On the relationship between Chinese EFL students' everyday technology usage, e-learning readiness, and emotion regulation

Hongwu Yang
Suzhou University of Science and Technology, China

Aigui Wang (corresponding author)
Suzhou University of Science and Technology, China

ABSTRACT: This study investigated the relationship between learners' everyday technology usage, e-learning readiness, and emotion regulation among EFL students in China. A total of 557 participants were recruited using a convenience sampling technique from various colleges and universities, ultimately yielding a final sample of 504 valid responses after excluding problematic data. The participants, aged between 17 and 39, varied across genders, academic years, and majors. The data collection occurred from late November 2022 to early August 2023 through a nationwide questionnaire survey facilitated by EFL teachers. The process included two stages: the first involved translating the questionnaire into Chinese, followed by rigorous scrutiny by two experts in applied linguistics, while the second stage ensured ethical compliance through informed consent obtained via WeChat using Wenjuanxing. Participants completed the survey anonymously, taking approximately 2 to 31 minutes each. Cognitive Emotion Regulation, Readiness for E-Learning, and Everyday Technology Usage questionnaires were employed to gather data. Results indicated a positive and statistically significant direct effect of technology use and e-learning readiness on emotion regulation, suggesting that access to technology and online communication skills enhances students' self-efficacy, motivation, and emotional wellbeing. E-learning readiness fostered a positive attitude toward the ease of use and usefulness of online learning, which, in turn, influenced students' intentions and attitudes towards utilizing online technology and blended learning strategies. Implications for educational practice are discussed.
Keywords: E-learning readiness, Emotion regulation, technology-supported environment, Technology usage

Sobre la relación entre el uso diario de la tecnología de los estudiantes chinos de EFL, la preparación para el aprendizaje electrónico y la regulación de las emociones

RESUMEN: Este estudio investigó la relación entre el uso diario de la tecnología, la preparación para el aprendizaje electrónico y la regulación emocional de los estudiantes. Para llevar a cabo este estudio, utilizamos la regulación cognitivo - emocional, la preparación para el aprendizaje electrónico y el cuestionario de uso de técnicas diarias. Los resultados del estudio muestran que los efectos directos del uso de la tecnología y el aprendizaje electrónico en la regulación emocional son positivos y estadísticamente significativos. El acceso a equipos y tec-

nologías y las habilidades de comunicación en línea mejorarán la autoeficacia de los estudiantes y aumentarán su motivación y emoción. De hecho, la preparación de los estudiantes para el aprendizaje electrónico puede tener una actitud positiva hacia la facilidad y utilidad del aprendizaje en línea, y estos factores también pueden afectar la intención y actitud de los estudiantes de usar la tecnología de aprendizaje en línea y el aprendizaje mixto. Se discutieron los efectos.
Palabras clave: Uso de la tecnología, preparación para el aprendizaje electrónico, regulación emocional, entorno de soporte técnico

1. Introduction

The development of information technology has led to the growth of online learning as a new method of education (Acosta-Gonzaga & Ramirez-Arellano, 2021; Guo & Wang, 2024). Technology-oriented learning includes education through electronic media such as the Internet (Buhr et al., 2019), intranet (Gao et al., 2021), extranet (Lyashevsky et al., 2020), audio-visual tapes (Hossain, 2023), satellite broadcasting, television, and CDs (Lee, 2020). Rojas and Abenavoli (2023) define technology-oriented learning as the method of presenting content through digital devices such as computers and mobile phones to improve learning. Today, technology-oriented learning has become a new growing trend in learning (Derakhshan & Zhang, 2024; Qi & Derakhshan, 2025; Roxå & Marquis, 2019).

This development was due to the need to expand higher education and lack of capacity in traditional (face-to-face) education, and advances and developments in information and communication technology (Richter & Hunecke, 2022). The main advantages of distance education for learners are having relatively absolute freedom in time, place, and pace of learning (Yeldham & Gao, 2021). This term has been developed over time and used to describe other forms of learning such as e-learning, online language learning, technology-based learning, collaborative online learning, technology-enhanced learning, virtual learning, technology-supported learning, and web-based learning (Arabmofrad & Shakki, 2025; Zeinstra et al., 2023).

Research studies show that students can be trained well through the web and learn at least as much as in traditional courses if there is no training and learning (Gao, Zeng et al., 2022; Granziera et al., 2022; Hossain, 2023; Mohammed & Al-Jaberi, 2021; Vollet & Kindermann, 2020; Zhang et al., 2023). The features that determine the reception and application of web-based learning need to be recognized in order to achieve the development of this learning system (Eres et al., 2021). Motivation, attitude, and understanding of web-based learning have been important factors in the successful completion of e-learning programs (Claffey & Brady, 2019; Derakhshan et al., 2021; Hanson et al., 2023; Lyashevsky et al., 2020).

Despite the rapid growth of the use of technology and the Internet in web-based environments and its related benefits, research shows that learners who are familiar with the teaching and learning processes of traditional systems have many problems adapting to web-based environments (Huang et al., 2024; Teo et al., 2022; Wu et al., 2024). A significant number of learners have not been able to complete online learning courses (Holzer et al., 2023). Therefore, in distance and virtual education systems, it seems important and necessary to identify the inhibiting factors in using and intending to use web-based learning (Kazemitabar et al., 2021). In other words, identifying features distressing the willingness to practice technology-supported environments will create a suitable context for improving web-based learning processes (Mendzheritskaya & Hansen, 2019).

The learners' attitude towards the usage of information technology is one of the most effective factors. In other words, users' understanding and attitude towards e-learning can lead to the creation of a more suitable learning environment for education (Sung, 2023). Based on the views of Liao and Hong, the structure of users' attitudes towards computer technologies and the Internet has been divided into three major and measurable parts, which are: emotional, cognitive and behavioral assessment. Emotional assessment includes categories such as examining the level of desire and cognitive assessment of things such as self-achievement and usefulness, which have a positive effect on behavioral assessment. The behavioral assessment also includes items such as behavioral purpose to practice technologies as a teaching tool (Weise et al., 2022).

Meanwhile, to endlessly carry out the electronic learning model, one high priority a right comprehension of the real factors, conditions, and capacities in the progress of electronic learning projects, consequently, looking at the level of understudies' status as one of the crowds of the electronic learning framework and looking at the perspectives towards the execution and execution of the learning framework Electronic is required and essential. It is important to recognize its assets and shortcomings and steer positive developments. In view of this, this examination was led fully intent on deciding the connection between students' ordinary innovation utilization, e-learning availability, and emotion regulation.

The study uniquely examines the interplay between everyday technology usage, e-learning readiness, and emotion regulation, providing a comprehensive understanding of how these factors jointly influence students' language learning experiences. While many studies focus on the technical and cognitive aspects of e-learning, this research highlights the role of emotional regulation, a relatively underexplored area, in shaping students' engagement and performance in technology-mediated language learning. The study situates its investigation within the Chinese EFL learning context, which offers unique insights into how cultural and systemic factors impact students' technology adoption, readiness for e-learning, and emotional management strategies. By focusing on everyday technology usage rather than solely academic or institutional platforms, the study bridges the gap between students' personal and academic lives, exploring how general technological habits influence educational readiness and outcomes. The findings are likely to inform the development of adaptive e-learning strategies that align with students' technology habits and emotional needs, promoting personalized and effective learning environments. Combining elements of educational psychology, technology adoption, and language learning, the research adopts an interdisciplinary lens, contributing to broader discussions in educational technology and second language acquisition. These innovations collectively advance our understanding of how technology, readiness, and emotional factors intersect in the rapidly evolving landscape of e-learning.

2. Literature Review

The technology acceptance model is considered as one of the ideas raised in the field of survey about users' attitude toward information technologies (Sung, 2023). The technology acceptance model proposes two specific behavioral ideas (Wu et al., 2023). Attitude about ease of use and attitude about usefulness. These two attitudes together determine the intention of a student in using technology. Research shows that one of the utmost imperative features

required for technology-based courses is to have optimistic perceptions towards this type of instruction (Yeldham & Gao, 2021).

For the fruitful employment of technology-based learning environments in universities, the attitude of students as the main users of this system is very important (Soga & Gaston, 2016). On the other hand, if e-learning is chosen as an educational strategy, it needs to be sure about the readiness of learners and their attitude towards e-learning (Richter & Hunecke, 2022). The characteristics of successful virtual learners have been identified and presented in various studies (Altintas et al., 2020; Haerens et al., 2019; Hung, 2015; Malmberg et al., 2015; Osterlie et al., 2019; Sultana et al., 2023; Zylstra et al., 2019). In these studies, they often refer to characteristics such as computer and technology literacy, learning competence, self-motivation, problem-solving and critical thinking, time management, interest in learning, self-regulation skills, ability to communicate with groups, self-evaluation, questioning skills, discussion skills, responsibility, the expertise of utilizing web-based acquiring assets and the utilization of learning procedures as the qualities of fruitful online students.

In order to successfully implement technology-based training, it is imperative to check the readiness of e-learning in the sense of the ability of organizations, managers, and key people to be present in the electronic space before the execution of the technology-based project, and to some extent it guarantees the success of the e-learning implementation (Chen & Wu, 2021). Technology-based readiness is the capacity of individuals to involve e-learning assets and media advancements to work on the nature of learning (Han & Geng, 2023).

In research, Korpershoek et al. (2020) estimated learners' readiness for technology-based learning in six regions: admittance to innovation, online relational abilities, inspiration, capacity to learn through media, web bunch conversations, and significant issues for outcome in e-learning. The results show that in the development of e-learning implementation, human resources should be a priority. Since the 1980s, the studies in the field of learning have been focused on the interaction of motivational and cognitive factors that jointly affect the learning and progress of learners (Kim & Ketenci, 2020; Shen et al., 2023; Solhi et al., 2023; Wu et al., 2023; Zhao et al., 2022).

Cognitive skills and motivational beliefs in distance education (combined) classes are important and effective on students' academic performance. In this type of education, learners are responsible for their learning and actively follow the learning process (Naylor & Nyanjom, 2021). Students are the center of educational activity, and students who are more motivated and use better cognitive strategies will be more likely to progress academically (Weise et al., 2022). Self-regulated learning is one of the categories that pay attention to the individual's role in the learning process. Self-regulation strategies refer to students' monitoring, regulation, and control of their cognitive activities and actual behavior (Naylor & Nyanjom, 2021; Pawlak et al., 2022).

According to research studies, traditional learning environments do not prepare students for a high degree of emotion regulation compared to technology-based learning environments (Qu & Wang, 2024; Shao et al., 2023). Motivation has a significant effect on the learner's attitude and learning behavior in educational environments. Motivation is an important component of instructional design. If the educational environment is well designed and the students are not motivated enough, then success will not be achieved (Shen et al., 2023; Wang & Xue, 2024). There are different models of motivation that have been presented about learning

and performance (Verzeletti et al., 2016). In these models, the value-expectation theory is used. In this theory, there are three motivational components, which are: expectation, value, and emotion. According to this model, motivational beliefs include three general types of self-efficacy beliefs, task value beliefs, and goal orientations that exist in students. According to the findings of Volet et al. (2019), there is a direct and strong relationship between self-efficacy and self-regulated learning and students' academic performance. According to models of motivational beliefs, task value beliefs have a positive correlation with the use of cognitive strategies. Goal orientation is the third component of motivational beliefs, which includes two types of internal and external goal orientation. Internal goal orientation refers to the degree of perception that students involve themselves in a task for reasons such as being challenging, curious, and proficient (Weise et al., 2022; Wu et al., 2024).

Bardach et al. (2022) describe extrinsic goal orientation as the degree to which students involve themselves in a task for reasons such as getting grades, rewards, performance evaluation by others, and competition. In their research, Claessens et al. (2017) have mentioned the role of goal orientation in the tendency to use new learning strategies and other variables. In research, Haerens et al. (2019) show that students have more freedom of learning methods in online learning environments, and this freedom increases their internal motivation. In fact, learner control affects their motivation.

Students who have effective and comfortable communication are more successful in online learning environments (Tadayonifar & Entezari, 2020). Learners' motivation, attitude, and understanding of online learning are among the important factors that are considered in evaluating the successful completion of new learning programs (Sultana et al., 2023; Wang et al., 2024). Likewise, the readiness of e-learning has a significant effect on the motivational beliefs and satisfaction of students in flipped classrooms that are created by the combination of traditional and online education. In research, Pennings and Hollenstein (2020) have shown that goal orientation and self-regulated learning directly and indirectly have a significant effect on the attitude toward web-based learning and the intention to use web-based learning.

Correspondingly, Reeve and Shin (2020) have predicted the scholarly exhibition of distance schooling understudies in view of the factors of persuasive convictions and self-directed learning methodologies. The consequences of the exploration show that inside objective direction, self-adequacy, and self-controlled learning methodologies greatest affect scholarly execution in consolidated schooling. Overall, according to the research conducted and the literature background. In this research, the main topic is to investigate the variable effect of e-learning readiness on motivational beliefs, self-regulated learning, and behavioral inclination to online learning of hybrid education students (Tadayonifar & Entezari, 2020). E-learning has received a lot of attention around the world, but the effective expansion of e-learning in the country will not be successful without the comprehensive preparation of scholars, professors, and users to use technology in terms of knowledge, insight, and skills (Ma et al., 2023).

Currently, one of the most fundamental debates in education in many developed countries is how to prepare students for an increasingly computerized society (Kaendler et al., 2016). The traditional methods of education that are implemented at the moment, alone, will not respond to the rapid movement of science and knowledge and the continuous change of the needs of societies in the world of informatics. In universities, raising the quality of learning and teaching has always been one of the important issues, and to achieve this goal,

taking the help of technology to support teaching and learning activities can be effective, considering the existing shortcomings (Reeve & Shin, 2020).

The introduction establishes the context of the study by emphasizing the increasing prevalence of technology in learners' everyday lives and its profound implications for education. It highlights how the ubiquity of technology not only transforms traditional learning environments but also necessitates a deeper understanding of its impact on learners' readiness to engage with e-learning platforms and their ability to regulate emotions in digital learning contexts. By framing these issues, the introduction creates a logical entry point for examining the relationships between everyday technology usage, e-learning readiness, and emotion regulation. Building on this foundation, the literature review delves into prior research, systematically analyzing the interplay between these key constructs. Studies on technology usage are presented to illustrate its pivotal role in enhancing learners' familiarity with digital tools and platforms, which is a critical determinant of e-learning readiness. Simultaneously, the literature highlights the importance of emotion regulation in fostering resilience and adaptability within technology-mediated learning environments, emphasizing how learners' ability to manage emotions influences their engagement and academic success. Moreover, the literature review explores the mediating role of e-learning readiness, positing that it serves as a bridge connecting the habitual use of technology to the development of effective emotion regulation strategies. This thematic focus not only contextualizes the research questions but also demonstrates how existing studies inform the theoretical framework and empirical inquiries of the present research. By maintaining a clear and logical alignment, the introduction and literature review collectively pave the way for addressing the research questions and provide the necessary grounding to investigate the statistically significant relationships and mediating effects outlined in the study.

Since the characteristic of the current age is information and information is central and e-learning is considered as a necessity for the information society, universities cannot ignore e-learning. In addition to familiarizing professors and students with new educational methods, the correct use of electronic learning systems in universities can also help with computer skills and the use of scientific materials online. In the meantime, in order to implement the electronic learning model, one must have a correct understanding of the realities, conditions and capabilities in the success of electronic learning projects, therefore, examining the level of students' readiness as one of the audiences of the electronic learning system and examining the attitudes towards the implementation of the learning system Electronic is obligatory and necessary. It is necessary to identify its strengths and weaknesses and take steps in the right direction. Based on this, this research was conducted with the aim of determining the relationship between learners' everyday technology usage, e-learning readiness, and emotion regulation.

2.1. Research questions

To cover the study objectives, the following research questions were raised:
1. Is there any statistically significant relationship between learners' everyday technology usage, e-learning readiness, and emotion regulation?
2. Do learners' e-learning readiness mediate the relationship between learners' everyday technology usage and their emotion regulation?

3. METHOD

3.1. Participants

In order to minimize the sample selection bias, this study used a convenience sampling technique to collect participants' data. An overall number of 557 EFL students took part in the study. After excluding the problematic data, a finalized sample of 504 respondents was selected. They were selected from different colleges and universities, with different genders, different grades, and different majors. The age of the participants ranged from 17 to 39. Besides, informed consent was given to participants in this study before the data was collected via WeChat by means of Wenjuanxing. Further demographic information is shown in Table 1.

Table 1. *Participants' demographic information*

category	N	%
Age		
17-22	493	97.22
>22	14	2.78
Gender		
Male	204	40.23
Female	303	59.76
Grade		
Elementary	427	84.22
Intermediate	67	13.21
Advanced	13	2.56

3.2. Instrument

The following instruments were used to collect the required data:

3.2.1. Cognitive emotion regulation questionnaire

To gauge the students' cognitive emotion regulation, the cognitive emotion regulation poll was utilized (Garnefski & Kraaij, 2007). The poll is a 27-item survey comprising of the accompanying nine reasonably particular subscales, each comprising of three items and each alluding to somebody's thought process after the experience of undermining or upsetting life altering situations: self-fault, other-fault, rumination, catastrophizing, placing into point of view, positive pulling together, positive reappraisal, acknowledgment, and arranging. Cognitive emotion regulation techniques were estimated on a 5-point Likert scale, going from 1-5, from never to quite often. The Cronbach's alpha coefficient for this questionnaire was calculated to be 0.87, indicating a high level of internal consistency and reliability for the instrument. This suggests that the items within the questionnaire are well-correlated and measure the underlying construct with consistency across respondents. A Cronbach's alpha value of 0.87

exceeds the commonly accepted threshold of 0.70, reinforcing the questionnaire's suitability for use in the study to reliably assess the intended variables.

3.2.2. Readiness for e-Learning questionnaire

The instrument utilized in this study was the E-learning availability poll (Watkins et al., 2004). This poll included 26 items analyzing the students' perceptions about their preparation for E-learning. The poll reactions were estimated in view of a 5-point Likert scale. The Cronbach's alpha coefficient for this questionnaire was calculated to be 0.91, indicating a high level of internal consistency and reliability for the instrument.

3.2.3. Everyday technology usage questionnaire

The everyday technology usage poll was utilized to assess the students' impression of the significance of various everyday technology usage and their apparent capacity in utilizing them. The poll contains 31 items. The poll reactions were estimated in view of a 5-point Likert scale. The Cronbach's alpha coefficient for this questionnaire was calculated to be 0.89, indicating a high level of internal consistency and reliability for the instrument.

3.3. Procedure

3.3.1. Data collection

The data collection for this study took place from late November 2022 to early August 2023, with the support of Chinese EFL teachers from various colleges and universities across China. The data collection process was divided into two stages to ensure both reliability and ethical integrity. The first stage focused on translating the questionnaire into Chinese to ensure that the questions were accurately represented in the language of the participants. This step was crucial for maintaining the validity of the responses. After translation, the Chinese version of the questionnaire was reviewed and scrutinized by two experts in applied linguistics to ensure linguistic and conceptual accuracy. Their feedback was incorporated to refine the translation and enhance the clarity of the questions. In the second stage, the research team adhered to strict ethical standards for educational research. Participants were required to sign an informed consent form, confirming their voluntary participation in the study and their awareness of their rights, including confidentiality and anonymity. Following this, the bilingual electronic version of the questionnaire was distributed to 1317 participants via WeChat, utilizing the Wenjuanxing platform. Each participant was informed of the study's purpose and given a description of the questionnaire. They were assured that the data would remain confidential, and the questionnaire was anonymous. Participants took approximately 2 to 31 minutes to complete the survey. A total of 557 students participated in the survey, with 504 valid responses after excluding problematic data.

3.3.2. Data analysis

The data analysis process involved using both SPSS (version 27) and AMOS (version 24) software to handle and analyze the data effectively. Descriptive statistics were first used to summarize and describe the demographic characteristics of the participants, such as their age, gender, and educational background. This provided an overview of the sample's composition and set the foundation for further analysis. Exploratory Factor Analysis (EFA) was conducted to ensure the validity of the constructs measured by the questionnaire. The reliability of the data was assessed using Cronbach's alpha to determine the internal consistency of the scales. A threshold of 0.70 was set as the minimum acceptable level for reliability. AMOS was utilized to perform Structural Equation Modeling (SEM) to test the proposed relationships among the variables: everyday technology usage, e-learning readiness, and emotion regulation. SEM allowed for a more complex analysis, enabling the research team to examine the direct and indirect effects between the constructs. Model fit indices such as CFI, TLI, and RMSEA were used to assess the overall fit of the model.

4. Results

To check the reliability of the instruments and the model fit, the researcher conducted Confirmatory Factor Analysis (CFA). The employed instruments in the current study were as follow: Cognitive Emotion Regulation Questionnaire (27 items), Readiness for E-Learning Questionnaire (27 items), and Everyday Technology Usage Questionnaire (31 items). The results of these analyses are presented in the following tables and figures.

Table 2. *CFA and goodness of fit*

Criteria		Threshold			Evaluation
		Terrible	Acceptable	Excellent	
CMIN	3398.807				
DF	1103				
CMIN/DF	3.081	> 5	> 3	> 1	Acceptable
RMSEA	.064	> 0.08	< 0.08	< 0.06	Acceptable
PNFI	.726	< 0.5	> 0.5		Acceptable

The results of Table 2 reveal that the goodness of fit of the model has been met. Therefore, CMIN/DF is 3.081, PNFI = 0.726, and RMSEA = 0.064.

Table 3. *Variables' reliability and validity*

	CR	AVE	MSV	MaxR(H)	Technology Use	Readiness	Emotion Regulation
Technology Use	0.915	0.519	0.040	0.922	0.721		
Readiness	0.958	0.876	0.737	0.965	0.179**	0.936	
Emotion Regulation	0.918	0.849	0.737	0.926	0.200**	0.858***	0.946

Table 3 shows the values of the questionnaires' composite reliability and construct relia-bility. AVE values higher than 0.50 approve the model's convergent and discriminant validity. Besides, the results show that there was a significant, small, positive correlation between learners' everyday technology usage and their e-learning readiness, $r(504) = .17$, $p < .01$. In addition, learners' everyday technology usage and their emotion regulation were found to be positively correlated, $r(504) = .20$, $p < .01$. Finally, learners' e-learning readiness are strongly and positively correlated with learners' emotion regulation, $r(504) = .85$, $p < .001$.

Table 4. *Standardized regression weights of the variables*

Parameter			Estimate	Lower	Upper	P
Readiness	←	Use	.461	.018	.098	.007
Regulation	←	Use	.483	-.003	.047	.007
Regulation	←	Readiness	.541	.330	.521	.001

The results in Table 4 represent that the conditional mediation model rejected the first hypothesis. It means that learners' everyday technology usage has a significant positive im-pact on their emotion regulation ($\beta = .483$, $p < .01$) and on their e-learning readiness ($\beta = 0.461$, $p < .01$). The results also specify that learners' e-learning readiness have a significant positive impact on students' emotion regulation ($\beta = .541$, $p < .001$). Regression analysis in SEM was conducted to test H2.
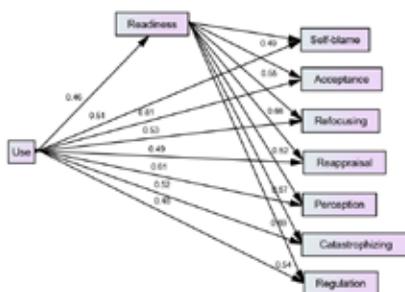

Figure 1. *The measurement model*

Table 5. *Standardized total, direct, and indirect effects*

Total Effects	Use	Readiness	Direct Effects	Use	Readiness	Indirect Effects	Use
Readiness	.007	...	Readiness	.007	...	Readiness	...
Regulation	.009	.001	Regulation	.007	.001	Regulation	.005
Catastrophizing	.018	.001	Catastrophizing	.465	.001	Catastrophizing	.006
Perception	.033	.002	Perception	.676	.002	Perception	.006
Reappraisal	.021	.001	Reappraisal	.083	.001	Reappraisal	.005
Refocusing	.189	.020	Refocusing	.438	.020	Refocusing	.015
Acceptance	.022	.001	Acceptance	.091	.001	Acceptance	.004
Self-blame	.108	.004	Self-blame	.295	.004	Self-blame	.006

To investigate whether e-learning readiness mediates the relation between learners' everyday technology usage and their emotion regulation, a path model was tested using AMOS Version 24. Results in Table 5 indicated that learners' everyday technology usage predicted their e-learning readiness, $\beta = .461$, $p < .007$, and that e-learning readiness predicted emotion regulation, $\beta = .543$, $p < .001$. The indirect effect, tested using percentile bootstrapped confidence intervals, also was significant, 95%, $p < .005$. The direct effect of everyday technology usage on emotion regulation remained significant after e-learning readiness was controlled, $\beta = .309$, $p = .007$, suggesting that the significant indirect effect is consistent only with a partial mediational effect. The total amount of variance in emotion regulation accounted for by learners' everyday technology usage and e-learning readiness was approximately 31%, $R2 = .315$. The results also show that the indirect effect of e-learning readiness on subscales of learners' emotion regulation are also significant. The total amount of variance in subscales of emotion regulation accounted for by learners' everyday technology usage and e-learning readiness was also approximate self-blame 14%, $p < .002$; acceptance 18%, $p < .002$; refocusing 13%, $p < .002$; reappraisal 22%, $p < .002$; perception 36%, $p < .002$; and catastrophizing 45%, $p < .002$.

5. Discussion

The general aim of the research was to investigate the effect of using technology and e-learning on emotion regulation. The results showed that the direct effect of using technology and e-learning on emotion regulation is positive and statistically significant. This finding is consistent with the results of several studies (Altintas et al., 2020; Heidrich et al., 2018; Osterlie et al., 2019; Yeldham & Gao, 2021; Zylstra et al., 2019). These researchers have shown that online communication skills and free access to technology in online learning and blended learning environments increase students' internal motivation and have a positive effect on students' regulatory emotions. In explaining this finding, it can be argued that access to equipment and technology and having online communication skills will increase students' self-efficacy and increase their motivation.

The study aligns with and contributes to important research questions concerning the intersection of technology usage, learning readiness, and emotional competencies. The results indicate that e-learning readiness serves as a partial mediator between everyday technology usage and emotion regulation. This suggests that while technology usage directly impacts emotion regulation, it also enhances e-learning readiness, which in turn influences emotional management. This nuanced understanding enriches existing literature by emphasizing that e-learning readiness is not just a passive state but an active construct that shapes learners' emotional responses to learning challenges. The study confirms prior findings that highlight the importance of everyday technology interaction in preparing learners for e-learning environments. It expands on existing research by quantifying how technology usage contributes to emotional regulation strategies such as self-blame, acceptance, and reappraisal. This aspect is vital for understanding how habitual technology use influences learners' adaptability in varied emotional contexts, reinforcing the need for fostering effective technology habits. By examining the specific subscales of emotion regulation—such as self-blame, acceptance, refocusing, reappraisal, perception, and catastrophizing—the study provides detailed insights

into how e-learning readiness interacts with emotional dynamics in educational settings. This granularity allows for tailored interventions and support mechanisms that educators can implement to bolster students' emotional resilience, thereby contributing to more effective learning outcomes.

These findings have several implications for the field of educational psychology and technology integration. The identification of e-learning readiness as a mediatory factor emphasizes that educational programs should not only focus on technology training but also cultivate learners' readiness for e-learning environments. This holistic approach can enhance learning experiences and emotional outcomes, particularly in increasingly digital educational contexts. Incorporating strategies that promote both technology usage and emotional regulation can inform curriculum development. Educators can design curricula that actively integrate technology use while simultaneously teaching emotion regulation skills, leading to a more comprehensive learning experience.

The findings of this research also showed that the direct effect of using technology and e-learning on the subscales of emotion regulation is also positive. Also, the indirect effect of e-learning readiness on emotion regulation through the mediation of technological readiness is positive and statistically significant. This finding is consistent with the results of Chan and Lam (2023), which show that e-learning readiness has an effect on cognitive skills, such as time management skills, searching for help through the Internet, and homework strategies in an online learning environment. In other words, it can be argued that the preparation of e-learning increases students' motivation, and the created motivation increases the use of emotion regulation. In fact, the readiness of e-learning in students creates a positive attitude about the ease of use and usefulness of online learning; these factors also affect the intention and attitude of students in using online learning technology and blended learning.

The findings regarding the mediation of e-learning readiness in the relationship between learners' everyday technology usage and emotion regulation align with and extend insights from previous research in the fields of educational technology and psychology. Prior studies have highlighted the positive impact of technology usage on learners' readiness for e-learning environments. For instance, research by Hanson et al. (2023) found that daily interactions with technology improve students' adaptability and preparedness for online learning. The current findings reinforce this conclusion by establishing that everyday technology usage significantly predicts e-learning readiness. The importance of emotion regulation within educational contexts has been recognized in earlier studies. For example, Sung (2023) identified various strategies for emotion regulation and their role in academic performance. The present study corroborates this, indicating that e-learning readiness not only connects technology usage and emotion regulation but also influences specific emotional responses, aligning with Gross's framework. The pathway from technology usage to emotion regulation through intermediary factors like readiness has been previously documented. Studies such as those by Weise et al. (2022) suggested that learners' perceptions and readiness for online environments mediate the effectiveness of technology on learning outcomes. The current findings further this understanding by identifying e-learning readiness as a significant mediator in the specific context of emotion regulation.

Granziera et al. (2022) stated that goal orientation influences the tendency to use new learning strategies. Richter and Hunecke (2022) showed that the value of the task has a

positive and significant effect on emotion regulation. Zylstra et al. (2019) stated that learners who believe that homework is valuable are more involved in metacognitive activities and use more monitoring strategies and believe in the success of homework and, as a result, have higher academic progress. For this finding, it can be argued that students who have high technological readiness and have set goals for themselves and have good homework value and self-efficacy are more inclined to emotion regulation and this factor causes the adoption of appropriate cognitive strategies for learning in learning-oriented environments. In other words, increasing the components of technological readiness of students increases positive attitude and intention to use online learning and ultimately leads to successful performance in learning virtual and hybrid educational methods.

While previous research may have suggested relationships among technology usage, readiness, and emotional outcomes, fewer studies have rigorously tested mediation using path models. By employing AMOS for structural equation modeling, the current research provides empirical evidence of the partial mediation of e-learning readiness, reflecting a more nuanced understanding of these dynamics. The current findings offer a novel contribution by examining how e-learning readiness affects specific subscales of emotion regulation, such as self-blame and reappraisal. This granular approach allows for more precise insights into how different aspects of emotion regulation are influenced by learners' technology readiness, which has been less explored in existing literature.

The findings emphasize the importance of integrating emotional and technological readiness into e-learning practices. This perspective extends the discussion in previous research by suggesting concrete educational strategies to enhance both students' technological skills and their emotional regulation capabilities. Earlier studies might not have explicitly connected these domains, making this an important advancement in understanding how to create more supportive learning environments. The current research situates the findings within contemporary educational contexts, such as the increasing reliance on digital tools for learning. While previous studies laid the groundwork for understanding technology's role in education, this research is timely, considering the rapid shift towards e-learning, particularly after the increased demand for online education seen during the COVID-19 pandemic. This relevance highlights practical applications for today's educators.

6. Conclusion

According to the research hypotheses, it can be argued that e-learning readiness has a positive and significant effect on students' regulatory emotions, so increasing the amount of this factor increases students' motivation in the online educational environment and their success. Considering that emotions are one of the most important factors affecting the success of online and combined training courses and are very sensitive to the traditional educational environment, therefore increasing online communication skills and increasing students' access to technology, hardware equipment and software and providing high-quality content in Virtual training courses and a combination of them are considered essential for the success of virtual learning educational strategies of educational centers and universities. Thus, this factor has a positive and significant effect on emotion regulation and behavioral tendency to learn online through the mediation of the technological readiness variable. In

fact, increasing the readiness of students for electronic learning increases the efficiency and effectiveness of the virtual learning educational system. Because of that, the productivity of distance education increases, which saves a lot of time and money for educational centers. Correspondingly, increasing the e-learning readiness of other stakeholders, including professors and staff of educational centers and universities, is another factor affecting the success of students' performance, which can have a great impact on the implementation of a virtual and hybrid educational system. Among the limitations of the current research, it can be pointed out that the study was conducted using a questionnaire, which examines learners' attitudes, not reality, so it is recommended to use interviews in future studies to gather learners' attitudes in a more realistic and accurate way.

The findings support and extend existing theoretical frameworks that emphasize the role of mediating variables in educational psychology. Specifically, the identification of e-learning readiness as a mediator between everyday technology usage and emotion regulation contributes to a more nuanced understanding of how individual differences in technology interaction can influence emotional outcomes in learning contexts. This research highlights the importance of integrating emotional regulation theories with technology readiness frameworks. It suggests that emotional competencies are integral to learners' preparation for digital learning environments, moving beyond the traditional focus on cognitive and motivational factors. This integration enriches theoretical discussions on how emotional factors should be considered alongside technological readiness in educational contexts. The study implies that learning environments are dynamic and influenced by various factors, including personal technology use and emotional regulation strategies. This highlights the need for models of learning that reflect the interactions between technological proficiency and emotional adaptability.

Educational institutions can benefit from incorporating modules that focus on enhancing both e-learning readiness and emotion regulation skills. By focusing on technology training alongside emotional literacy, educators can better prepare students for modern learning environments. Professional development for educators should include strategies to help students develop emotional regulation skills while using technology. Training programs can teach teachers to identify signs of emotional distress related to technology use and equip them with tools to support students' emotional needs. Institutions should provide resources and support systems that help students manage their emotions in e-learning contexts. This could include counseling services, workshops, or online resources that focus on developing emotional resilience in conjunction with technology use.

Future research could employ longitudinal methodologies to explore how the relationships between technology usage, e-learning readiness, and emotion regulation evolve over time. This approach would provide insights into the long-term effects of everyday technology interactions on emotional wellbeing and academic success. There is a need to investigate these relationships across different demographic groups, including varied age ranges, educational backgrounds, and cultural contexts. This can help determine whether the findings are universally applicable or if they vary by population. Future studies could examine other potential mediators or moderating variables, such as social support, motivation, or self-efficacy, that may influence the relationship between technology usage and emotion regulation. Understanding these additional factors could provide a more comprehensive view of the dynamics at play. Incorporating qualitative research methods, such

as interviews or focus groups, could enrich the understanding of how learners perceive their emotional regulation in relation to technology use. This qualitative data could reveal insights that quantitative approaches may overlook. Conducting intervention studies that focus specifically on improving e-learning readiness and emotion regulation skills could help establish a causal link between these constructs. Research could test different interventions to see which approaches are most effective in enhancing emotional adaptability in technology-rich learning environments.

Funding Information

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