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ORIGINAL RESEARCH PAPER

On the Regulatory Engagement, Internet Self-efficacy, Course Satisfaction, and Reading Comprehension in Online English Classes

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ABSTRACT

Background and Objectives: Online learning involves a complex array of factors that collectively shape the educational experience. One key element is learning engagement, which enhances academic performance, knowledge retention, and overall course satisfaction. Another important aspect is self-regulation; these skills are essential for success in online courses due to the lack of external structure and supervision. Additionally, internet self-efficacy and course satisfaction significantly impact the effectiveness of online education. Considering and addressing these elements can lead to a deeper understanding of online learning.

Materials and Methods: This study involved 315 students, aged 18-22, enrolled in a general language course at a university in Tehran, Iran. Of these, 282 completed the online questionnaires. The study utilized four questionnaires and an English test, including the Online Self-Regulation Questionnaire (30 items), the Online Student Engagement Scale (19 items), the Online Learning Self-Efficacy Scale (22 items), the Course Satisfaction Questionnaire (21 items), and the reading section of the TOEFL (40 items). These were administered through the university's virtual education platform. Persian versions of the questionnaires were used to ensure students' comprehension. Since these questionnaires had not been previously published or available in Iranian research journals, the researcher translated them with the assistance of two professors proficient in both languages. Back translations ensured accuracy. This descriptive correlational study included statistical analyses such as reliability, correlation, and regression, alongside a thorough construct validity assessment. Additionally, mediation analysis was conducted to examine the complex effects of course satisfaction and internet self-efficacy on the relationship between regulatory engagement and reading comprehension.

Findings: The Cronbach's alpha values for self-regulation, engagement, self-efficacy, course satisfaction, and the reading test were .94, .90, .90, .93, and .86, respectively, indicating strong reliability and internal consistency of the instruments. The RMSEA values for engagement, self-regulation, satisfaction, self-efficacy, and reading were 0.08, 0.07, 0.08, 0.07, and 0.01, respectively, demonstrating satisfactory results. Notably, a coefficient of 0.84 was observed between self-regulation and engagement, and 0.7 between self-efficacy and satisfaction. A bivariate correlation of 0.7 or higher can present challenges in testing and interpreting regression coefficients. To better understand these relationships, the researcher created composite variables named 'regulatory engagement' and 'satisficacy' (course satisfaction and internet self-efficacy). The β index for satisficacy was .47 ($p = .00$), indicating it as a significant predictor of the learning outcome, while the β index for regulatory engagement was .06 ($p = .26$), showing a weaker prediction. This finding suggested that regulatory engagement indirectly influenced learning outcomes via satisficacy, with satisficacy ($\eta 2=.81$) being a significant predictor and regulatory engagement ($\eta 2=.47$) having an indirect effect through satisficacy. This underscores the critical role of regulatory engagement in enhancing satisficacy and its impact on learning.

Conclusions: The results of this study highlight the importance of promoting regulatory engagement to improve satisfaction and self-efficacy, thereby enhancing reading comprehension. However, this study has its limitations. The data collected from the current sample may not be fully applicable to other contexts. Moreover, the composite variables introduced in this study may add complexity and require further validation in different settings. Future research should investigate the intricate relationships between regulatory engagement, satisficacy, and reading comprehension, considering additional variables and assessing the generalizability of these findings across various populations.

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جایگاه مشارکت فعال، خود تنظیمی یادگیری، خودکارآمدی اینترنتی و رضایت تحصیلی در مهارت خواندن در کلاس‌های بر خط انگلیسی

رضا نجاتی

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چکیده

پیشینه و اهداف: یادگیری آنلاین شامل مجموعه پیچیده ای از عوامل است که تجربه آموزشی را شکل می دهند. یکی از عناصرمهم مشارکت فعال در یادگیری است که پیشرفت تحصیلی، حفظ دانش و رضایت از آموزش بر خط را افزایش می دهد. جنبه مهم دیگر در یادگیری خود تنظیمی است. این مهارت ها برای موفقیت در دوره های آموزشی بر خط به دلیل نبود تعامل حضوری بین دانشجو و استاد ساختار بسیار ضروری هستند. علاوه بر این، خودکارآمدی اینترنتی و رضایت از دوره به میزان قابل توجهی بر اثربخشی آموزش بر خط تأثیر می‌گذارد. در نظر گرفتن و پرداختن به این عوامل می تواند به درک عمیق تر از آموزش بر خط منجر شود.

روش‌ها: در این پژوهش ۳۱۵ دانشجو ۱۸ تا ۲۲ شرکت کردند. آن ها در یک دوره زبان عمومی در یکی از دانشگاه‌های تهران ثبت نام کرده بودند. از این تعداد، ۲۸۲ نفر پرسشنامه های مربوط را در بستر آموزش مجازی تکمیل کردند. در این مطالعه از چهار پرسشنامه و یک آزمون خواندن زبان انگلیسی، شامل پرسشنامه خودتنظیمی یادگیری بر خط (۳۰ گویه)، مقیاس مشارکت فعال در یادگیری بر خط (۱۹ سؤال)، مقیاس خودکارآمدی یادگیری بر خط (۲۲ سؤال)، پرسشنامه رضایت از دوره اموزشی (۲۱ سؤال) و بخش ریدینگ تافل (۴۰ مورد) استفاده شد. پرسشنامه ها و آزمون تافل از طریق بستر آموزش مجازی دانشگاه اجرا می شد. برای اطمینان از درک دانشجویان از نسخه فارسی پرسشنامه استفاده شد. از آنجایی که این پرسشنامه ها قبلاً در مجلات پژوهشی ایران منتشر نشده بود محقق با کمک دو استاد مسلط به زبان انگلیسی و فارسی آنها را ترجمه کرد. ترجمه های مذکور به روش ترجمه معکوس بررسی و نسخه نهایی آماده شد. این مطالعه از نوع توصیفی همبستگی است. تجزیه و تحلیل های آماری مانند پایایی، همبستگی و رگرسیون همراه با ارزیابی اعتبار سازه انجام گرفت. علاوه بر این، تجزیه و تحلیل میانجی برای بررسی اثرات پیچیده رضایت از درس و خودکارآمدی اینترنتی بر رابطه بین مشارکت نظارتی و درک مطلب انجام شد.

یافته‌ها: مقادیر آلفای کرونباخ برای خودتنظیمی، مشارکت فعال، خودکارآمدی، رضایت از درس و آزمون خواندن به ترتیب ۰/۹۴، ۰/۹۰، ۰/۹۰، ۰/۹۳ و ۰/۸۶ بود که نشان دهنده پایایی قوی و انسجام درونی است. مقادیر RMSEA برای سازه های مشارکت فعال، خودتنظیمی یادگیری، رضایت از درس، خودکارآمدی و خواندن به ترتیب ۰/۰۸، ۰/۰۷، ۰/۰۸، ۰/۰۷ و ۰/۰۱ بود که نتایج رضایت بخشی را نشان می‌دهد. قابل ذکر است که بین خودتنظیمی و مشارکت فعال ضریب ۰/۸۴ و بین خودکارآمدی و رضایت از درس ۰/۷ مشاهده شد. اگر همبستگی بین دو متغیره ۰.۷ یا بالاتر می تواند چالش هایی را در سنجش این عوامل وتفسیر ضرایب رگرسیون ایجاد کند. برای درک بهتر این روابط، محقق متغیرهای ترکیبی به نام‌های «مشارکت خود تنظیم» و «رضایت از کارآمدی» (رضایت از دوره و خودکارآمدی) را ارائه کرد. شاخص β برای رضایت از کارامدی ۰/۴۷ (p = 00/0) بود که نشان می دهد این عامل یک پیش‌بینی‌کننده مهم برای تبیین نتیجه یادگیری است، در حالی که شاخص β برای مشارکت خود تنظیم ۰/۰۶ بود (p = 26/0)، که پیش‌بینی ضعیف‌تری را نشان می‌دهد. این یافته نشان می‌دهد که مشارکت خود تنظیم به‌طور غیرمستقیم ، یعنی با واسطه رضایت از کارآمدی بر یادگیری تأثیر می‌گذارد. رضایت از کارآمدی»(81/0=η2) یک پیش‌بینی‌کننده بسار مهم و مشارکت خود تنظیم

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(η2=.47) اثر غیرمستقیم دارد. این امر بر نقش مشارکت خود تنظیم در افزایش رضایت و تأثیر آن بر یادگیری صحه می گذارد.

نتیجه‌گیری: نتایج این مطالعه بر اهمیت افزایش مشارکت خود تنظیم برای بهبود رضایت و خودکارآمدی و در نتیجه افزایش درک مطلب تأکید می‌کند. با این حال، این مطالعه محدودیت های خود را دارد. داده‌های جمع‌آوری‌شده از نمونه فعلی ممکن است به طور کامل برای دانشجویان در بافت های دیگر قابل اجرا نباشد. علاوه بر این، متغیرهای ترکیبی معرفی‌شده در این مطالعه ممکن است باعث پیچیدگی بیشتر متغیرهای این پژوهش شوند و نیاز به اعتبارسنجی بیشتر در ساختارهای مختلف آموزشی داشته باشند. تحقیقات آینده باید روابط پیچیده بین مشارکت خود تنظیم، رضایت از خودکارآمدی و نقش آن ها در درک مطلب انگلیسی را بررسی کند و تعمیم پذیری این یافته ها را در جوامع آماری مختلف ارزیابی کند.

Introduction

Drawing upon technology-based learning, online instruction can facilitate the teaching and learning processes and can expand educational opportunities, thereby acting as an agent of development of life-long learning, benefiting individuals, communities, and societies across the world. Online instruction helps learners to access educational resources and materials at their convenient time and place. According to Marshall [1], technology-based learning tools can enhance the learning experience by providing interactive and engaging content.

Online platforms can incorporate multimedia features, such as videos, animations, and simulations, which can help illustrate complex concepts and engage learners in a more interactive manner. Moreover, online platforms frequently provide adaptive learning systems that tailor the learning experience to individual needs and preferences [2]. Additionally, online instruction promotes collaborative learning. Technology allows learners to connect and collaborate with peers and instructors from different locations. The online video conferencing tools, discussion forums, etc., allow learners to exchange opinions and collaborate on tasks and projects [3].

Online instruction is a multifaceted process encompassing learning engagement, self-regulation, internet self-efficacy, course satisfaction, and a host of other variables. Learning engagement contributes to better academic outcomes, knowledge retention, and overall satisfaction with the online course [4-7]. Self-regulation is another significant issue in online instruction [8-11]. Developing self-regulation skills seems vital for succeeding in online courses, as there is usually little external structure or supervision. Internet self-efficacy and course satisfaction play critical roles in the success of online instruction [6, 11-12].

This study investigates these factors among Iranian students, filling a gap in the literature by examining the interplay of self-regulation, internet self-efficacy, and course satisfaction in shaping online learning outcomes. By studying these relationships, the research aims to offer valuable insights that enhance our understanding of online learning and support the development of more effective instructional strategies.

Review of the Related Literature

Self-regulated learning (SRL) entails students actively and purposefully engaging in their own learning process. It involves setting goals, monitoring progress, adapting strategies, and taking responsibility for one's own learning [13-14]. It is often assumed that highly self-regulated students may be more driven, engaged, and determined to manage the

challenges of online learning, such as self-discipline, time management, and organization skills. Conversely, students with lower self-regulated learning (SRL) abilities may have a hard time with online tasks. This struggle can lead to frustration, confusion, and dissatisfaction with online learning. While this perspective aligns with prior findings, it is important to acknowledge that even students with strong SRL skills may experience similar challenges in poorly designed or overly demanding online courses.

However, while previous studies have confirmed a connection between SRL and satisfaction with online learning [15-20], it is essential to critically assess the extent and nature of this relationship rather than assume its universality. Some research suggests that self-regulated learners tend to demonstrate a higher inclination towards assuming responsibility for their learning, seeking assistance when necessary, and actively participating in online courses [21]. This active engagement is believed to facilitate deeper comprehension and a more fulfilling learning experience. However, the degree to which SRL enhances online learning satisfaction may depend on contextual factors such as course design, instructor support, and technological affordances.

A closer examination of the mechanisms through which SRL influences satisfaction reveals several contributing factors:

-Motivation and engagement go hand in hand: Students exhibiting higher levels of self-regulated learning (SRL) are often more actively involved in their educational pursuits [22-23]. They establish meaningful objectives and consistently strive to achieve them. Such determination and engagement play a pivotal role in fostering their overall contentment with the online learning journey.

-Adaptability and flexibility: Online learning often requires students to navigate through various tools, resources, and assignments independently. Students with strong SRL skills can adapt to different situations, manage their time efficiently, and regulate their efforts as demanded in the online environment [24]. This adaptability enhances their satisfaction with online learning, as they feel confident and capable of handling the challenges that arise.

-Self-assessment and monitoring: SRL entails consistently tracking one's progress and recognizing areas that need improvement. Students who proactively evaluate their own performance in online learning are more inclined to promptly address any knowledge or skill gaps. This self-awareness and evaluation contribute to their satisfaction, as they can see their growth and development over time [25].

-Goal attainment and success: Students exhibiting strong SRL tendencies may set practical and specific objectives for themselves. They establish strategies to accomplish these goals, whether they pertain to finishing assignments, gaining knowledge, or mastering new skills. When students achieve their goals through their SRL efforts, they experience a sense of accomplishment and satisfaction [26].

-Autonomy and ownership: Online learning offers students more autonomy and ownership over their learning journey. Students with strong SRL skills can take full advantage of this independence by actively managing their learning process. They decide on when, where, and how to learn, which enhances a sense of satisfaction. According to Nicol [27], students demonstrated increased self-reliance in online learning, which aligns with the core essence of self-regulated learning (SRL). Meanwhile, Joo et al. [28] discovered an indirect correlation between these factors. Nonetheless, Kuo et al. [29] found no significant relationship,

suggesting that autonomy alone does not necessarily lead to satisfaction.

To sum up, while SRL plays a crucial role in shaping students' experiences in online learning, its impact on satisfaction is not straightforward. The relationship between SRL and satisfaction is influenced by multiple factors, including course structure, technological usability, and the availability of support systems. Thus, rather than viewing SRL as a universally beneficial trait, research should explore how its effects vary across different learning contexts and student populations.

Studies investigating online instruction have demonstrated that highly efficacious students excel in completing academic tasks and exhibit robust self-regulatory abilities. Mastery of these skills correlates with enhanced academic achievements. For instance, students with high self-efficacy are usually able to set effective goals, manage their time effectively, and check their own progress, which improves their ability to successfully complete academic tasks. Conversely, individuals with low self-efficacy typically exhibit inadequate self-regulatory skills, resulting in unfavorable academic outcomes due to difficulties in managing learning habits [30- 33].

While these findings are widely supported, the focus on self-efficacy as a determinant of self-regulation requires further exploration, particularly in online learning contexts. The assumption that self-efficacy directly translates into improved self-regulation may overlook other complex factors that influence learning outcomes. For instance, studies tend to assume a linear relationship between self-efficacy and academic success, yet this relationship may be moderated by external factors such as social support, motivation, and technological competence, all of which can vary significantly in online environments.

A person's self-efficacy, which represents their belief in their own capabilities to accomplish tasks, plays a crucial role in effectively regulating learning behaviors, including goal setting, time management, and progress monitoring [34]. On the other hand, students with low self-efficacy may experience reduced confidence in their potential for success, ultimately influencing their motivation, engagement, and persistence in online learning [35].

Bandura suggests that several factors, such as mastery experiences, vicarious experiences, verbal persuasion and social influence, and physiological and affective states, can influence one’s self-efficacy [34]. These sources play a central role in evaluating the learners' abilities and ultimately influence their decision as to whether to engage in a particular task or not. Mastery experiences refer to successful past experiences in which the individual has accomplished a similar task or goal. When someone has previously done well in an activity, most probably they do well in future similar cases.

Vicarious experiences involve observing others successfully completing a task. By witnessing others' achievements, individuals can gain confidence in their own capabilities to complete similar tasks. This can be particularly persuasive when individuals identify with those they observe, such as role models or peers. Verbal persuasion and social influence refer to the encouragement or discouragement individuals receive from others regarding their capabilities. Positive feedback and support can enhance self-efficacy, while negative feedback and criticism can lower it. The opinion of influential others, such as teachers, parents, or friends, can greatly affect one's self-efficacy beliefs [36]. Physiological and affective states can also influence self-efficacy. When individuals feel an increased heart rate or

anxiety, they may interpret these physical reactions as signs of ineffectiveness and low self-efficacy. Conversely, positive emotions and a calm state can enhance self-efficacy views [37].

Overall, these four types of self-efficacy provide people with an assessment of their abilities that leads to either motivation and persistence on a task or avoidance and withdrawal. By understanding issues influencing self-efficacy, people may become more confident and do the tasks with more assurance. Furthermore, the influence of verbal persuasion in online settings is often mediated by the quality and frequency of feedback provided by instructors, peers, or automated systems. While positive reinforcement can enhance self-efficacy, inconsistent or non-personalized feedback may fail to motivate students or even diminish their sense of competence. Similarly, the physiological and affective states described by Bandura [34] may be more challenging to interpret in an online environment where students are working in isolation, possibly leading to misinterpretations of anxiety or stress as signs of incompetence rather than common reactions to online learning pressures.

Repeated failures or negative experiences can weaken one's self-efficacy beliefs. The sources of failure are not always straightforward in an online learning context. For example, mastery experiences are often less frequent or harder to gauge without immediate feedback or face-to-face interaction, making it more challenging for students to build self-efficacy in virtual environments. Moreover, while vicarious experiences can still play a role through online peer interactions or video tutorials, the lack of direct, personal feedback may weaken the impact of this source.

According to Zimmerman and Schunk [14], self-regulation is considered crucial for the cultivation of self-efficacy, yet it is not always clear how self-regulation strategies (e.g., self-monitoring, goal-setting) are cultivated in online learners. When learners with high self-regulation tendencies involve themselves in some activities like self-monitoring, they show proof of their progress. This feeling enhances their self-confidence. Alternatively, Bandura [33] maintains that self-efficacy plays a key role in the development of self-regulation. In general, as clarified earlier, the four bases of self-efficacy shape one's certainty in their capacity to arrange and carry out the necessary actions to accomplish a task.

Numerous research papers have revealed the correlation between self-efficacy and self-regulatory skills within academic environments. Pintrich and De Groot's [32] research illuminated the advantageous bearing of strong self-efficacy and self-regulation on students' accomplishments in traditional classes. These scholars characterized self-regulated learners as students who employed metacognitive tactics such as planning, monitoring, and adjusting their cognitive processes. The findings revealed that higher levels of self-efficacy and a genuine appreciation for the assigned task (viewing it as interesting and important) were associated with increased utilization of cognitive strategies, heightened metacognitive activity, improved student self-regulation, and elevated levels of achievement across various projects, including essays, quizzes, seatwork assignments, lab problems and teacher-made tests.

Joo et al. [31] attested that some aspects of self-regulation and self-efficacy go together to shape educational accomplishment in Web-based courses. They attained a positive connection between self-regulated learning, internet self-efficacy, and academic attainment.

In summary, while extensive research highlights the positive impact of self-efficacy

and self-regulation on academic performance, existing studies do not fully capture the complexities of these relationships in online learning environments. Future research should explore how these factors interact in digital settings, considering the limitations of traditional models and the specific challenges online learners face. Moreover, greater emphasis should be placed on individual differences and external influences, such as instructor presence, peer interaction, and access to technology, as these elements can play a crucial role in shaping self-efficacy and self-regulation in virtual learning spaces.

Student satisfaction is an important factor in academic success, shaping motivation, engagement, and overall performance. It reflects students' perceptions and evaluations of their educational experiences. It is influenced by various factors, such as instructional quality, curriculum effectiveness, levels of participation and interaction, and the outcomes achieved [38].

According to Gray and DiLoreto [38] satisfaction is shaped by many factors, including the teaching methods, the level of feedback and support provided by peers and instructors, the availability of means and technology, and the overall learning environment. However, these factors are often examined separately, overlooking the ways in which they influence one another. For example, while access to technology is crucial, it alone does not ensure a fulfilling learning experience unless supported by effective teaching methods and active student engagement.

Online learning satisfaction involves the assessment of learners' opinions and emotional experiences towards the excellence of online learning services delivered by providers. It represents a holistic psychological response emerging from a balanced evaluation of the actual perceived effectiveness of online learning content and environment, put together with the learners' initial expectations [39].

Online learning satisfaction has gathered significant research attention, particularly with the advent of COVID-19 [40- 42]. Notably, there has been a fervent discussion surrounding the factors influencing online learning satisfaction [43]. Several factors have emerged as significant contributors to online learning satisfaction. These include the role of online instructors [44], the collaboration between teachers and learners in the online environment [17], the observed effectiveness of online learning courses [45], the quality of online learning subject matter [46], the efficacy of platform machinery [47], the learners' motivation and efficacy within the online learning setting [48] and the presence of robust evaluation systems [47]. While these studies provide valuable insights, they often rely on self-reported measures of satisfaction, which may be influenced by students' biases, previous experiences, or external pressures. Moreover, satisfaction levels may be contingent on students’ prior exposure to online learning, raising questions about the generalizability of findings across diverse learner populations.

Online learners' satisfaction plays a key role in boosting their perseverance. Several studies prove that learners who are content with their online learning quality are more likely to stay motivated, complete their courses, and achieve success. For instance, Ali and Ahmed [49] discovered a positive correlation between satisfaction and student retention in online courses. Likewise, Paepe et al. [50] noted that high levels of satisfaction were linked to lower dropout rates among online learners. Satisfaction is not the only factor influencing retention; external elements such as financial constraints, workload, and institutional support also play significant roles.

Student satisfaction emerges as a dependable indicator of online learning excellence. Eom and Ashill [51] found a positive correlation between satisfaction, perceived learning outcomes, and overall course quality. Kauffman [52] viewed satisfaction as a noteworthy predictor of student engagement and academic success in online courses. Furthermore, Yukselturk and Yildirim [53] highlighted satisfaction's influential role as a predictor of student success in online learning settings.

Generally, these discoveries put emphasis on the importance of satisfaction in encouraging student engagement, motivation, and success in online learning settings. Emphasizing the creation of excellent learning environments that align with learners' needs and expectations, educators can foster satisfaction, providing vital support for their students' perseverance and accomplishments.

Gray and DiLoreto [38] believe that student satisfaction and accomplishment play a key role in assessing the success of online instruction. When the learners feel pleased with their online classes, it enhances their engagement and motivation, ultimately resulting in improved academic performance. Richardson and Swan [54] also discovered a strong link between satisfaction with online learning and academic achievement, thus reinforcing the support for this claim.

Student achievement and satisfaction hold great importance as primary learning outcomes, serving as pivotal indicators of educational quality [55]. The level of satisfaction students experience with a course can significantly influence their decisions regarding continued enrollment or withdrawal [56]. This emphasizes the critical role of satisfaction in shaping students' educational career. Furthermore, satisfaction is not only associated with retention but is also recognized as a crucial aspect of achieving successful learning outcomes [57].

A further dimension of satisfaction is its connection to self-efficacy. Pajares and Miller [58] have established a link between student satisfaction and self-efficacy. They have emphasized that a strong sense of efficacy contributes to overall comfort. For instance, self-efficacy convictions have the potential to impact the levels of stress and anxiety experienced by individuals during their engagement in activities [59]. This principle applies to students as well, implying that their self-efficacy may influence their satisfaction with a course. However, this perspective raises a question of directionality—does self-efficacy enhance satisfaction, or does satisfaction reinforce self-efficacy? Some scholars, such as Marks et al. [59], contend that achieving concrete learning outcomes boosts satisfaction, implying that performance may shape students' perceptions rather than vice versa. The authors additionally observed that students' achievement effects are reliable indicators of student gratification, suggesting that educators can use student success as a measure of the effectiveness of their online practice.

Overall, these researches believe that academic satisfaction and achievement are closely related and may serve as dependable signs of the effectiveness of online training. By specializing in developing high-quality learning that promotes student engagement, motivation, and achievement, educators can support the satisfaction and achievement of their students in online environments.

Satisfaction with courses may boost students' self-belief in their potential to be successful. This accelerated self-belief, called self-efficacy, plays an important role in their instructional journey. Furthermore, course satisfaction promotes self-regulation amongst college students. When students are content

with their instructors, they may be more likely to undertake behaviors that enhance their learning, which include regular attendance, timely finishing assignments, and looking for help when needed. As a result, their academic performance tends to improve due to the fact that they become good at staying focused and effectively handling their own learning.

Previous studies have proved the significance of self-efficacy and self-regulation in traditional classes. These studies consistently demonstrate that students with higher self-efficacy and stronger self-regulatory skills tend to achieve better academic outcomes. However, their impact on student attainment in online learning settings remains uncertain. Online instruction introduces unique challenges and opportunities compared to traditional education. Students have to navigate virtual platforms, correctly control their time, and maintain motivation and engagement in the absence of direct interactions with instructors and friends. Understanding how self-efficacy and self-regulation contribute to student satisfaction and fulfillment in online contexts seems helpful. This knowledge can guide the development of interventions and techniques that assist students in online environments, ultimately improving their achievements and outcomes. Although previous research recognizes these challenges, there is little empirical evidence on how self-efficacy and self-regulation interact with factors like course satisfaction and engagement to impact academic success in online learning.

This study addresses this gap by examining the interrelationships among course satisfaction, self-efficacy, self-regulation, and academic attainment amongst students in an online learning environment. Previous studies have examined these variables in isolation; however, few studies have investigated how they interact with each other and collectively impact student success. Understanding whether satisfaction is a consequence of learning outcomes, as suggested by Marks et al. [59], or whether it functions as a key predictor of academic success remains an open question. Additionally, it remains unclear which factor—engagement, self-efficacy, self-regulation, or satisfaction—has the strongest impact on reading comprehension in online learning. To address these gaps, this study specifically seeks to answer the following research questions:

- Does learning outcome promote satisfaction as claimed by Marks et al. [59]?
- Which of the following factors - engagement, self-efficacy, self-regulation, or satisfaction is a stronger predictor of reading comprehension?

Participants

This study involved 315 undergraduate students enrolled in a compulsory general language course at a university in Tehran, Iran. The participants, aged 18 to 22, were selected as they represent a population commonly engaged in online learning environments, providing a suitable context for exploring factors influencing online learning outcomes. Tehran was chosen due to its diverse student population and the widespread adoption of online education, particularly in the post-COVID-19 era, which aligns with the study's focus on internet self-efficacy, self-regulation, and satisfaction.

Of the initial pool of participants, 282 students completed the questionnaires. However, 18 responses were excluded due to incomplete or contradictory answers that could introduce bias into the analysis. These exclusions were necessary to ensure the reliability and validity of the results. The final analysis was conducted on 264 complete and accurate responses. While these exclusions reduced the sample size, they did not

compromise the representativeness of the data, as the excluded responses accounted for only a small proportion of the total sample.

Instruments

The purpose of this study was to collect data and assess the importance of self-regulation and engagement, internet self-efficacy, and course satisfaction in the process of online learning. To fulfill this purpose, the researcher used four questionnaires, namely, the Online Self-regulation Questionnaire, the Online Student Engagement Scale, the Online Learning Self-Efficacy Scale, and the Course Satisfaction Questionnaire. Additionally, the researcher included the reading section of the TOEFL test, with a total of 40 items. These tools were chosen because of their established reliability.

The instruments used in this study were chosen for their robust psychometric properties, as evidenced by prior research, and underwent a rigorous back-translation process to ensure linguistic and cultural appropriateness for Iranian participants. However, further efforts, such as pilot testing and consultation with local experts, ensured that the measures were contextually relevant and accurately captured the constructs being studied.

The online self-regulation questionnaire (OSQ)

The form, created by Cho and Cho [60], included 30 items distributed across three constructs. The initial construct (items 1 to 11) aimed to measure students' interaction with the course materials. The second construct (items 12 to 20) examined students' responsibility in interactions, collaboration, and communication with instructors. The third construct (items 21 to 30) explored students' positive involvement in peer interactions, group discussions, and collective learning. To evaluate participants' responses, a Likert scale with seven points was used. The scale ranged from 1 (representing "not at all true of me") to 7 (representing "very true of me").

The Online Student Engagement Scale (OSE)

The enquiry utilized the Online Student Engagement Scale, developed by Dixson [61]. The scale included 19 statements covering various engagement-related behaviors. Participants had to use a 7-point Likert scale to show how each statement reflected their personal experiences. The scale ranged from 1 (indicating "not at all characteristic of me") to 7 (representing "very characteristic of me").

The questionnaire designer evaluated engagement by categorizing it into four dimensions. The first dimension, Skills examined behaviors such as note-taking. Items 1, 3, 4, 5, 6, and 7 centered around participants' active engagement in acquiring and organizing information. The second dimension, Emotional Engagement, investigated participants' intrinsic motivation and desire to learn. Items 2, 8, 9, 10, 11, and 19 gauged emotional investment, curiosity, and enthusiasm. Participation constituted the third dimension, highlighting involvement in discussions and forums. Items 12, 13, 14, 17, and 18 assessed collaborative learning, idea sharing, and peer interaction. The fourth dimension, Performance, concentrated on achieving high grades. Items 15 and 16 evaluated academic accomplishment and motivation to excel.

The Online Learning Self-Efficacy Scale

Zimmerman and Kulikovich [62] devised the Online Learning Self-Efficacy Scale (OLSES), comprising 22 activities. This scale gauges the respondents' perceptions of their ability in performing the given tasks, starting from 1 to 6. A score of one reflects low self confidence in performance, a score of 6 shows a strong belief

in a one's skills. The total rating ranges from 22 to 132. The dimensions and corresponding items of OLSES are as follows:

- Learning: 11, 12, 13, 14, 15, 17, 18, 19, 21, 22
- Time: 8, 9, 10, 16, 20
- Technology: 1, 2, 3, 4, 5, 6, 7

The Course Satisfaction Questionnaire

In the previously mentioned general English course, students were required to fill in the Course Satisfaction Questionnaire (CSQ) developed by Frey et al. [63]. The CSQ consists of twenty-one items and is rated on a 7-point scale, ranging from 1 (extremely dissatisfactory) to 7(very satisfactory). CSQ scores range from 21 to 147, with higher scores reflecting greater levels of satisfaction with the course. The CSQ encompasses the following components and corresponding items:

- Interaction between students and faculty: 1, 2, 3, 13, 14, 17
- Content relevance: 5, 8, 9, 10, 11, 12, 20
- Teaching/delivery: 4, 6, 7, 15, 16, 18, 19, 21

Reading Comprehension Test

The reading section of the TOEFL was used for assessing students' reading comprehension skills. It covers various micro-skills, including word recall for vocabulary comprehension, understanding word meanings in context. Moreover, the TOEFL reading section focuses on higher-level abilities, such as drawing inferences from the text, identifying synonyms, and effectively searching for specific information. It also evaluates students' proficiency in comprehending references and understanding grammatical relationships within the text. Additionally, the test measures the capability to use skimming and scanning techniques to navigate the text and find relevant information efficiently. Lastly, the section assesses students' ability to recognize the author's style and tone, providing a deeper understanding of the intended message of the text.

Procedure

To assess the proficiency of students in the general English course, the TOEFL reading section was administered to a total of 315 students. The test was conducted online through the university's virtual education system, providing a convenient and accessible platform for student participation. For research purposes, the questionnaires were designed using Google Forms and distributed to these students in autumn 2022.

To ensure the respondents' understanding of the questionnaire items, the researcher utilized Persian versions of the questionnaires. These questionnaires had not been previously published or available in Iranian research journals, so the researcher translated them with the assistance of two professors proficient in both languages. Back translations were conducted to maintain accuracy and precision.

Out of the 315 students who received the questionnaires, 282 students completed and submitted them. However, upon closer examination, it was found that 18 responses exhibited patterns that made them unreliable for analysis. These patterns included consistently selecting the neutral option or choosing the same response for every question. Therefore, these responses were omitted, leaving 264 valid answers for the subsequent examination.

The remaining 264 responses, along with the students' reading comprehension scores, were included in the data analysis. By examining the questionnaire responses and performance on the TOEFL reading section, researchers aimed to gain insights into the relationship between students' self-reported perceptions and their reading comprehension abilities.

Design

The study adopts a descriptive correlational design, aiming to explore the links between regulatory engagement, self-efficacy, course satisfaction, and reading comprehension. This design enables the researcher to discover the relationships between these variables and acquire a more profound comprehension of their characteristics and strengths.

Results and Findings

In this research study, the researcher investigated the levels of self-regulation of learning, classroom engagement, Internet self-efficacy, course satisfaction, and TOEFL reading performance among Iranian students who were taking online classes. Various statistical analyses, such as reliability, correlation, and regression, were carried out. The results are presented here.

Before addressing the research questions, the researcher estimated the reliability of the measurements. The researcher calculated Cronbach's Alpha coefficient for each measure, and the outcomes are described in Table 1. The Cronbach alpha for Self-regulation, Engagement, Self-efficacy, Course satisfaction, and Reading test were .94, .90, .90, .93, and .86, respectively. These coefficients indicate that the instruments are reliable and the items within each measure demonstrate a strong internal consistency.

The assessment included a thorough examination of construct validity as well. This evaluation aimed to determine how effectively the instruments measure the intended constructs. Construct validity offers evidence that the instruments accurately capture the theoretical concepts they were designed to assess. It is worth mentioning that confirmatory factor analysis was employed to evaluate construct validity.

Table 2 reveals the findings on construct validity. The RMSEA quantities for Engagement, Self-regulation, Satisfaction, Self-efficacy, and Reading are estimated as 0.08, 0.07, 0.08, 0.07, and 0.01, respectively. These values indicate satisfactory results. According to Browne and Cudeck [64], models with an RMSEA less than 0.08 and PCLOSE of 0.5 or higher are considered adequate.

With the thorough assessment of the questionnaires and the reading test for their reliability and validity, the researcher can confidently move forward in addressing the research questions central to the study. The first research question is restated here.

-Does learning outcome promote satisfaction as claimed by Marks et al. [59]?

To answer this question, the data were put into a regression equation in which satisfaction was the dependent variable and reading comprehension scores (learning outcome), along with self-regulation, engagement, and self-efficacy, were considered the independent variables. The results are presented in Table 3.

Table 1: Reliability of the instruments

Instruments	Self-regulation	Engagement	Internet Self-efficacy	Course Satisfaction	Reading Comprehension
Cronbach's Alpha	.94	.90	.90	.93	.86
N of items	30	19	22	20	40

Table 2: Model Fit Statistics of the Instruments

Instruments	RMSEA	LO 90	HI 90	PCLOSE
Engagement	.08	.07	.09	.5
Self-regulation	.07	.06	.09	.5
Satisfaction	.08	.07	.09	.5
Self-efficacy	.07	.06	.09	.5
Reading test	.01	.01	.02	1

Table 3: Model Summary of Learning Outcome, Self-regulation, Engagement, Self-efficacy & Course Satisfaction

Model	R	R Square	Adjusted R Square	Std. Error of Estimate	Change Statistics				
					R Square Change	F Change	df1	df2	Sig. F Change
1	.71	.5	.5	10.96	.5	67.16	4	259	.00

The F-statistic (F = (4,259) 67.14, p = 0.00) showed that the model was statistically significant. This means that the connection among learning outcome, self-regulation, engagement, self-efficacy, and course satisfaction is not random. Instead, it indicates a meaningful and reliable association between these variables. The R Square value of .5 suggests that these variables explain 50% of the variance in course satisfaction, which is a noteworthy finding.

Table 4 shows that the Variance Inflation Factor (VIF) indices for the major variables were all below 3.7, indicating that multicollinearity is not a concern. To ensure that the regression model was accurate, the researcher carried out additional diagnostic tests. Attempts were made to find the outliers, but it was noticed that they did not have any significant effects on the findings. The normality assumption was also examined, and the data showed a satisfactory distribution, suggesting that the residuals followed a normal pattern.t4

The results displayed in Table 4, however, indicate that "reading comprehension" does not account for the variation in course satisfaction (t= .23, p= .81). Therefore, these findings do not support the argument made by Marks et al. [59] who claimed that learning outcomes have a significant impact on course satisfaction. This finding highlights the complexity of measuring and understanding the relationship between learning outcomes and student satisfaction.

The researcher utilized standard linear regression to assess the predictive function of engagement, self-efficacy, self-regulation, and satisfaction on learners' reading comprehension. To explore the multicollinearity among the independent variables, their correlation was examined.

Markedly, a coefficient of 0.84 was found between self-regulation and engagement, and a

coefficient of 0.7 between self-efficacy and satisfaction (Table 5). According to Pallant's [65] guideline, a bivariate correlation of 0.7 or higher between independent variables can pose challenges when testing and interpreting regression coefficients. Therefore, Pallant recommends forming a 'composite' variable by combining the scores of the two strongly correlated variables.

To create a composite variable, the scores of the two variables underwent a transformation into Z scores. This transformation standardized the data, facilitating meaningful comparisons. It ensured that both variables were placed on the same scale, removing any potential bias originating from differences in their original measurement units. Once the Z scores were obtained, they were combined using a specific statistical procedure described in Tabachnick and Fidell's [66] work. This merging process entailed amalgamating the Z scores from each variable to generate a singular composite score that captured the underlying relationship between the two variables. By integrating the information from both variables into a composite measure, the researcher aimed to get a broader understanding of the phenomenon being investigated. The new variables are:

- "Regulatory Engagement" combines self-regulation and engagement.

- "Satisficacy" merges satisfaction and self-efficacy.

To understand the role of these two composite variables, the researcher used a standard linear regression analysis. According to the F-statistic (F = (2, 261) 46.25, p = 0.00) presented in Table 6, the model demonstrated statistical significance. This implies that the connection between Regulatory Engagement and Satisficacy and their impact on learning outcomes was not random. Rather, it signified a meaningful and dependable association between these variables. The R Square value of .51 indicates that these variables account for 51% of the variation in reading comprehension, which is a significant discovery.

Table 4: Regression Model of Self-efficacy, Self-regulation, Reading test, Engagement & Satisfaction

		Unstandardized Coefficients		Standardized Coefficients			Collinearity Statistics	
Model		B	Std. Error	Beta	t	sig.	Tolerance	VIF
1	(Constant)	27.89	8.13		3.42	.00		
	Self-efficacy	.62	.05	.64	11.27	.00	.58	1.71
	Self-regulation	.06	.05	.10	1.27	.2	.26	3.79
	Reading test	.06	.27	.01	.23	.81	.69	1.43
	Engagement	.00	.08	.00	.08	.92	.27	3.6

Table 5: Correlations among Reading Comprehension, Self-efficacy, Self-regulation, Satisfaction & Engagement

		Reading Comprehension	Self-efficacy	Self-regulation	Satisfaction	Engagement
Pearson Correlation	Reading Comprehension		.54	.33	.39	.25
	Self-efficacy			.5	.7	.46
	Self-regulation				.43	.84
	Satisfaction					.4
	N	264	264	264	264	264

Table 6: Model Summary of Regulatory-engagement, Satisficacy & Reading Comprehension

Model	R	R Square	Adjusted R Square	Std. Error of Estimate	Change Statistics				
					R Square Change	F Change	df1	df2	Sig. F Change
1	.51	.26	.25	2.56	.26	46.25	2	261	.00

Predictors: (Constant), regulatory-engagement, Satisficacy

The next step involved assessing whether there were any differences between regulatory engagement and satisficacy in predicting the learning outcome. To tackle with issues of multicollinearity, the Variance Inflation Factor (VIF) indexes were inspected and found to be below 1.34, indicating that multicollinearity was not a significant concern. Upon analyzing the results, the β index for satisficacy was .47 (p = .00), while for regulatory engagement, it was .06 (p = .26). This shows that satisficacy is a statistically significant predictor of the learning outcome, whereas regulatory engagement does not strongly predict the outcome. This finding contrasts with existing literature [22, 11]. Therefore, it can be speculated that regulatory engagement plays an indirect role in predicting the learning outcome. To explore this assumption further, the data is subjected to structural equation modeling analysis, and the researcher poses the following question:

Does satisficacy mediate the relationship between regulatory engagement and reading comprehension?

The model is visually displayed in Figure 1, where it outlines the direct effect of Regulatory Engagement on reading comprehension, as well as the indirect effect of regulatory engagement on reading comprehension through the supposedly mediating factor of satisficacy.

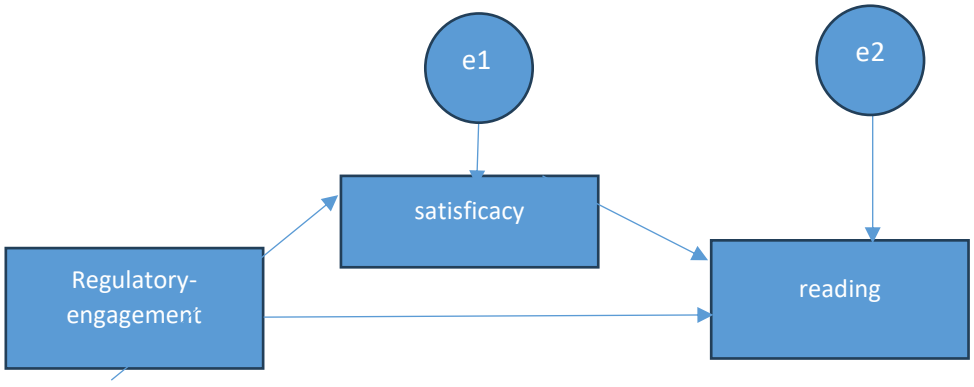

Fig. 1: Full mediation model

To assess the normality of the distribution, an examination was conducted on the skewness and kurtosis values for the variables of regulatory engagement, satisficacy, and reading comprehension. The skewness indices were estimated to be 0.16, -0.15, and -0.53, respectively. Moreover, the parallel kurtosis indexes were realized to be -0.58, -0.80, and 0.14. According to the guidelines outlined by Collier [67], skewness values falling between -2 and +2, as well as kurtosis values ranging from -10 to +10, are indicative of a normal distribution. In light of this, the present dataset can be deemed to adhere to a normal distribution pattern.

However, upon analysis, Root Mean Square Error of Approximation (RMSEA) turned out to be .44 which was way beyond Browne and Cudeck's [64] threshold of .08. Hence, the full mediating model was not confirmed as a significant pathway between the predictor (Regulatory Engagement) and the outcome (reading comprehension). This means that the initial model failed to provide evidence in support of the hypothesis. Subsequently, further inspection was required to establish an alternative model that could account for the relationship between the variables under investigation.

Figure 2 below depicts the alternative partial mediation model. The accompanying results are presented subsequently.

The default model yields a chi-square test statistic of 1.24, corresponding to 1 degree of freedom and a probability level of .26. This finding indicates a satisfactory association between the model and the obtained data, as the p-value exceeds the conventional significance level of .05. Furthermore, additional fit indicators, including the RMSEA at .03, further support the notion of a favorable model fit, given that it falls below the recommended threshold of .08 [64]. Within the model, multiple paths connecting variables have been incorporated. Specifically, it has been determined that satisficacy exerts a positive influence on regulatory engagement, with an estimated effect size of .47 and a critical ratio (C.R.) of 9.57. Likewise, satisficacy is found to positively impact reading comprehension, as indicated by an estimated effect size of .81 and a critical ratio (C.R.) of 9.56.

The results of the analysis offer compelling support for the presence of a noteworthy indirect (mediated) effect of regulatory engagement on reading comprehension. Particularly, the coefficient obtained from the analysis stands at 0.39, with a corresponding p-value of 0.01. This coefficient signifies that with each incremental increase of one unit in regulatory engagement, there is an associated improvement in reading performance by 0.39 units.

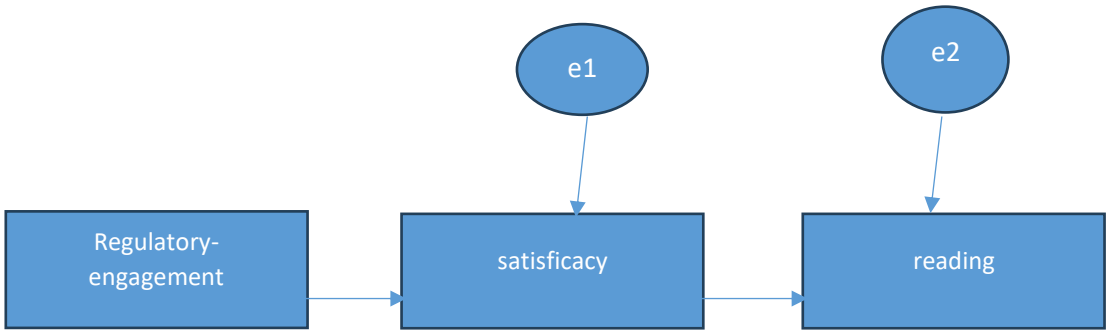

Fig. 2: Partial mediation model

To determine the strength of the above-mentioned coefficient, a bootstrap analysis was carried out, producing a lower bound value of 0.30 and an upper bound value of 0.48. It is notable that the estimated effect of 0.39 falls within this range. This consistency reinforces the conclusion that the indirect effect of regulatory engagement on reading comprehension is indeed statistically significant.

Furthermore, these findings suggest that the relationship between regulatory engagement and reading comprehension is fully mediated by the construct of satisficacy. This construct encompasses both satisfaction and self-efficacy, highlighting the interplay between subjective contentment and perceived competence in relation to regulatory engagement and its influence on reading comprehension. In essence, the impact of regulatory engagement on reading comprehension is dependent on its influence on satisficacy, emphasizing the pivotal role played by this psychological construct in translating regulatory engagement into enhanced reading abilities.)

Discussion

The present study investigated the relationship between self-regulation of learning, classroom engagement, internet self-efficacy, course satisfaction, and reading performance in online courses in the context of Iran. Statistical analyses highlighted important relationships among these variables while raising intriguing questions about their implications, applications, and broader significance. The findings of this study revealed significant insights into the dynamics of online learning. Notably, while self-regulation, engagement, and self-efficacy collectively accounted for 50% of the variance in course satisfaction (Table 3), reading comprehension did not emerge as a significant predictor of course satisfaction (Table 4). This result diverges from Marks et al. [59], who suggested a direct and substantial link between learning outcomes and satisfaction. Instead, our findings suggest that satisfaction may stem from other aspects of the learning experience, such as engagement, instructional quality, and student motivation, rather than reading comprehension alone. This discrepancy underscores the complex and context-specific nature of these constructs, warranting further exploration in varied cultural and educational settings.

It should be mentioned that our findings are context-specific and pertain to the particular dataset and methodology employed in the study. However, they do provide valuable insights that cast doubt on the previously established notion of a significant relationship between reading comprehension and course satisfaction, as proposed by Marks et al. [59].

Moreover, the correlation between learning outcomes and student satisfaction may vary across different branches of learning, courses, and individual learners. Certain subjects or instructional approaches may prioritize different aspects of learning that do not directly align with traditional learning outcomes. These variations can affect the generalizability of the findings and the applicability of using student achievement as a sole indicator of instructional effectiveness.

In conclusion, while Marks et al. [59] suggest a link between student satisfaction and learning outcomes, it is important to interpret their findings in the appropriate context. Student satisfaction is a complex construct influenced by multiple factors, and relying solely on student achievement as a measure of course effectiveness may oversimplify the overall picture. A comprehensive understanding of student satisfaction requires considering a

broader range of variables and adopting a more nuanced approach.

As shown in Table 6, students' levels of regulatory engagement (their active involvement, goal setting, and self-monitoring in the learning process) and satisficacy (their satisfaction with the course and perception of meeting the necessary requirements for successful learning) are influential factors in promoting their reading comprehension abilities. Although this piece of finding is significant, its generalizability should be deliberated. This study focused specifically on reading comprehension, and its applicability to other subject areas or educational contexts may vary.

When satisficacy and regulatory engagement are jointly taken into account, they emerge as statistically significant predictors of learning outcomes (Table 7). This implies that both of these factors, when considered together, exert a meaningful influence on the final learning outcomes achieved by individuals. However, it is essential to note that the major contributor to learning outcomes appears to be satisficacy, as it demonstrates a stronger predictive capacity compared to regulatory engagement in isolation. In other words, people with a high level of satisfaction are more likely to achieve favorable learning outcomes. On the contrary, the predictive power of regulatory engagement, when examined independently, does not exhibit a robust association with learning outcomes. This unexpected observation challenges the prevailing literature [5-9,11] and calls for a deeper understanding of the intricate interplay between satisficacy, regulatory engagement, and learning outcomes. To clarify this complex relationship, the present study investigated the structural relationship between these variables. It was found that increase in regulatory engagement was associated with improvement in reading performance.

These findings have significant theoretical implications. First, they challenge the conventional assumption that student achievement is a primary determinant of satisfaction in online learning. Instead, the study suggests that factors such as self-regulation and satisficacy play a more critical role. This calls for a shift in research focus from a one-dimensional view of satisfaction as an outcome of learning to a broader, multidimensional perspective that considers other psychological and behavioral factors.

The partial mediation model, as displayed in Figure 2, reveals that the model fit is highly favorable. These findings offer conclusive evidence to support the existence of a significant indirect effect of regulatory engagement on reading comprehension, with satisficacy acting as a crucial mediating factor. Satisficacy, a construct that amalgamates satisfaction and self-efficacy, plays a pivotal role in facilitating the translation of regulatory engagement into improved reading abilities. In essence, regulatory engagement influences reading comprehension indirectly by exerting its impact through satisficacy. This implies that individuals who exhibit higher levels of regulatory engagement are more likely to experience greater satisficacy, which in turn fuels their enhanced reading comprehension skills. By uncovering this mediating mechanism, the study sheds light on the intricate relationship between regulatory engagement, satisficacy, and reading comprehension, thus expanding our understanding of the cognitive processes involved in achieving optimal levels of reading proficiency. Educators should recognize that simply fostering self-regulation may not be enough; ensuring that students feel confident and satisfied with their learning process is equally important.

From a practical standpoint, these findings emphasize the importance of designing online

courses that actively promote both regulatory engagement and satisficacy. This could be achieved by incorporating strategies that enhance students' self-efficacy, motivation, and satisfaction, ultimately leading to improved learning outcomes.

Our study diverges from previous research that suggests a direct correlation between learning outcomes and satisfaction [59]. One possible explanation for this discrepancy is the varying nature of student experiences across different learning environments. In traditional classroom settings, where instructor support and peer interactions are more immediate, learning achievements may translate more directly into satisfaction. However, in online settings, satisfaction may be influenced by additional factors such as technology use, self-efficacy, and the availability of support mechanisms.

Additionally, while studies like Richardson and Swan [54] and Eom and Ashill [51] argue that satisfaction is a predictor of academic success, our findings suggest that satisficacy, rather than satisfaction alone, is a more meaningful predictor. This distinction underscores the importance of considering self-efficacy and regulatory engagement alongside satisfaction when evaluating online learning experiences.

Based on findings of this study, several practical strategies can be implemented to enhance student engagement, satisfaction, and learning outcomes in online education:

- Set Clear Goals and Expectations: Encourage students to establish clear learning goals and expectations at the beginning of the course. This helps them stay focused, motivated, and engaged throughout the online learning experience [13].

- Encourage Instructor-Student Interaction: Promote regular interaction between instructors and students through discussion forums, virtual office hours, and personalized feedback. This interaction builds a sense of community and encourages students to actively participate and engage with the course material [17, 20].

- Provide Structured Learning Resources: Offer well-organized and easily accessible learning resources, such as lecture recordings, readings, and interactive multimedia materials. Structured resources enable students to navigate the course content effectively, leading to a better understanding of the subject matter [38].

- Develop Time Management Skills: Emphasize the importance of effective time management for online learning. Encourage students to create schedules, set deadlines, and allocate dedicated study time to balance their coursework effectively. This promotes a sense of control and helps students stay on track [13].

- Provide Internet Skills Training: Offer tutorials or workshops on internet skills and online learning platforms to enhance students' internet self-efficacy. Teach essential digital literacy skills, such as online research, effective communication in virtual environments, and online collaboration tools [61].

- Promote Peer Interaction and Collaboration: Facilitate opportunities for students to engage in peer to-peer interaction and collaboration. This can be done through group projects, online discussions, or virtual study groups, promoting shared knowledge construction and enhancing the sense of community in the online class [20].

- Incorporate Varied Assessment Methods: Utilize diverse assessment methods to cater to different learning styles and provide students with a variety of opportunities to demonstrate their knowledge and skills. This can include quizzes, essays, group presentations, and online discussions [61].

- Collect and Utilize Feedback: Actively gather feedback from students regarding their learning experience to identify areas for improvement. Use this feedback to make necessary adjustments to the course design, content delivery, or engagement strategies, thereby enhancing overall course satisfaction [36].

- Foster a Positive Learning Environment: Create a positive and inclusive learning environment by valuing student contributions, encouraging active participation, and providing constructive feedback. This fosters a sense of belonging and motivates students to actively participate in the learning process [48].

- Promote Continuous Reflection and Self-Assessment: Encourage students to reflect on their learning progress and engage in self-assessment activities. This helps them identify areas of strength and areas that require further improvement, fostering self-regulation and self-directed learning [39].

By implementing these techniques, instructors can enhance regulatory engagement, internet self-efficacy, and course satisfaction among students, ultimately leading to improved learning outcomes in online classes.

Conclusions

The study found that satisficacy, a composite variable combining satisfaction and self-efficacy, was a significant predictor of the learning outcome, while regulatory engagement did not strongly predict the outcome. However, further analysis using structural equation modeling revealed an indirect effect of regulatory engagement on reading comprehension through the mediating factor of satisficacy. This suggests that the impact of regulatory engagement on reading comprehension is dependent upon its influence on satisficacy. These findings have implications for educational practitioners and researchers in understanding the multifaceted nature of student learning and satisfaction. It emphasizes the significance of fostering regulatory engagement to enhance satisfaction and self-efficacy thereby promoting reading comprehension.

This study has its limitations. The data analyzed was based on a specific context and sample, which may limit its generalizability to other settings. Additionally, the composite variables created may introduce complexities and require further validation in different contexts.

Future research should explore the nuanced relationships between regulatory engagement, satisficacy, and reading comprehension, as well as their influence on other subject areas. Additionally, future studies can examine the role of external factors, such as technological challenges, instructor presence, and institutional support, in shaping student satisfaction in online learning. Longitudinal research would be beneficial in assessing how internet self-efficacy and regulatory engagement evolve over time and their long-term impact on academic success. Moreover, investigating the effectiveness of various instructional strategies, including gamification, interactive multimedia, and adaptive learning systems, could provide valuable insights into enhancing satisficacy and improving student outcomes.

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Conflict of Interest

The author has no personal or financial interests that could potentially influence this work.

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