (SRL) is facilitated by learner autonomy, hence highlighting individual will and attitude, which results in personal variances (Teng, 2024). The self-directed character of online learning environments renders self-regulated learning (SRL) a vital component for promoting effective learning (Barnard et al., 2009). Nonetheless, certain studies indicate that learners encounter difficulties with self-regulated learning in online educational settings (Carter et al., 2020; Jin et al., 2023).

Based on educational psychology, SRL can be divided into three main stages (Zimmerman, 2002). In the forethought phase, learners plan and set learning goals and monitor, analyze, and adjust their behaviour through awareness. In the performance phase, learners use various strategies to organize and manage their time and monitor their learning performance against set

goals. In the self-reflection phase, learners self-assess through emotional reflection on the learning process to enhance their improvement.

Barnard et al. (2009) assessed self-regulated learning (SRL) capabilities in online contexts through six determinants: environmental structure, goal formulation, time allocation, assistance-seeking, task methodologies, and self-assessment. Zheng et al. (2018) subsequently refined and classified these six characteristics into six distinct self-regulated learning skills. (1) Goal formulation: strategizing prior to and following educational outcomes; (2) Temporal organization: allocating specific periods for study; (3) Task methodologies: employing suitable techniques for efficient learning; (4) Environmental optimization: identifying conducive study environments and conditions; (5) Assistance solicitation: requesting support from peers and educators when encountering challenges; (6) Self-assessment: consistently evaluating and reviewing academic progress.

Motivation

Motivation propels learning (Hariri et al., 2021; Tabinas et al., 2023; Qianyi & Zhiqiang, 2024). In the context of language acquisition, motivation denotes the degree to which an individual endeavors to achieve a goal, getting gratification from the process (Dörnyei, 1998). Motivation elicits emotional responses, facilitating a clear comprehension of a certain situation and driving intellectual and physical exertion throughout a designated period to attain established objectives (Al-Hoorie & Szabó, 2022). Dörnyei (1998) highlighted that good motivational factors, such as the aspiration for achievement, can improve academic performance, whereas negative effects, such as the fear of failure, can diminish motivation. Consequently, a significant association exists between motivation and language learning success (Han & Lu, 2017). Zheng et al. (2018) evaluated the efficacy of motivation in computer-assisted English learning vs traditional approaches by measuring second-language learning motivation across five categories, resulting in accurate findings. Specifically: (1) Online English Learning Experience (OELE): the manner in which learners engage with online educational platforms; (2) Cultural Interest (CI): the extent of interest in the culture associated with the target language and nation; (3) Instrumentality Promotion (IPO): pertaining to personal objectives, such as enhancing language proficiency for future application; (4) Instrumentality Prevention (IPR): the perception of duty or obligation to acquire knowledge; (5) Others' Expectations (OE): the anticipations from family, friends, educators, etc., concerning online English learning. Additional research explicitly delineate the manifestations of motivation to assess the influence of computer-assisted language learning on learners' motivation. For instance, Belmar et al. (2019) and Widodo et al. (2018) illustrated that motivation facilitates language learners' connection and integration with the culture and community linked to the language. Wang et al. (2022) discovered that highly motivated learners optimally utilize resources offered by educational institutions and instructors, engage actively in learning activities, and express satisfaction with the courses and learning results.

Washback Effect in Computer-Assisted Language Learning

CALL, an acronym for Computer-Assisted Language Learning, pertains to research centered on utilizing computers to enhance the language teaching and learning process. The advent of CALL toward the close of the 20th century transformed perceptions of computer usage, elevating computers beyond just instruments for information processing and presentation (Gündüz, 2005). Computer-Assisted Language Learning (CALL) has disseminated globally among numerous learners and has been included into diverse educational curricula (Chapelle, 2010). CALL denotes computer-linked devices, such as CD-ROMs containing interactive multimedia exercises (Gündüz, 2005), reference software like electronic dictionaries, grammar

checkers, and digital libraries (Chapelle, 2010), as well as diverse applications of online learning platforms (Wang et al., 2023), to enhance language acquisition.

Washback refers to the influence of assessments on teaching and learning in education; its impacts may be beneficial or detrimental, contingent upon the alignment of design and implementation with educational objectives (Spratt, 2005). Washback influences language instruction and acquisition (Cheng et al., 2004). The concept of the "Washback effect" has been extensively examined in diverse educational contexts regarding the influence of assessment activities on teaching and learning (Cheng & Curtis, 2003; Watanabe, 2003; Cheng et al., 2004). Nonetheless, despite the considerable influence of CALL on pedagogy and learning, assessments of washback effects remain insufficiently prevalent, systematic, or thorough. Research indicates that washback effects are intricate and can differ markedly according to the context and execution of CALL tools.

Effective integration of CALL into the educational process might yield beneficial washback effects, resulting in contemporary and efficient learning methodologies. Interactive exercises, immediate feedback, and personalized learning paths can improve instructional activities and learner results (Chapelle, 2003). Research indicates that students utilizing Computer-Assisted Language Learning (CALL) typically dedicate more time to cultivating extensive language skills, tailor their learning experiences to their individual pace and requirements, promptly recognize and rectify mistakes, maximize their educational time and resources, derive enjoyment from the learning process, and enhance their performance (Garrett, 2009; Stockwell, 2013). The future of Computer-Assisted Language Learning (CALL) is anticipated to be increasingly bright, owing to improvements in artificial intelligence (AI) and virtual reality (VR).

Conversely, if CALL is inappropriate or overly reliant, it can lead to adverse washback effects, where language learning becomes mechanical, dependent, and lacks genuine interaction. For instance, learning that focuses less on meaningful communication may hinder language acquisition (Sun, 2019). Additionally, in many parts of the world, particularly in rural or underdeveloped areas, learners often struggle to access the Internet and the necessary devices for using CALL (Warschauer, 2003); this creates a disparity in learning opportunities and raises concerns about educational equity (Selwyn, 2010). Another important factor mentioned by Blake (2011) is the reliance on technology, which can reduce direct interaction between teachers and learners, a crucial aspect of language learning.

The relationship between washback effect in CALL, motivation, and self-regulated learning

Prior research (Zarei & Hashemipour, 2015; Dong et al., 2022) demonstrates that Computer-Assisted Language Learning (CALL) substantially influences learners' motivation. The washback effect in Computer-Assisted Language Learning (CALL) can augment learners' motivation by offering stimulating and interactive educational resources. When students see CALL as engaging, their intrinsic and extrinsic motivations are enhanced, resulting in improved learning outcomes and conversely.

The influence of CALL is seen in learners' self-regulated learning inside online settings (Nazeer et al., 2023). The washback effect in Computer-Assisted Language Learning (CALL) facilitates Self-Regulated Learning (SRL) by equipping learners with tools to oversee their learning processes. They can establish objectives, monitor advancement, and evaluate themselves through exercises and automated feedback. In a CALL environment, learners' self-regulated learning (SRL) cultivates their capacity for autonomous learning and increases essential language abilities.

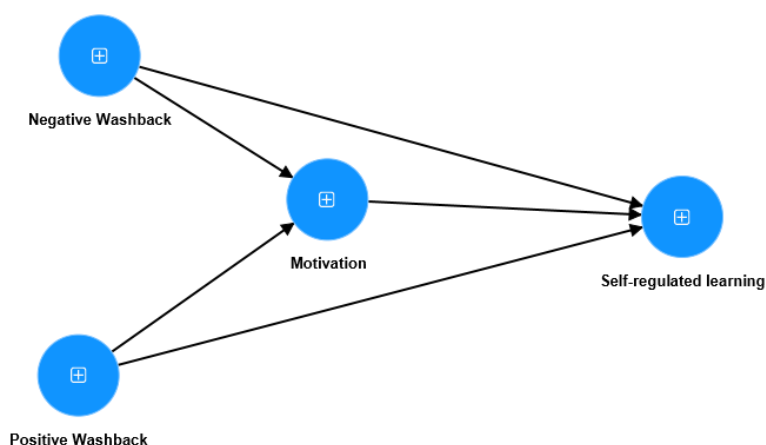
Moreover, research conducted by Al-Hoorie & Szabó (2022) and Li & Zhang (2021) indicates that highly motivated learners demonstrate superior self-regulated learning capacities; conversely, enhanced self-regulation fosters increased learning initiative.

Hypotheses

Based on a comprehensive review and the relationship between the washback effect in CALL, motivation, and SRL, the authors propose a research model: Self-Regulated Learning and Motivation in CALL: A Washback Perspective, as follows:

Figure 1.

Proposed research model



Accordingly, this study proposed the following hypotheses:

- H1. Negative washback affects EFL students' self-regulated learning
- H2: Negative washback affects EFL students' motivation
- H3. Positive washback affects EFL students' self-regulated learning
- H4. Positive washback affects EFL students' motivation
- H5. Motivation affects EFL students' self-regulated learning

Methods

Sample and data collection

The data was collected through an online survey. Students were sent a link to a Google Form that was open for one week, from August 19 to 25, 2024. The participants in this study were students enrolled in English for Occupational Purposes (EOP) courses at a public university in Vietnam. The course is designed in a hybrid format, i.e., students study listening, reading, and writing online via an LMS platform developed by the university, known as the EOP platform. They do exercises, tasks, and practice tests on the learning platform. The onsite class focuses on Speaking practice. Students take part in the final exam at the end of the semester. A total of 577 students participated in the survey, and 47 invalid questionnaires were excluded. The remaining 530 responses accounted for 91.8% of the statistical analysis. Table 1 presents the demographic information of the participants. Among the 530 participants, 353

(66.6%) were male, 172 (32.5%) were female, and 5 (0.9%) identified as belonging to other genders. Regarding IT competence, 33.2% of participants reported that they were not quite proficient in using technology, 3% stated that they had difficulty using technology, whereas 63.8% claimed they were proficient.

Table 1.

Demographic information of participants

Item	Values	Frequency	Percentage
Gender	Male	353	66.6
	Female	172	32.5
	Others	5	0.9
Major	Tourism & Hospitality	76	14.4
	Mechanical Engineering	80	15.1
	Garment & Fashion Design	62	11.7
	Information Technology	72	13.6
	Chemistry - Environment	61	11.5
	Commerce	37	7.0
	Electrical - Electronics engineering	89	16.8
	Automobile	53	10
IT competence	Have difficulty using technology	16	3.0
	Not quite proficient	176	33.2
	Proficient	304	57.4
	Very proficient	34	6.4

Measurement instrument

The questionnaire items were developed based on the literature review and validated in the pilot stage. The questionnaire consisted of three main parts, each containing 31 items. The first part collected demographic information from participants. The second part assessed students' perceptions of the negative and positive washback of computer-assisted learning, motivation, and self-regulated learning. The third part gathered their suggestions and comments on the EOP platform. Back translation was used to confirm the accuracy and quality of the translation between the English and Vietnamese questionnaires, and the Vietnamese version was then sent to participants via Google Forms. The survey employed a five-point Likert scale, ranging from 1 (strongly disagree) to 5 (strongly agree).

Data analysis

This study utilizes SmartPLS 4.0 for data analysis, employing Partial Least Squares Structural Equation Modeling (PLS-SEM) techniques to provide causal explanations (Hair et al., 2019). This causal-predictive study examines how exogenous variables, specifically negative and positive washback effects of CALL, can predict endogenous variables, namely motivation and self-regulated learning.

There are two phases for evaluating and reporting PLS-SEM results: measurement model assessment and structural model assessment. The measurement model includes five steps: factor loading and p-value, indicator reliability, internal consistency reliability, average variance extracted (AVE), and discriminant validity (Hair et al., 2021). The cut-off value 0.70 for Cronbach's alpha and composite reliability is acceptable (Hair et al., 2021). To evaluate convergent validity, the average variance extracted (AVE) should be above 0.5 (Hair & Alamer, 2022). Next, discriminant validity can be assessed using the Fornell and Lacker criterion or the Heterotrait-Monotrait correlation ratio (HTMT). The second phase is assessing the structural model. The structural model can be assessed based on the variance inflation factor

(VIF) value; a VIF value of 5 or greater demonstrates serious collinearity issues (Hair et al., 2021). The coefficient of determination (R^2) is used to calculate the explanatory power, and Q^2 is used to measure the predictive relevance of independent variables; a Q^2 value greater than 0 indicates that the model has predictive relevance (Shmueli et al., 2019). For second language and education research, Hair and Alamer (2022) proposed that R^2 values between 0 and 0.11 are weak, 0.11 and 0.30 are modest, 0.31 and 0.50 are moderate, and those greater than 0.50 demonstrate strong explanatory power.

Ethical considerations

Students were informed of the study's purpose, procedure, and their rights as respondents, including the option to withdraw from the study at any time before completing the questionnaire. They were instructed not to write their names or personal information in the questionnaire to ensure anonymity and confidentiality.

Results/Findings and Discussion

Measurement model

Cronbach's alpha was examined to assess the reliability of the measurement of the construct. The Cronbach's alpha ($C\alpha$) results range from 0.91 to 0.95, which exceeds the required threshold of 0.7 proposed by Hair et al. (2021). Factor loadings, Composite reliability (CR) and AVE were tested to measure the convergent validity. Factor loadings ranged from 0.71 to 0.91, CR values ranged from 0.936 to 0.962, and the AVE values ranged from 0.698 to 0.809 (Table 2). Hence, the reliability and convergent validity of the construct measurements are established.

Table 2.

Factor loadings, reliability and convergent validity

Constructs	Loadings	$C\alpha$	Rho-a	CR	AVE
Negative washback		0.927	0.931	0.942	0.698
NWB1 Learning becomes mechanical, lacks real interaction	0.714				
NWB2 I concentrate less on studying.	0.895				
NWB3 My language skills get worse.	0.805				
NWB4 I do not have the necessary equipment to learn language skills on the computer.	0.860				
NWB5 Studying with a computer does not create a fair language-learning environment.	0.894				
NWB6 I depend more on technology when learning language skills.	0.871				
NWB7 I lack an environment to practice while studying.	0.795				
Positive washback		0.948	0.949	0.957	0.761
PWB1 I can effectively use learning resources.	0.848				
PWB2 I can learn English skills at my own pace.	0.886				
PWB3 I can correct mistakes quickly when studying.	0.861				
PWB4 I invest a lot of study time in developing language skills.	0.884				
PWB5 I am interested in learning experiences with the computer learning support system.	0.907				
PWB6 My academic performance is better.	0.884				
PWB7 Applying AI in learning helps improve my language skills.	0.837				

Motivation		0.915	0.917	0.936	0.746
MOT1	The platform's interactive features (e.g., English quizzes and forums) are well-organized and easy to access.	0.873			
MOT2	The cultural content provided on the platform enhances my understanding of the English language.	0.900			
MOT3	The English skills I gain on this platform will be useful in my future career.	0.863			
MOT4	My use of this platform is influenced by a concern for failing to meet future language requirements.	0.825			
MOT5	I feel pressured by others (lecturers, peers) to perform well on this online learning platform.	0.855			
Self-regulated learning		0.953	0.953	0.962	0.809
SRL1	I plan and track my learning objectives effectively using the platform.	0.891			
SRL2	I manage my time effectively while using the platform, ensuring I complete tasks on time.	0.908			
SRL3	The platform provides useful tools and resources that support my task strategies.	0.915			
SRL4	I create a conducive learning environment using the online platform (e.g., quiet space, minimal distractions).	0.902			
SRL5	I seek help from instructors or peers when encountering difficulties on the online learning platform.	0.865			
SRL6	I identify areas for improvement after each session.	0.916			

Fornell-Lacker's criterion was used to evaluate the validity of the discriminant, i.e., how constructs are distinct in the model. Table 2 shows that the square root of AVE values was higher than the inter-construct correlations, indicating good discriminant validity (Table 3). The results confirm strong statistical evidence for the construct reliability and the scale's discriminant validity.

Table 3.

Fornell-Lacker criterion

	Motivation	Negative Washback	Positive Washback	Self-regulated learning
Motivation	0.864			
Negative Washback	0.196	0.836		
Positive Washback	0.777	0.186	0.873	
Self-regulated learning	0.803	0.139	0.831	0.900

Structural model

The structural model was evaluated. The direct and indirect influence of negative and positive washback on self-regulated learning was assessed. Bootstrapping techniques, utilizing 5,000 resamples, were employed to determine the significance of direct paths and assess their standard errors. The calculation shows that all the VIFs are less than 3; hence, the result confirms that there is no collinearity in the model.

The coefficient of determination R^2 values for motivation is 0.607, Q^2 is 0.448, R^2 for self-regulated learning is 0.754, and Q^2 is 0.605. The model has predictive relevance as Q^2 is higher than 0. The model has substantial value. The R^2 values support the model's predictive power.

The relative effect sizes (F^2) of the exogenous variable have an impact on the endogenous variables ($F^2 > 0.35$), except for Negative washback. The R^2 for self-regulated learning is 0.754, indicating that 75.4% of the variance in self-regulated learning can be explained by the model variables (Figure 2). Hence, the model has a strong predictive power on self-regulated learning.

The path analysis outcomes indicate that negative washback did not influence motivation ($B = 0.053$, $p > 0.05$) or self-regulated learning ($B = -0.038$, $p > 0.05$). Therefore, H1 and H2 were rejected. In contrast, positive washback has a significant influence on motivation ($B = 0.767$, $p < 0.01$) and self-regulated learning ($B = 0.526$, $p < 0.01$), confirming H3 and H4. Additionally, motivation has a statistically significant influence on self-regulated learning ($B = 0.401$, $p < 0.01$). Hence, H5 was supported.

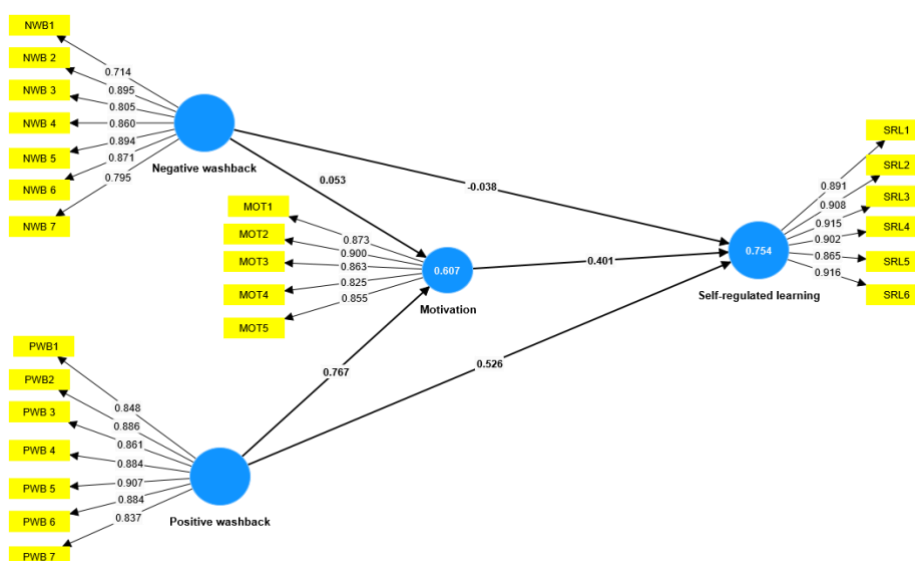
Table 4.

Hypothesis test results

Hypotheses	Beta Coefficient	Standard deviation	T	P	Decision
H1: NWB > MOT	0.053	0.028	1.891	0.059	Not supported
H2: NWB > SRL	-0.038	0.022	1.738	0.082	Not supported
H3: PWB > MOT	0.767	0.028	27.599	0.000	Supported
H4: PWB > SRL	0.526	0.061	8.650	0.000	Supported
H5: MOT > SRL	0.401	0.063	6.378	0.000	Supported

Figure 2.

Path analysis results



Discussion

This study examines the effects of negative and positive washback on students' motivation and self-regulated learning in computer-assisted language learning. This study identifies positive washback as the key factor in strengthening students' self-regulated learning, with factor loadings ranging from 0.837 to 0.907, indicating good indicators of positive washback. Elements in CALL, such as self-paced English skill development, rapid error correction, enhanced learning support, and AI-assisted application, should receive attention from lecturers

and educators due to their significant impact on students' motivation and self-regulated learning. This study supports the highlights of Zhang et al. (2019) and Alsager (2024) of the pedagogical benefits of AI in fostering students' learning. This study also confirms the positive influence of washback in CALL environments, exhibiting that positive washback promotes self-regulated learning behaviors. Specifically, it encourages students to plan their learning, seek support and adopt effective online learning strategies.

Conversely, the study's findings reveal several factors contributing to negative washback, including limited real interaction, inadequate equipment, an inequitable language learning environment, overreliance on technology, and insufficient practice opportunities. The most noticeable finding is the minimal influence of negative washback on self-regulated learning (-0.038), suggesting a weak effect in this context. Given that self-regulated learning is a 'context-specific process' (Zheng, 2018), the current results uncover that negative washback does not significantly impact self-regulated learning within the specific context of CALL in EOP. The findings may be attributed to EOP practices and practice tests that are not directly tied to students' achievements, thus reducing the potential threat of negative washback. Although the impact of negative washback is not statistically significant in this context, the elements of such washback remain important to contemplate so that lecturers and educators can provide adequate practice tests and equip students to manage other testing environments.

The study also confirms a significant washback impact of CALL on students' motivation, accounting for 60.7% of the variance in motivation, consistent with the findings of Dong et al. (2022), which demonstrate that CALL has a substantial impact on students' motivation. Students are inclined to invest time and effort in their language learning when they realize the benefits of CALL. This positive washback encourages students to engage more deeply with the learning, explore English-speaking cultural aspects, and stay on pace with their peers. Consequently, CALL fosters motivation and inspires students to engage in their language learning goals. Although the negative washback of CALL has a marginal and insignificant effect on motivation (0.53%) in this specific context, its consequences should not be ignored. The lack of direct interaction, equity issues, and technology dependence can demotivate students and impact their learning achievement during the learning phases.

The results of this study align with the research of Zheng (2018) and Umamah et al. (2024), reinforcing the view that motivation is instrumental in enhancing students' self-regulated learning efforts. Accordingly, lecturers and administrators should prioritize factors that foster motivation, such as incorporating interactive features into learning platforms and integrating cultural content to broaden students' understanding of English-speaking countries. Additionally, students' motivation increases when they recognize the relevance of skills gained through computer-assisted learning for their future careers. Thus, activities designed to enhance language knowledge and skills should be carefully crafted to support students in their future careers. Finally, the involvement of lecturers and peers plays a crucial role in supporting students' engagement and focus within computer-assisted language learning environments. The guidance, endorsement and support from lecturers and peers can alleviate the isolation students experience during their computer-based language learning practice while fostering students' self-regulated learning abilities to efficiently plan, monitor, and adjust their language acquisition processes.

Conclusion

This study offers theoretical and practical implications. Theoretically, the study reinforces the washback effects of computer-assisted language. Practically, the study emphasizes the critical role of positive washback on students' motivation and self-regulated learning in CALL settings. The inner model analysis reveals that positive washback and motivation explain 75.4% of the variance in self-regulated learning, with positive washback alone accounting for nearly 60.7% of the variance in motivation. This finding confirms the predictive roles of positive washback and motivation on students' language self-regulated learning in the CALL environment. However, lecturers and administrators need to consider additional factors that may contribute to students' self-regulation in language learning contexts.

The study's results highlight the significant impact of positive washback on learners' motivation and self-regulated learning in Computer-Assisted Language Learning (CALL), thereby offering implications for optimizing CALL implementation in higher education. First, lecturers and administrators should design learner-centered CALL that promotes goal setting, self-monitoring, and meaningful interaction with content, peers, and lecturers to minimize the negative washback. Second, training for students and lecturers is necessary, especially for those less proficient with technology. Third, lecturers should ensure that learning activities are designed to be practical and career-oriented, thereby increasing relevance and motivation. Fourth, regular evaluation of CALL implementation, utilizing learner feedback and data-driven analysis, facilitates monitoring its effectiveness. Furthermore, focusing on key elements of positive washback is crucial for optimizing language learning outcomes.

This study suggests several further studies. Similar studies could incorporate interviews and observations to gather qualitative data on students' self-regulated learning practices, providing more insights into the multidimensional influences on motivation and self-regulated learning. This approach would provide a more comprehensive view of the negative and positive washback effects in CALL environments.

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