Factors Affecting English Foreign Language (EFL) Learners' Acceptance of Content-Based Language Application for Language Learning

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***Abstract*—In recent years, investigating factors affecting learners' acceptance has gained prominence. However, little is known about the effect of behavioural intention, and interactivity and engagement as mediating variables, particularly in the use of technology-based content application for language learning. This study explored the relationships among variables on learners' acceptance of Content-Based Language Application (CBLA). The Unified Theory of Acceptance and Use of Technology (UTAUT) construct reveals a strong correlation with both self-efficacy and attitude. Performance expectancy demonstrates a positive correlation with attitudes, indicating that learners' beliefs about favourable outcomes and performance in language learning influence their attitudes positively. Social influence exhibits a critical correlation with behavioural intention, highlighting the role of social factors in shaping learners' intentions to engage in language learning activities. Effort expectancy shows a positive direct correlation with self-efficacy and attitude. Social influence significantly affects self-efficacy and attitude, and these effects are mediated by behavioural intention, as well as interactivity and engagement. These findings underscore the important role of social factors in shaping learners' self-efficacy beliefs and attitudes, which in turn influence their behavioural intentions. Facilitating conditions have a substantial direct effect on behaviour, while interactivity and engagement act as mediators in the relationship between facilitating conditions and self-efficacy and attitude, highlighting their significance in shaping users' attitudes and intentions to adopt and use content-based language application. Future research can investigate the suitability of the suggested model in other linguistic settings for broader applicability of the results. In light of the ever-evolving nature of technology and language learning, longitudinal studies could offer valuable insights into the lasting effects and stability of the observed relationships over an extended period.**

***Keywords*—attitude, behavioural intention, interactivity and engagement, self-efficacy, UTAUT**

I. Introduction

Higher education institutions have encountered significant transformations as a result of the recent proliferation of digital technology in the educational sector. Due to the network technology, online learning, e-learning, and other informal learning strategies have extended resources, venues, and learning spaces, enabling for self-initiated creation of learning experiences and access to the ecosystem of language learning based on language learners' interests and needs [1, 2]. The use of technology in education can increase learners' involvement in learning, excite interest, increase their level of engagement, and create engaging learning experiences that keep them focused on the subject [3]. As a result, it is essential to investigate factors and values that influence the use of technology in education and its acceptance by learners.

This study adopted the Unified Theory of Acceptance and Use of Technology (UTAUT) towards self-efficacy and attitude with behavioural intention, and interactivity and engagement as mediating variables. It focused on the use of Content-Based Language Application (CBLA) by English Foreign Language learners and aimed to identify factors in the proposed model that could help interpret and understand their acceptance and usage patterns. Within the framework of this study, CBLA refers to a software or application that focuses on language learning and communication by providing content-rich materials and exercises that aim to help learners acquire language skills while obtaining knowledge in other areas.

Researchers have inquired about several factors that contribute to learners' acceptance of language learning technology related to self-efficacy, attitude, self-regulated learning and learning motivation [2], perceived enjoyment, satisfaction, perceived risk moderators and trust [4], perceived anxiety and use behaviour [5], and behavioural intentions habits [6]. Further study revealed that English as Foreign Language (EFL) learners' acceptance of technology in mobile-based flipped teaching was detected, and it was discovered that attitude and behavioural attention played a pivotal role in affecting learners' acceptance of the technology [7]. Additionally, Peng *et al*. [8] showed that perceived convenience has a robust impact on perceived ease of use, perceived usefulness, and attitude toward using; there is a critical and positive correlation between perceived ease of use, perceived usefulness, attitude toward using, and intention to use; and curiosity and self-efficacy have a substantial impact on intention to use mobile learning when learning English. However, there is little known on elaborating the UTAUT concerning self-efficacy and attitude with behavioural intention, interactivity and engagement as mediating variables and focus on the use of CBLA as the underpinned value.

The study's originality stems from its focus on learners' acceptance of CBLA using the UTAUT framework, as well as its investigation of the relationship between acceptance and self-efficacy, attitude, and behavioural intention, with

interactivity and engagement serving as mediating variables. The study focused on CBLA which adds to an understanding of technology acceptability in the language learning domain by analyzing learners' acceptance in this unique scenario when learners study the language embedded with meaningful content. The justification of researching acceptance and use of technology of CBLA is due to the evolving nature of language across different contexts necessitates a thoughtful selection of activities and materials when teaching English in specialized fields. This selection should be based on a thorough understanding of learners' specific requirements and preferences within their respective areas of study [9]. To address this need, the integration of technology-based content pedagogy is crucial. The study also addresses interactivity and engagement as mediating variables in the link between acceptance and its causes. This feature is unusual in that it analyzes how the amount of interaction and engagement within the application affects learners' acceptance, as well as the impact of self-efficacy, attitude, and behavioural intention. The findings provide a complete examination of learners' adoption of CBLA by including these innovative features in the research design and shed light on the function of major psychological aspects and mediating variables. This adds to the current body of knowledge and guides the development and deployment of successful CBLA. Educators and instructional designers can acquire insights into students' adoption and use of CBLA by using the UTAUT model and including self-efficacy and attitude, as well as the mediating factors of behavioural intention, and interactivity and engagement. This understanding may be used to influence the development and implementation of CBLA tools and tactics that improve self-efficacy, positive attitudes, interactivity, and engagement. Allowing students to actively interact with the information, participate in meaningful activities, and receive timely feedback can all lead to more successful CBLA language learning experiences.

This study aimed to gain a deeper comprehension of Indonesian EFL learners' acceptance of CBLA by modelling the links between the modified UTAUT components. This model was used for evaluating technological and value-related aspects and gaining insights into the factors influencing Indonesian EFL learners at the university level regarding the usage of CBLA. The study model is depicted in Fig. 1 with key components and their predicted correlations. More details are provided below:

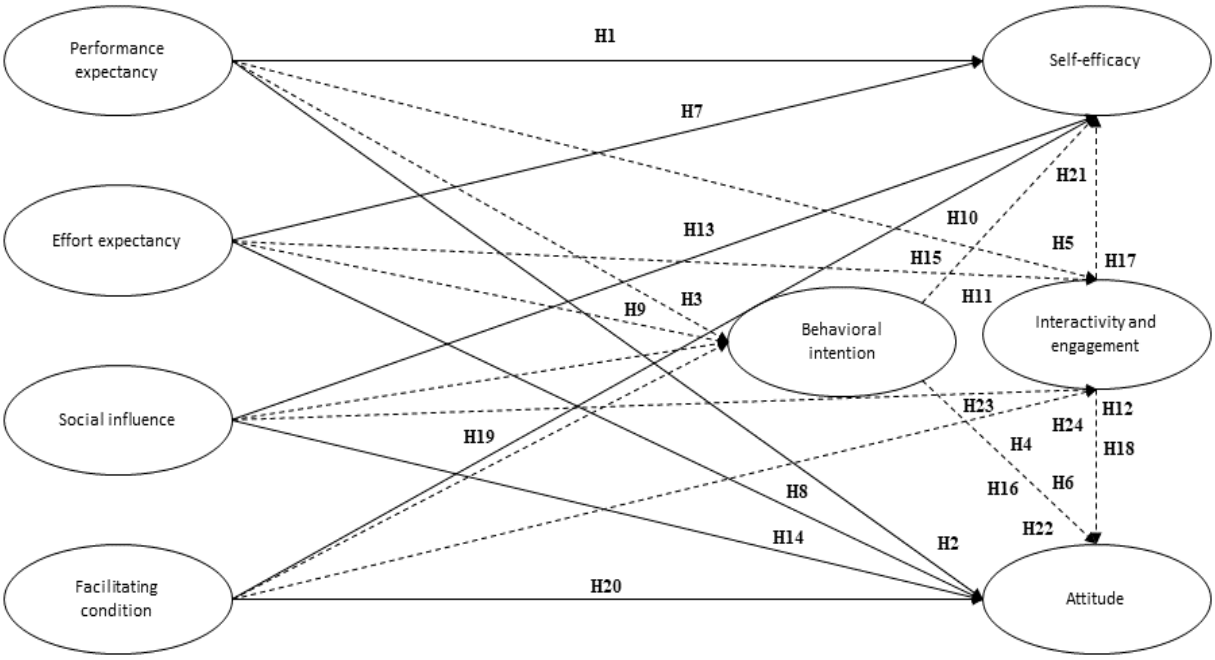

Fig. 1. Proposed model.

Guided by the framework of the UTAUT model [10], this study pinpoints scrutinizing the factors affecting EFL learners' acceptance of self-efficacy and attitude in using CBLA for language learning with behavioural intention, and interactivity and engagement as mediating variables. Three research questions are addressed in this study:

1) How does the UTAUT framework affect the self-efficacy and attitude of EFL learners in using CBLA?
2) How does the UTAUT framework affect the self-efficacy and attitude of EFL learners in using CBLA mediated by behavioural intention?
3) How does the UTAUT framework affect the self-efficacy and attitude of EFL learners in using CBLA mediated by interactivity and engagement?

II. Literature Review

A. The Unified Theory of Technology Acceptance and Use of Technology (UTAUT)

The UTAUT has lately emerged as one of the most sophisticated and intense methods for testing technology adoption and acceptance [11]. It was proposed in 2003 by Venkatesh *et al*. by integrating and expanding several existing theories of technology acceptance [10]. Its goal is to explain and predict how people accept and use technology. This theory is an all-encompassing theoretical model created to

comprehend and foretell how individuals embrace and utilize technology; it integrates and expands upon various established technology acceptance theories such as the Technology Acceptance Model (TAM), the Theory of Reasoned Action (TRA), and the Theory of Planned Behaviour (TPB) with four core aspects namely performance expectancy, effort expectancy, social influence, and facilitating condition [10]. Performance expectancy has been scrutinized from various angles, with its original definition focusing on the extent to which an individual believes that employing the system will enhance job performance [10]. A second fundamental component in the UTAUT model is effort expectancy, which revolves around the perception of how easy it is to use the system [10]. Moving on, social influence, the third core aspect, hinges on the belief that others who hold significance in the user's life advocate for their adoption of the system [10]. Lastly, the facilitating condition encompasses the extent to which an individual assesses the existence of an organizational and technical infrastructure that underpins the system's utilization [10].

B. Self-Efficacy and Attitude

Self-efficacy, a concept presented by Bandura [12] in social cognitive theory, refers to a person's confidence in the capability to carry out particular tasks or behaviours effectively. Self-efficacy plays a crucial role in the development of autonomy, which is closely linked to emerging identities and manifested through the use of digital literacies [13]. In the context of this study, the first endogenous variable observed was self-efficacy. In the milieu of CBLA, self-efficacy is the learners' perception of their proficiency and effectiveness in using technology to acquire language skills and knowledge. The second endogenous variable was attitude which refers to an individual's positive or negative assessment of using CBLA. Research has shown that learners with higher self-efficacy are more predisposed to actively participate in the language application, yielding enhanced learning achievement and increased motivation to continue using the technology. For instance, self-efficacy has a significant predictive value that contributes to students' participation in out-of-class technological activities [14].

A favourable attitude towards technology is a critical determinant of its acceptance and use. When learners perceive the language application as beneficial, enjoyable, and effective in supporting their language learning goals, they are more inclined to adopt and persist in using the technology. Learners who have strong beliefs are likely to achieve favourable results because their positive attitudes impact their actions [15]. As the social psychology notion of attitude toward a behaviour is fundamental for understanding and analyzing learners' perspectives on technology in education, learners' attitudes play an important role in language acquisition [16]. Favourable attitudes toward the learning task increase motivation, promote a favourable learning environment, and permit the successful use of self-regulation mechanisms, resulting in improved learning results [17].

In the realm of language learning and education, technology integration has witnessed significant growth, particularly with the need to provide CBLA. It leverages technology to deliver language learning content in interactive and engaging formats for learners. As technology continues to play a crucial role in language education, comprehending the factors influencing learners' acceptance and utilization of CBLA becomes imperative. Also, self-efficacy plays a crucial role in the academic achievement of learners with varying language proficiencies; as a result, learners' attitudes towards their language learning abilities hold significant importance in their decision-making processes [18]. The previous relevant study revealed that technology integrated into teaching content language to students contributes evidence to the increased motivation of students towards the "professionally-oriented foreign language" course, as indicated by the feedback obtained from the student's final questioning [19]. Besides, using cooperative learning combined with digital storytelling in a content and language-integrated learning environment was proven to improve the digital storytelling skills, English proficiency, and financial knowledge of primary school students [20].

C. Behavioural Intention

It is critical to investigate the UTAUT influence on behavioural intention since behavioural intention is a significant predictor of technology uptake and usage [10]. The foundational theory that underpins the concept of behavioural intention is the Theory of Planned Behavior (TPB). TPB is a fundamental model developed by social psychologists to examine deliberate and intentional behaviour [21]. TPB pertains to an individual's purpose to undertake a certain activity with the thought intention to represent the motivating factors that contribute to an action; they are signs of how hard individuals are willing to try, of how much effort they plan to exert, to do the action [22]. Behaviour intention refers to the extent to which an individual consciously makes plans about whether they will perform a particular action in the future [4]. The belief is that the intention to use technology behaviourally influences the decision of whether or not to utilize it. When examining intentions to participate in technology, it is vital to take into account both technology and available resources that suggest students capitalize on the wide array of technological tools at their disposal [23]. This aligns with previous a study on how students perceive English E-learning technology, which has shown that their performance expectation, effort expectation, and social influence all contribute positively to their intentions to use these platforms [24]. Furthermore, when facilitating conditions are favourable, they also enhance students' intentions to use these resources. This suggests that behavioural intention plays a crucial role as a variable in determining learners' acceptance and use of technology. Understanding how UTAUT elements (performance expectancy, effort expectancy, social influence, and facilitating condition) impact behavioural intention gives useful insights into users' motivation and preparedness to embrace and use technology [25]. Researchers and practitioners can acquire a better understanding of the variables that motivate people to embrace technology and incorporate it into their everyday activities by investigating the link between the UTAUT components and behavioural intention.

D. Interactivity and Engagement

Interactivity and engagement within CBLA use in the context of this study employed the framework of the community of inquiry theory. This framework serves as the foundation for a collaborative learning environment that encourages meaningful communication. It underscores critical elements such as interpersonal interaction, intellectual engagement, and the existence of effective instructional guidance [26, 27]. The framework comprises three active components namely cognitive presence, social presence, and teaching presence that, when considered together form a profound educational experience [28]. While cognitive presence refers to a state of higher-order thinking skill and learning that centres on reflective thinking and conversational exchange [29], social presence can be broadly defined as the capacity to actively participate in the learning community by engaging in open, respectful, and trusting discussions [30]. Teaching presence encompasses the duties and roles related to designing and organizing instruction, guiding discussions, and providing direct teaching, with the possibility of some responsibilities transitioning to students as they become more engaged in a community of inquiry [27, 29].

The study assessed the position of interactivity and engagement as mediating variables. The study investigated interactivity and engagement using the theory framework, which forms the basis for a collaborative environment fostering purposeful communication. It emphasizes essential attributes such as social interaction, cognitive engagement, and the presence of effective teaching [26]. The addition of interactivity and engagement as mediating factors to the UTAUT model provides for a more nuanced understanding of how learners' interactions with technology and degree of involvement with the learning process impact their technology acceptance and use behaviour [31]. Consideration of interactivity and engagement as mediating variables can also aid in the identification of ways to maximize technology use and improve learners' overall learning outcomes in the digital age [32, 33]. For instance, Bikowski and Casal [34] conducted a study that demonstrated how an interactive digital book positively influenced active engagement in language learning among non-native English speakers. Engagement of various pedagogical interactions on content and learners resulted in engaged activities among English language learners [35]. As a result, it is vital to highlight the importance of creating interactivity and dynamic learning engagement to increase learners' acceptance and usage of technology.

III. Method

An analytical survey research design was adopted to examine the connections among multiple factors in the context of EFL learners using CBLA. These factors included performance, and effort expectancies, social influence, facilitating conditions, behavioural intention, interactivity, engagement, self-efficacy, and attitude. The present research was conducted on 135 EFL learners, enrolled in English for Specific Purposes (ESP) courses at an academic university in Indonesia. The entire student population participated in the investigation, because this subject was mandatory, and the semester learning plan incorporated the use of this CBLA. Gender and age were excluded from consideration since learners shared homogeneous characteristics. The research instruments were questionnaires rated using a five-point Likert scale.

For robust data analysis, a measurement model assessment was first conducted. This was aimed to establish the validity and reliability of the constructs. The validity criterion was fulfilled by ensuring that the Average Variance Extracted (AVE) and outer loading were >0.05 and >0.07, respectively. The reliability criteria were achieved by ensuring that the Cronbach alpha and composite reliability were >0.06 and >0.07, respectively [36, 37]. After the measurement model assessment was fulfilled, a structural model specification was defined by specifying the relationships between constructs. It was used to determine the direction and strength of construct relationships based on the theoretical framework. The step was analyzing the R-square values to quantify the proportion of variance in an endogenous construct that is explained by latent constructs in the model. The last step of data analysis was conducting bootstrapping to calculate the significance of path coefficients. Partial Least Square Structural Equation Modelling (PLS-SEM) with SmartPLS was utilized, and a *P*-value of <0.05 was considered to determine the significance of the findings and used as a threshold in hypothesis testing [37]. Table 1 shows the research instrument constructs in the study.

Table 1. Research instrument constructs

Variable	Construct	Indicator	Data Collection	Underpinned Theories
Performance Expectancy	PE1	Productivity	Questionnaire	UTAUT [38–40]
	PE2	User satisfaction		
	PE3	Task efficiency		
	PE4	User satisfaction, adoption, and engagement		
	PE5	Task completion rate		
Effort Expectancy	EE1	Perceived ease of use		
	EE2	Learning curve		
	EE3	Learnability		
	EE4	Error rates		
	EE5	Task completion time		
Social Influence	SI1	Social influence		
	SI2	Subjective norm		
	SI3	Social proof and peer influence		
	SI4	Social network analysis		
Facilitating Condition	FC1	Access to resources		
	FC2	Technical support		

	FC3	Digital literacy		
	FC4	Infrastructure and compatibility		
	FC5	User-friendly interface		
Behavioural Intention	BI1	Likelihood to adopt	Questionnaire	TPB [21, 41]
	BI2	Perceived usefulness		
	BI3	Attitude toward using		
	BI4	Future usage expectation		
	BI5	Attitude toward using		
	BI6	Willingness to recommend		
	BI7	Attitude toward using		
Interactivity and Engagement	IE1	Perceived interactivity	Questionnaire	Community of Inquiry [26, 27, 42]
	IE2	Enjoyment		
	IE3	Task relevance		
	IE4	Interaction opportunities		
	IE5	User Engagement		
	IE6	Multimedia and interactive content		
	IE7	Meaningful feedback		
Attitude	AT1	Perception of benefit	Questionnaire	TPB, and attitude in second language learning [21, 43]
	AT2	Adaptability		
	AT3	Adoption and usage		
	AT4	Adoption and usage		
	AT5	Perception of benefit		
	AT6	Comfort level		
	AT7	Comfort level		
	AT8	Perception of benefit		
	AT9	Adoption and usage		
	AT10	Adoption and usage		
	AT11	Comfort level		
	AT12	Comfort level		
Self-Efficacy	SE1	Confidence in technological skills	Questionnaire	Bandura's theory of self-efficacy [12, 44]
	SE2	Confidence in technological skills		
	SE3	Adaptability to a technological-based learning environment		
	SE4	Persistence in learning		
	SE5	Persistence in learning		
	SE6	Self-directed learning		
	SE7	Self-directed learning		
	SE8	Positive experience		
	SE9	Comfort level		
	SE10	Comfort level		
	SE11	Comfort level		
	SE12	Positive experience		

IV. Results

A. Partial Least Squares Algorithm

The initial phase of data analysis involved evaluating the outer loading scores, which played a critical role in understanding the associations between variables. These scores were instrumental in determining the strength and significance of the relationships, as well as assessing the reliability and validity of the proposed model. The validity requirements for performance expectancy, effort expectancy, social influence, facilitating condition, behavioural intention, interactivity and engagement, self-efficacy and attitude were fulfilled, as the outer loadings for each indicator of both exogenous and endogenous variables exceeded 0.7.

The results provided in Table 2 represent the outer loadings of the measurement items for each construct in the research model. The measurement items for the attitude construct (AT1 to AT12) have high outer loadings, ranging from 0.748 to 0.877. These findings suggest that the measurement items effectively capture different aspects or dimensions of attitude and are strongly related to the attitude construct. The outer loadings for the behavioural intention measurement items (BI1 to BI7) are likewise high, ranging from 0.800 to 0.884. This suggests that the latent construct of behavioural intention is successfully represented by these assessment items. The effort expectancy measuring items (EE1 to EE5) exhibit a positive connection with the construct, ranging from 0.817 to 0.893. According to these findings, the assessment items are indications of the latent concept of effort expectancy. The self-efficacy measuring items (SE1 to SE12) have a positive relationship with the construct, with scores ranging from 0.780 to 0.807. These findings suggest that these test items successfully capture the hidden notion of self-efficacy. The facilitating conditions assessment items (FC1 to FC5) show a positive association with the construct, ranging from 0.817 to 0.900. This suggests that the latent construct of facilitating conditions is successfully represented by these assessment items. The measurement items for interactivity and engagement (IE1 to IE7) have a positive relationship with the construct, ranging from 0.779 to 0.886. This suggests that these measurement items are indicators of the latent construct of interactivity and engagement. The performance expectancy assessment items (PE1 to PE5) present a positive connection with the construct, ranging from 0.898 to 0.927. This indicates that these measurement items effectively represent the latent construct of performance expectancy. The measurement items for social influence (SI1 to SI4) have positive relationships with the construct, ranging from 0.881 to 0.862. This indicates that these measurement items effectively represent the latent construct of social influence. Overall, the findings indicate that the measurement items have significant relationships with their respective constructs, indicating that they are valid

indicators of these constructs in the research model. These findings provide evidence for the reliability and validity of the measurement items used in the study.

The second step was the assessment of construct reliability and validity to ascertain that the scale items used to assess the variables were coherent. The obtained values, as indicated by the Average Variance Extracted (AVE) output, were above the threshold of 0.05. Concerning discriminant validity to variable differentiation, all variables were deemed valid. Reliability was evaluated using Cronbach's Alpha, which exceeded 0.06, and composite reliability, which surpassed 0.07, ensuring strong analytical research findings. Based on the provided AVE values in Table 3, the constructs generally exhibit satisfactory to commendable levels of convergent validity. These findings suggest that a significant portion of the variation in each construct is adequately represented by the measurement items, considering the presence of measurement error. Consequently, it can be inferred that the measurement items effectively capture the underlying constructs and contribute to their overall validity.

Table 2. Outer loadings

	Attitude	**Behavioural Intention**	**Effort Expectancy**	**Facilitating Condition**	**Interactivity and Engagement**	**Performance Expectancy**	**Self-Efficacy**	**Social Influence**
AT1	0.840							
AT2	0.820							
AT3	0.761							
AT4	0.826							
AT5	0.851							
AT6	0.748							
AT7	0.877							
AT8	0.832							
AT9	0.804							
AT10	0.858							
AT11	0.823							
AT12	0.853							
BI1		0.848						
BI2		0.840						
BI3		0.867						
BI4		0.884						
BI5		0.800						
BI6		0.858						
BI7		0.876						
EE1			0.817					
EE2			0.828					
EE3			0.893					
EE4			0.878					
EE5			0.834					
FC1				0.868				
FC2				0.900				
FC3				0.817				
FC4				0.818				
FC5				0.836				
IE1					0.779			
IE2					0.852			
IE3					0.864			
IE4					0.797			
IE5					0.886			
IE6					0.882			
IE7					0.854			
PE1						0.898		
PE2						0.927		
PE3						0.823		
PE4						0.885		
PE5						0.878		
SE1							0.780	
SE2							0.784	
SE3							0.755	
SE4							0.756	
SE5							0.829	
SE6							0.847	
SE7							0.816	
SE8							0.774	
SE9							0.768	
SE10							0.808	
SE11							0.741	
SE12							0.807	
SI1								0.881
SI2								0.844
SI3								0.795
SI4								0.862

Table 3. Construct reliability and validity

	Cronbach's Alpha	rho_A	Composite Reliability	Average Variance Extracted (AVE)
Attitude	0.957	0.958	0.962	0.681
Behavioural Intention	0.938	0.939	0.949	0.729
Effort Expectancy	0.904	0.905	0.929	0.723
Facilitating Condition	0.902	0.904	0.928	0.720
Interactivity and Engagement	0.933	0.936	0.946	0.715
Performance Expectancy	0.929	0.930	0.946	0.780
Self-Efficacy	0.945	0.946	0.952	0.623
Social Influence	0.867	0.873	0.910	0.716

Following construct reliability and validity, Table 4 displays the outcomes of the Fornell-Larcker criterion, which evaluates the discriminant validity among the constructs. The values shown represent the square root of the Average Variance Extracted (AVE) for each construct. Upon examining the data provided, it becomes evident that the AVE values for each construct surpass their correlations with other constructs, affirming satisfactory discriminant validity. This implies that the constructs are distinguishable from one another and effectively capture unique aspects of the underlying constructs they represent. Overall, these findings substantiate the discriminant validity of the measurement items and signify that the constructs possess ample distinctiveness within the study's context.

Table 4. Discriminant validity fornell-larcker criterion

	Attitude	Behavioural Intention	Effort Expectancy	Facilitating Condition	Interactivity and Engagement	Performance Expectancy	Self-Efficacy	Social Influence
Attitude	0.825							
Behavioural Intention	0.790	0.854						
Effort Expectancy	0.794	0.806	0.850					
Facilitating Condition	0.819	0.854	0.803	0.848				
Interactivity and Engagement	0.791	0.879	0.813	0.853	0.846			
Performance Expectancy	0.927	0.782	0.747	0.794	0.772	0.883		
Self-Efficacy	0.916	0.729	0.735	0.816	0.792	0.876	0.789	
Social Influence	0.765	0.789	0.708	0.754	0.790	0.785	0.733	0.846

After ensuring the validity and reliability of all variables, it was necessary to examine the R-Square (R^2) to gain an understanding of the underlying constructs, measure the proportion of variance explained by the variables, and evaluate the predictive capability of the proposed model. Table 5 presents the R^2 values for each construct, which represents the percentage of variation accounted for by the predictor variables in the regression models. Regarding attitude, the R^2value is 0.887, implying that about 88.7% of the variability in attitude may be described by the independent variables included in the model. Similarly, for behavioural intention and interactivity and engagement, the R^2values are 0.802 and 0.804, respectively. These values suggest that approximately 80.2% and 80.4% of the variation in these variables can be interpreted by the independent variables. In the case of self-efficacy, the R^2value is 0.828, denoting that about 82.8% of the variance in self-efficacy can be exemplified by the independent variables. Taken together, these R^2values demonstrate the strong explanatory power of the independent variables in predicting the variation observed in the dependent variables.

Table 5. R-Square of endogenous variables

	R-Square	R-Square Adjusted
Attitude	0.887	0.882
Behavioural Intention	0.802	0.796
Interactivity and Engagement	0.804	0.798
Self-Efficacy	0.828	0.819

B. Bootstrapping

To explore the causative relationship or correlation between the exogenous and endogenous variables, it is necessary to examine the linear regression weights. The significance of the findings is determined by a *p*-value of less than 0.05, indicating the impact of the observed results [36]. Table 6 displays the relationship between effort expectancy and interactivity and engagement which is highly significant, as indicated by a *p*-value of 0.000. This indicates that the association between these variables is likely meaningful and not a result of chance. On the contrary, the relationship between performance expectancy and behavioural intention has a *p*-value of 0.456, which exceeds the threshold of 0.05 indicating that there is no statistically significant relationship between these two variables.

Table 6. Path coefficients

	Original Sample (O)	Sample Mean (M)	Standard Deviation (STDEV)	T Statistics (|O/STDEV|)	*p*-values
Behavioural Intention → Attitude	0.028	−0.043	0.104	0.266	0.790
Behavioural Intention → Self-Efficacy	0.292	0.294	0.099	2.941	0.003
Effort Expectancy → Attitude	0.165	0.163	0.086	1.925	0.005
Effort Expectancy → Behavioural Intention	0.241	0.249	0.112	2.157	0.002
Effort Expectancy → Interactivity and Engagement	0.272	0.284	0.106	2.574	0.000
Effort Expectancy → Self-Efficacy	0.030	0.037	0.073	0.411	0.681
Facilitating Condition → Attitude	0.407	0.379	0.119	3.397	0.001
Facilitating Condition → Behavioural Intention	0.407	0.380	0.114	3.568	0.000
Facilitating Condition → Interactivity and Engagement	0.404	0.381	0.104	3.890	0.000
Facilitating Condition → Self-Efficacy	0.308	0.302	0.088	3.490	0.001
Interactivity and Engagement → Attitude	0.285	0.281	0.089	2.916	0.004

Interactivity and Engagement → Self-Efficacy	0.285	0.278	0.098	2.922	0.004
Performance Expectancy → Attitude	0.699	0.700	0.081	8.675	0.000
Performance Expectancy → Behavioural Intention	0.091	0.117	0.122	0.745	0.456
Performance Expectancy → Interactivity and Engagement	0.046	0.062	0.115	0.403	0.687
Performance Expectancy → Self-Efficacy	0.618	0.628	0.081	7.620	0.000
Social Influence → Attitude	0.699	0.707	0.085	8.250	0.000
Social Influence → Behavioural Intention	0.240	0.232	0.115	2.092	0.014
Social Influence → Interactivity and Engagement	0.256	0.252	0.094	2.731	0.005
Social Influence → Self-Efficacy	0.240	0.244	0.108	2.224	0.000

Consequently, this relationship is considered non-significant, implying that the correlation between performance expectancy and behavioural intention may be due to chance rather than having a meaningful connection. The correlation between social influence and attitude, performance expectancy and attitude, and social influence and self-efficacy all exhibit highly significant correlations, as their *p*-values are 0.000. In contrast, the correlation between behavioural intention and attitude has a *p*-value of 0.790, which is higher than the significance threshold of 0.05. Thus, this particular relationship is deemed non-significant.

The specific indirect effects reveal how the exogenous factors, including the UTAUT framework, as well as the endogenous characteristics (behavioural intention, interactivity and engagement, self-efficacy, and attitude), mediate and influence each other. Table 7 illustrates that the correlation between effort expectancy and attitude is significantly influenced by behavioural intention, with a *p*-value of 0.018. Similarly, the association between facilitating condition and attitude is significantly influenced by behavioural intention, supported by a *p*-value of 0.005. Furthermore, the indirect effect of performance expectancy on attitude is also significantly influenced by behavioural intention, evidenced by a *p*-value of 0.007. Likewise, the connection between social influence and attitude is significantly influenced by behavioural intention, as indicated by a *p*-value of 0.021.

However, the indirect effect of effort expectancy on attitude through interactivity and engagement is not substantially significant, with a *p*-value of 0.427. In the same way, the association between performance expectancy and attitude, mediated by interactivity and engagement, is not significantly influenced, as supported by a *p*-value of 0.504. Additionally, the indirect effect of social influence on attitude through interactivity and engagement is not statistically critical, with a *p*-value of 0.408.

Table 7. Specific indirect effects between exogenous and endogenous variables

	Original Sample (O)	**Sample Mean (M)**	**Standard Deviation (STDEV)**	**T Statistics (|O/STDEV|)**	***p*-values**
Effort Expectancy → Behavioural Intention → Attitude	0.115	0.109	0.049	2.365	0.018
Facilitating Condition → Behavioural Intention → Attitude	0.211	0.215	0.054	2.256	0.005
Performance Expectancy → Behavioural Intention → Attitude	0.123	0.142	0.119	2.129	0.007
Social Influence → Behavioural Intention → Attitude	0.207	0.214	0.052	2.208	0.021
Effort Expectancy → Interactivity and Engagement → Attitude	0.009	0.011	0.027	0.350	0.427
Facilitating Condition → Interactivity and Engagement → Attitude	0.114	0.115	0.034	2.405	0.016
Performance Expectancy → Interactivity and Engagement → Attitude	0.002	0.004	0.013	0.521	0.504
Social Influence → Interactivity and Engagement → Attitude	0.009	0.009	0.024	0.375	0.408
Effort Expectancy → Behavioural Intention → Self-Efficacy	0.170	0.013	0.041	2.738	0.015
Facilitating Condition → Behavioural Intention → Self-Efficacy	0.119	0.110	0.046	2.561	0.001
Performance Expectancy → Behavioural Intention → Self-Efficacy	0.127	0.233	0.037	2.714	0.016
Social Influence → Behavioural Intention → Self-Efficacy	0.170	0.172	0.050	3.419	0.000
Effort Expectancy → Interactivity and Engagement → Self-Efficacy	0.078	0.078	0.040	1.929	0.054
Facilitating Condition → Interactivity and Engagement → Self-Efficacy	0.115	0.107	0.050	2.314	0.021
Performance Expectancy → Interactivity and Engagement → Self-Efficacy	0.113	0.117	0.035	2.381	0.014
Social Influence → Interactivity and Engagement → Self-Efficacy	0.073	0.070	0.037	1.949	0.052

On the other hand, the relationship between effort expectancy and self-efficacy is significantly influenced by behavioural intention, with a *p*-value of 0.015. Likewise, the association between facilitating condition and self-efficacy is significantly influenced by behavioural intention, with a *p*-value of 0.001. Correspondingly, the indirect effect of performance expectancy on self-efficacy is significantly influenced by behavioural intention, with a *p*-value of 0.016.

Finally, the correlation between social influence and self-efficacy is significantly influenced by behavioural intention, with a *p*-value of 0.000.

This thorough analytical investigation explored the correlation between endogenous and exogenous variables, providing a comprehensive understanding of their significance in the study. The results in Table 8 show significant total effects for several factors. Specifically, effort expectancy has a meaningful impact on attitude (*p*-value of 0.045), behavioural intention (*p*-value of 0.032), interactivity and engagement (*p*-value of 0.010), and self-efficacy (p-value of 0.008). Similarly, facilitating condition demonstrates significant total effects on attitude (*p*-value of 0.002), behavioural intention (*p*-value of 0.000), interactivity and engagement (*p*-value of 0.000), and self-efficacy (*p*-value of 0.000). Additionally, performance expectancy significantly affects attitude (*p*-value of 0.000), behavioural intention (*p*-value of 0.000), and self-efficacy (*p*-value of 0.000), while social influence has a notable impact on attitude (*p*-value of 0.019), behavioural intention (*p*-value of 0.027), and self-efficacy (*p*-value of 0.017).

However, two specific relationships show non-significant total effects. The associations of interactivity and engagement with attitude (*p*-value of 0.698) and performance expectancy with interactivity and engagement (*p*-value of 0.687) do not exhibit statistical significance. Overall, the findings highlight the significant influence of several factors on various outcomes within the model, indicating meaningful associations. Nonetheless, some specific relationships between variables lack statistically significant total effects.

Table 8. Total effects between exogenous and endogenous variables

	Original Sample (O)	**Sample Mean (M)**	**Standard Deviation (STDEV)**	**T Statistics (|O/STDEV|)**	**P Values**
Behavioural Intention → Attitude	0.128	0.137	0.112	2.246	0.006
Behavioural Intention → Self-Efficacy	0.292	0.294	0.099	2.941	0.003
Effort Expectancy → Attitude	0.167	0.164	0.083	2.005	0.045
Effort Expectancy → Behavioural Intention	0.241	0.249	0.112	2.157	0.032
Effort Expectancy → Interactivity and Engagement	0.272	0.284	0.106	2.574	0.010
Effort Expectancy → Self-Efficacy	0.137	0.142	0.076	2.485	0.008
Facilitating Condition → Attitude	0.131	0.126	0.077	2.690	0.002
Facilitating Condition → Behavioural Intention	0.407	0.380	0.114	3.568	0.000
Facilitating Condition → Interactivity and Engagement	0.404	0.381	0.104	3.890	0.000
Facilitating Condition → Self-Efficacy	0.304	0.298	0.081	3.766	0.000
Interactivity and Engagement → Attitude	0.035	0.040	0.089	0.389	0.698
Interactivity and Engagement → Self-Efficacy	0.285	0.278	0.098	2.922	0.004
Performance Expectancy → Attitude	0.698	0.703	0.073	9.567	0.000
Performance Expectancy → Behavioural Intention	0.291	0.217	0.122	2.045	0.000
Performance Expectancy → Interactivity and Engagement	0.046	0.062	0.115	0.403	0.687
Performance Expectancy → Self-Efficacy	0.605	0.612	0.084	7.182	0.000
Social Influence → Attitude	0.124	0.233	0.062	2.151	0.019
Social Influence → Behavioural Intention	0.240	0.232	0.115	2.092	0.027
Social Influence → Interactivity and Engagement	0.256	0.252	0.094	2.731	0.007
Social Influence → Self-Efficacy	0.233	0.121	0.068	2.542	0.017

V. Hypothesis Testing

The study affirms a strong and influential positive connection between performance expectancy and self-efficacy, with a *p*-value of 0.000. Similarly, there is a substantial positive interrelation between performance expectancy and attitude, with a *p*-value of 0.000. Additionally, performance expectancy has a critical positive effect on behavioural intention, and in turn, behavioural intention significantly influences self-efficacy, supported by a *p*-value of 0.016. Similarly, the positive link between performance expectancy and attitude is significantly mediated by behavioural intention, with a *p*-value of 0.007. Moreover, the study indicates a significant positive correlation between performance expectancy and interactivity and engagement, and this association significantly affects self-efficacy, as shown by a *p*-value of 0.014. Therefore, hypotheses H1, H2, H3, H4, and H5 were accepted.

Likewise, effort expectancy has a meaningful positive effect on self-efficacy, with a *p*-value of 0.008, and also on attitude, with a *p*-value of 0.045. Furthermore, effort expectancy has a critical positive effect on behavioural intention, and in turn, behavioural intention significantly influences self-efficacy, supported by a *p*-value of 0.015.

Similarly, the positive correlation between effort expectancy and attitude is significantly mediated by behavioural intention, with a *p*-value of 0.018. Hence, hypotheses H7, H8, H9, and H10 were accepted.

Furthermore, the study finds a substantial positive association between social influence and self-efficacy, with a *p*-value of 0.017. Similarly, there is a critical positive correlation between social influence and attitude, with a *p*-value of 0.019. Additionally, social influence significantly affected behavioural intention, and in turn, behavioural intention significantly influences self-efficacy, as indicated by a *p*-value of 0.000. Moreover, the positive link between social influence and attitude is significantly mediated by behavioural intention, with a *p*-value of 0.021. As a result, hypotheses H13, H14, H15, and H16 were accepted.

The study also reveals a meaningful positive relation between facilitating condition and self-efficacy, with a *p*-value of 0.000. Likewise, there is a substantial positive association between facilitating condition and attitude, with a *p*-value of 0.002. Additionally, facilitating condition has a significant critical impact on behavioural intention, and in turn, behavioural intention significantly influences self-efficacy, supported by a *p*-value of 0.001. Similarly, the positive relationship between facilitating condition and attitude is substantially mediated by behavioural intention, with a *p*-value of 0.005. Further, the study shows a distinctive positive correlation between facilitating condition and interactivity and engagement, and this association significantly affects self-efficacy, as indicated by a *p*-value of 0.021. Therefore, hypotheses H19, H20, H21, H22, H23, and H24 were accepted.

However, the study found that the correlation between performance expectancy and attitude mediated by interactivity and engagement is not significant from a statistical perspective, with a *p*-value of 0.504. Similarly, the relation between effort expectancy and self-efficacy mediated by interactivity and engagement is not statistically significant with a *p*-value of 0.054. Likewise, the connection between effort expectancy and attitude mediated by interactivity and engagement is not critically significant with a *p*-value of 0.427. The association between social influence and self-efficacy mediated by interactivity and engagement is not substantially significant, with a *p*-value of 0.052. Moreover, the study reveals that the correlation between social influence and attitude mediated by interactivity and engagement is not statistically significant, with a *p*-value of 0.408. Hence, hypotheses H6, H11, H12, H17, and H18 were rejected.

Overall, the findings of the study suggest that many variables significantly influence various outcomes in the model, indicating meaningful associations. However, some specific relationships between variables do not show statistically significant total effects. The path coefficients determined the hypotheses decision can be observed in Table 9.

Table 9. Results of specific indirect effects and total effects

H	Path Coefficients	*p*-values	Decision
1	performance expectancy → self-efficacy	0.000	Accepted
2	performance expectancy → attitude	0.000	Accepted
3	performance expectancy → behavioural intention → self-efficacy	0.016	Accepted
4	performance expectancy → behavioural intention → attitude	0.007	Accepted
5	performance expectancy → interactivity and engagement → self-efficacy	0.014	Accepted
6	performance expectancy → interactivity and engagement → attitude	0.504	Rejected
7	effort expectancy → self-efficacy	0.008	Accepted
8	effort expectancy → attitude	0.045	Accepted
9	effort expectancy → behavioural intention → self-efficacy	0.015	Accepted
10	effort expectancy → behavioural intention → attitude	0.018	Accepted
11	effort expectancy → interactivity and engagement → self-efficacy	0.054	Rejected
12	effort expectancy → interactivity and engagement → attitude	0.427	Rejected
13	social influence → self-efficacy	0.017	Accepted
14	social influence → attitude	0.019	Accepted
15	social influence → behavioural intention → self-efficacy	0.000	Accepted
16	social influence → behavioural intention → attitude	0.021	Accepted
17	social influence → interactivity and engagement → self-efficacy	0.052	Rejected
18	social influence → interactivity and engagement → attitude	0.408	Rejected
19	facilitating condition → self-efficacy	0.000	Accepted
20	facilitating condition → attitude	0.002	Accepted
21	facilitating condition → behavioural intention → self-efficacy	0.001	Accepted
22	facilitating condition → behavioural intention → attitude	0.005	Accepted
23	facilitating condition → interactivity and engagement → self-efficacy	0.021	Accepted
24	facilitating condition → interactivity and engagement → attitude	0.016	Accepted

VI. Discussion

The acquired data offer valuable insights into the relationships among variables concerning acceptance and usage of CBLA. Through the analysis of path coefficients, specific indirect, and total effects, the research emphasizes the importance and influence of various factors affecting the acceptance of learners and their intention to participate in language learning activities. The UTAUT construct exemplifies that there is a strong correlation to both self-efficacy and attitude. These findings are similar to that of comparable studies that learners' acceptance of the technological learning environment is influenced by the UTAUT affecting factors to self-efficacy and attitude [45]. Sung *et al.* [46] also asserted that the UTAUT (herewith performance expectancy) significantly contribute positive correlation with behavioural intention in mobile learning. In the given context, another empirical study evidenced that performance expectancy and effort expectancy both share substantially positive effect on behavioural intention in

mobile learning which means that when learners view a technology or system as beneficial (performance expectancy) and find it user-friendly (effort expectancy), they have a preference to use it. Fascinatingly, Zhang and Yu [47] found that the UTAUT variables, i.e., performance expectancy and facilitating conditions were positively interrelated to behavioural intention in gamification application for vocabulary enhancement, but effort expectancy and social influences were negatively correlated to behavioural intention. It is in contrast with the findings of this study that all constructs of the UTAUT positively correlated with self-efficacy, attitude and behavioural intention [4]. The finding of this current study also examined that performance expectancy mediated by interactivity and engagement which did not affect attitude positively. No previous study has reported a similar result. The existing study only focused on examining the relationship between perceived usefulness in online learning environments on learners' engagement [48]. Other studies may present counterarguments against the inclusion of specific variables or propose alternative models. For instance, some studies may argue that self-regulated learning or learning motivation should be included as additional factors influencing acceptance [49–51]. It is crucial to respond to such perspectives and provide a rationale for the chosen variables and model in this study. This can be achieved by discussing the theoretical basis for the selected variables, their relevance to the context of content-based language learning, and the empirical evidence supporting their inclusion.

In the effort expectancy construct, this study reveals that there is a positive direct correlation between effort expectancy to self-efficacy and attitude. However, Wei *et al*. [52] probed in their study that effort expectancy was not a determinant factor of self-efficacy in the technology learning ecosystem. Bailey and Rakushin-Lee [53] employed a reversed variable with self-efficacy mediates task value and engagement and revealed that self-efficacy can also function as a mediation model with robust and meaningful effects.

This study also found an insignificant correlation between the specific indirect effects of effort expectancy to self-efficacy and attitude mediated by interactivity and engagement. The lack of a significant indirect association does not imply that interactivity and engagement did not influence the variables; rather, it indicates that the data from the study did not give enough evidence to corroborate the expected mediation. Prior investigation delved into multi-path mediation of learner-content engagement and learner-learner engagement with self-efficacy and enjoyment as mediation and this study provided a critical sign for assessing online learning as part of digital transformative education [54]. It implies that interactivity and engagement can explain the mechanism of the learner to content and learner to learner although it minimally demonstrates a meaningful indirect correlation. Engagement is always seen as a robust and multidimensional concept encompassing contextualized ideas of thinking, emotions, and actions, which involve social interactions and where taking action is an essential element [55].

The next analysis is the specific indirect effects and direct effects of social influence on self-efficacy and attitude mediated by behavioural intention, and interactivity and engagement. It was found that social influence had a significant effect on both self-efficacy and attitude. A preexisting study reviewed that social influence and self-efficacy simultaneously affected the learners' adoption of technology and proved to be significant predictors for technology acceptance [56]. Graf-Vlachy and Buhtz [57] discovered that the social influence attribute has been characterized by diverse elucidations, interpretations, conceptualizations, impacts, disagreements, perceptions, perspectives, and adversities in the adoption of various information technology domains. It signifies that social influence as a determining factor in technology adoption may impact adoption behaviour with varying attitudes and behaviours.

Moreover, the study demonstrated that social influence indirectly affected self-efficacy and attitude through behavioural intention, and these indirect relationships were also statistically significant. These findings underline the meaningful influence of social aspects in shaping individuals' self-efficacy beliefs and attitudes, which, in turn, impact their behavioural intentions. It was corroborated by the preceding study under the Theory of Planned behaviour that attitude, behavioural intention, social image as well and actual engagement were closely interrelated as contributing factors in assisting EFL learners to learn English [58]. Because of this, the study's outcomes emphasize the importance of recognizing social influences in comprehending and forecasting individuals' attitudes and intentions concerning specific behaviours. The prior study investigated how social influence affected behavioural intention in mobile learning [46]. Inexplicably, similar to prior rejected hypotheses, social influence did not have a substantial favourable effect on self-efficacy and attitude with interactivity and engagement as a mediating variable. One possible explanation for social influence not having a critical positive effect on self-efficacy and attitude, particularly when interactivity and engagement are used as mediating variable, could be related to the nature of interactions between individuals and the technology or system under study. The amount of interaction and involvement did not considerably improve the impact of social influence on self-efficacy and attitude, resulting in insignificant associations. Furthermore, the nature of the technology or system, the context in which it was utilized, or the persons involved may have impacted the results. If the technology or system did not promote meaningful social connections or if participants did not find it especially engaging, the mediating impact of interactivity and engagement may have been ineffective. This construct is worth investigating concerning technology usage in CBLA as engaging students with technology such as gaming activity, web-based language learning and social media platforms can provide affordances of language learning interaction [59, 60].

In the fourth key factor of the UTAUT, interestingly, the results suggest that facilitating conditions significantly impact self-efficacy, attitude, and behavioural intention when using a technology or system. It affirms that facilitating conditions have a substantial direct effect on behaviour [10]. Furthermore, the study demonstrates that interactivity and engagement act as moderators in the relationship between

facilitating conditions and self-efficacy and attitude. These findings underscore the crucial role of facilitating conditions and interactivity in shaping users' attitudes and intentions towards adopting and using CBLA.

VII. Conclusion

In summary, this study investigates the acceptance of CBLA using the UTAUT framework among EFL learners. It explores the relationship between acceptance and key factors, including self-efficacy, and attitude, with behavioural intention, and interactivity and engagement as mediating variables. The results indicate that attitudes alone do not directly influence learners' behavioural intention in language learning activities, suggesting the presence of other influential factors. In terms of self-efficacy, no significant relationship with attitudes is established, indicating that learners' beliefs in their abilities do not directly impact their attitudes towards language learning.

This research provides valuable insights into the acceptance of CBLA and sheds light on the influential factors affecting learners' attitudes and intentions. It emphasizes the importance of considering factors such as effort expectancy, facilitating conditions, performance expectancy, and social influence when designing effective language learning applications. The findings contribute to the existing knowledge and offer guidance for the development and implementation of successful content-based language learning applications.

Moreover, acknowledging the pitfalls of the study and identifying areas for further inquiry is crucial. The generalizability of the findings may be limited to the specific population and context of Indonesian EFL learners. Further studies could explore the applicability of the proposed model in diverse cultural and linguistic contexts to enhance the transferability of the outcomes. Additionally, considering the dynamic nature of technology and language learning, longitudinal studies could provide insights into the long-term effects and stability of the observed relationships.

In a nutshell, the findings of the study contributed to the knowledge of the acceptance and use of CBLA. The path coefficients, specific indirect effects, and total effects provide valuable insights into the significance and influence of various factors. The study's focus on the UTAUT framework, the inclusion of self-efficacy, attitude, and behavioural intention as key factors, and the examination of interactivity and engagement as mediating variables are significant contributions. The pedagogical implications of the study's findings can assist language educators in using the knowledge of key factors of self-efficacy, attitude, behavioural intention, interactivity and engagement explicitly in teaching strategies, encouraging a positive learning environment and fostering motivation and engagement of students with CBLA. Language educators and institutions can also apply the study's findings as supporting data to inform the decisions about integrating CBLA into the educational curricula. This supporting evidence can aid stakeholders in making informed choices when it comes to using technology-enhanced learning tools.

Appendix

Table A. Questionnaire items

Construct		Item	Measurement	Reference
Performance Expectancy	Productivity	PE1	Using technology-based content language integrated learning material in learning English would enhance my language skills.	UTAUT [38–40]
	User satisfaction	PE2	I believe that technology-based content language integrated learning material will improve my understanding and usage of English.	
	Task efficiency	PE3	I expect that using technology-based content language integrated learning material will make my English learning more effective and efficient.	
	User satisfaction, adoption, and engagement	PE4	Technology-based content language integrated learning material would provide me with a wider range of resources and learning materials for improving my English language skills.	
	Task completion rate	PE5	I anticipate that using technology-based content language integrated learning materials will enhance my overall performance in English language learning	
Effort Expectancy	Perceived ease of use	EE1	Learning to use technology-based content, language, integrated learning material would be easy for me.	UTAUT [36–38]
	Learning curve	EE2	I believe that using technology-based content language integrated learning material would require minimal mental and physical effort.	
	Learnability	EE3	I expect that technology-based content language integrated learning material will be user-friendly and intuitive.	
	Error rates	EE4	I anticipate that using technology-based content language integrated learning material will not cause any significant difficulties in my English language learning journey.	
	Task completion time	EE5	I expect that using technology-based content language integrated learning material would not be complicated or time-consuming.	
Social Influence	Social influence	SI1	People whose opinions I value, such as my teachers or peers, would encourage me to use technology-based language content integrated learning materials in learning English.	UTAUT [38–40]
	Subjective norm	SI2	I believe that using technology-based content language integrated learning material is socially acceptable among my peers.	
	Social proof and peer influence	SI3	I would feel motivated to use technology-based content language integrated learning material if others whom I respect find it useful.	
	Social network analysis	SI4	I perceive a positive influence from my social environment to use technology-based language content integrated learning material in learning	

			English.	
Facilitating Condition	Access to resources	FI1	I have access to the necessary technology and resources to use technology-based content language integrated learning material.	UTAUT [38–40]
	Technical support	FI2	I have the technical support and assistance needed to effectively use technology-based content language integrated learning material.	
	Digital literacy	FI3	I have the necessary skills and knowledge to utilize technology-based content language integrated learning materials.	
	Infrastructure and compatibility	FI4	I believe that the infrastructure and connectivity required for using technology-based content language integrated learning materials are reliable and accessible.	
	User-friendly interface	FI5	I perceive that there are no significant barriers or obstacles that would hinder me from using technology-based content language integrated learning materials effectively.	
Behavioral Intention	Likelihood to adopt	BI1	The use of Content-Based Language Application (CBLA) would enhance my motivation to learn English.	TPB [21, 41]
	Perceived usefulness	BI2	I believe that incorporating Content-Based Language Application (CBLA)into my language learning would improve my overall language proficiency.	
	Attitude toward using	BI3	I am confident that using Content-Based Language Application (CBLA)would help me understand English texts more effectively.	
	Future usage expectation	BI4	I intend to regularly use Content-Based Language Application (CBLA) to support my English language learning.	
	Attitude toward using	BI5	I believe that Content-Based Language Application (CBLA) would make learning English more enjoyable for me.	
	Willingness to recommend	BI6	I would recommend the use of Content-Based Language Application (CBLA) to other EFL learners.	
	Attitude toward using	BI7	I expect that using Content-Based Language Application (CBLA) would positively impact my language learning outcomes.	
Interactivity and Engagement	Perceived interactivity	IE1	The interactive features in Content-Based Language Application (CBLA) help me actively engage in my language learning	Community of Inquiry [26, 27, 42]
	Enjoyment	IE2	I find the interactive exercises and activities in Content-Based Language Application (CBLA) enjoyable and interesting.	
	Task relevance	IE3	Content-Based Language Application (CBLA) allows me to practice and apply language skills in a meaningful context.	
	Interaction opportunities	IE4	The use of multimedia elements (e.g., videos, audio, images) in Content-Based Language Application (CBLA) enhances my learning experience.	
	User Engagement	IE5	Content-Based Language Application (CBLA) encourages me to actively participate in language learning tasks and exercises	
	Multimedia and interactive content	IE6	I feel motivated to continue using Content-Based Language Application (CBLA) due to its interactive and engaging nature.	
	Meaningful feedback	IE7	The interactive feedback provided by Content-Based Language Application (CBLA) helps me track my progress and improve my language skills.	
Attitude	Perception of benefit	AT1	I believe that using technology-based content language integrated learning material enhances my overall learning experience in English.	TPB, and attitude in second language learning [43]
	Adaptability	AT2	I find technology-based content language integrated learning material that is interesting and engaging for learning English.	
	Adoption and usage	AT3	I feel confident in my ability to effectively learn and use English through technology-based content language integrated learning materials.	
	Adoption and usage	AT4	I perceive technology-based content language integrated learning material as a valuable resource for improving my English language skills.	
	Perception of benefit	AT5	I believe that technology-based content language integrated learning material helps me develop a deeper understanding of English language concepts.	
	Comfort level	AT6	I enjoy using technology-based content language integrated learning material to practice my English language skills.	
	Comfort level	AT7	I perceive technology-based content language integrated learning material as a convenient and flexible way to learn English.	
	Perception of benefit	AT8	I believe that technology-based content language integrated learning material enhances my motivation to learn and improve my English language skills.	
	Adoption and usage	AT9	I feel that technology-based content language integrated learning material provides me with a wide range of learning opportunities in English.	
	Adoption and usage	AT10	I believe that using technology-based content language integrated learning material accelerates my progress in learning English.	
	Comfort level	AT11	I enjoy exploring and discovering new features and resources available in technology-based content language integrated learning material for learning English.	
	Comfort level	AT12	I am confident that using technology-based content language integrated learning material will contribute to my overall success in mastering the English language.	
Self-Efficacy	Confidence in technological skills	SE1	I feel confident in my ability to use technology-based content language integrated learning material to improve my English language skills.	Bandura's theory of self-efficacy [12, 44]
	Confidence in technological skills	SE2	I believe that technology-based content language integrated learning material enhances my motivation to learn English.	
	Adaptability to a technological-based learning environment	SE3	I am capable of effectively utilizing technology-based content language integrated learning material to enhance my English language proficiency.	
	Persistence in learning	SE4	I perceive technology-based content language integrated learning material as a valuable tool for improving my English language skills.	
	Persistence in	SE5	I believe that using technology-based content language integrated learning	

learning		material positively impacts my ability to understand and use English in real-life situations.
Self-directed learning	SE6	I feel confident in my ability to navigate and utilize the various features and functions of technology-based content language integrated learning material.
Self-directed learning	SE7	I believe that technology-based content language integrated learning material allows me to learn English at my own pace and in a self-directed manner.
Positive experience	SE8	I perceive technology-based content language integrated learning material as an effective resource for improving my overall language proficiency, including speaking, listening, reading, and writing skills.
Comfort level	SE9	I am confident that I can overcome any technical difficulties or challenges that arise while using technology-based content language integrated learning material to learn English.
Comfort level	SE10	I believe that technology-based content language integrated learning material provides an interactive and engaging learning experience for improving my English language skills.
Comfort level	SE11	I feel that technology-based content language integrated learning material is a valuable addition to my language learning resources.
Positive experience	SE12	I am confident in my ability to apply the knowledge and skills gained through technology-based content language integrated learning material to real-life English language situations.

CONFLICT OF INTEREST

The authors declare no conflict of interest.

AUTHOR CONTRIBUTIONS

R. Yulian has done the conception and framework of the study, research instrument development, manuscript writing, data analysis, and manuscript submission. U. Ruhama' and Y. Yuniarti have done the data input, data analysis and interpretation, correction, and editing. All authors had approved the final version.

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