

Navigating digital learning: Autonomy among EFL students in Indonesia

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Abstract: This study investigates the autonomy of EFL students in Indonesia in the context of digitalized education, focusing on their autonomy levels, influencing factors, and challenges. A structured Likert-scale questionnaire was administered to 272 second- and third-year English Department students at a public university in central Indonesia. Descriptive statistics were employed to analyze the data and interpret the findings. The results reveal a high level of learner autonomy, particularly in accessing and utilizing digital platforms and resources for English language learning. Key factors that enhance autonomy include the accessibility and adaptability of digital learning materials, the integration of tasks within the curriculum that foster independence, and the facilitative role of lecturers in supporting self-directed learning through technology. Despite these positive outcomes, challenges persist. Students reported difficulties in maintaining focus, managing the overwhelming availability of digital resources, and overcoming technical issues such as unstable internet connectivity. These findings underscore the importance of strengthening digital infrastructure, providing clear guidance on resource selection, and enhancing students' self-regulation skills to support autonomous learning further. This research offers valuable insights for educators and policymakers, contributing to the development of digital learning environments that empower students to become independent learners while addressing the challenges associated with digital education.

Keywords: *Autonomy, Digital Learning, EFL Learners, Indonesian Classroom.*

1. Introduction

The rapid evolution of digital technology has significantly transformed educational landscapes around the world. It has changed how students engage with learning activities, access course materials, and interact with lecturers and peers [1]. The rise of digital tools, such as mobile devices, computers, and internet services, has improved access to educational resources and encouraged greater learner autonomy [2, 3]. Digital technology now plays a crucial role in transforming learning processes and increasing the accessibility of instructional materials [4].

Integrating digital technology into education, often called the digitalization of learning, entails incorporating digital tools into teaching and learning practices [5]. This transition enhances students' access to educational content and encourages independent engagement with learning resources [6]. Digitalization offers adaptable and personalized learning experiences that enhance the educational process and facilitate self-directed learning strategies [7, 8]. This approach empowers students to independently design and manage their learning experiences, moving away from traditional teaching methodologies. It nurtures creativity and self-reliance, which are vital for achieving academic success in the era of digitalization of learning [9].

Digitalization significantly impacts English as a Foreign Language (EFL) instruction by expanding access to diverse digital resources and introducing innovative teaching methods that address individual learning needs [10]. EFL students can explore various learning preferences and enhance their autonomy beyond conventional classroom environments [11]. E-learning materials and language-

learning applications enable learners to tailor their study plans, practice language skills, and engage in interactive activities that align with their objectives [12]. These digital advancements empower learners to take control of their learning, fostering the development of flexible and self-regulated individuals.

In the era of digitalization of learning, learner autonomy is increasingly recognized as vital for cultivating independence and adaptability in education. Autonomous learners actively participate in their education by setting personal goals, selecting appropriate materials, implementing effective strategies, and monitoring their progress [13]. This autonomy increases motivation and stimulates active involvement, ultimately improving learning outcomes [14]. For EFL students, autonomy allows them to organize their learning activities, choose relevant resources, and take greater responsibility for their academic growth [15]. Empirical evidence consistently points out the positive influence of learner autonomy on academic achievement, emphasizing its crucial role in language learning [16-18].

Learner autonomy, closely associated with the digitalization of learning, has become a substantial area of interest in current EFL research. Studies have investigated methods to improve autonomy via digital platforms [19-21] and analyzed perceptions of digitized learning environments along with their effects on teaching and learning [22-24]. Research has also examined factors affecting EFL learner autonomy and students' experiences with self-directed learning [25, 26]. Although existing research has examined the role of digitalization in EFL education, few studies have specifically investigated its impact on learner autonomy in developing countries such as Indonesia. This study seeks to fill this gap by providing valuable insights into the dynamics of learner autonomy within Indonesia's digitalized educational landscape. It focuses on assessing the autonomy levels of EFL students and identifying the factors and challenges that influence their autonomy in the era of digital learning. Hence the formulation of the research questions is as follows:

1. What is the level of learner autonomy among EFL students in English language learning in the era of digital education?
2. What factors influence learner autonomy in English language learning in the era of digital education?
3. What challenges do students face in becoming autonomous EFL learners in the era of digital education?

2. Literature Review

2.1. Learner Autonomy

Learner autonomy, as defined by Holec [27] refers to learners' ability to take charge of their learning processes by setting personal goals, selecting strategies, and evaluating outcomes. Lengkanawati et al. similarly highlight autonomy as learners' responsibility for independently managing their learning, including goal-setting, progress monitoring, and method selection [28]. This concept is crucial in foreign language learning, where autonomy fosters independence and accountability, enabling students to adapt to diverse educational contexts and challenges [29-31]. In university settings, students are increasingly expected to engage in self-directed learning with minimal instructor intervention, a shift integral to improving learning outcomes [17, 32]. Thus, learner autonomy has become a cornerstone of effective language instruction, supporting the development of adaptable and self-regulated learners.

2.2. Autonomous Language Learners

Autonomous learners demonstrate the ability to engage in independent study, regulate their learning pace, select appropriate materials, and adopt effective learning strategies [33-35]. This autonomy is characterized by intrinsic motivation, accountability, goal-setting, and the freedom to choose content, methods, and evaluation approaches Cirocki, et al. [36]. Nasri, et al. [37] emphasize that self-directed learners take initiative in organizing and executing learning activities while consistently assessing their progress. In the digital era, Xu and Hanley [38] highlight the critical role

of online resources and digital engagement in fostering autonomy. Similarly, Yu [39] identifies motivation, proficiency in digital tools, time management, and resource accessibility as essential attributes of autonomous learners, particularly in technology-driven learning environments.

2.3. *The Level of Learner Autonomy*

Learner autonomy exists on a continuum, ranging from low to high levels, indicating a progression in learners' ability to regulate their activities and set goals [9]. Highly autonomous learners effectively manage their learning, while those with lower autonomy engage in only limited aspects of self-directed learning [12]. Autonomy levels often vary from beginner to advanced, with most learners situated at the intermediate level, influenced by factors such as teacher roles, student attitudes, and the learning environment [40]. Teachers play a crucial role in fostering autonomy by providing diverse learning opportunities and guidance, which can enhance moderate to high levels of autonomy [41]. A critical question remains whether learner autonomy is a stable trait or context-dependent, varying with situations and circumstances [42].

2.4. *Digitalization of Learning and Learner Autonomy in Language Teaching*

The digitalization of learning has revolutionized language instruction by transforming traditional teaching methods and offering learners a wealth of interactive, self-directed opportunities. This shift has expanded access to diverse digital resources, enabling learners to customize strategies based on their preferences and pace, thereby fostering greater autonomy [43]. Digitalization has enhanced learner autonomy in English language learning, promoting learner-centered instruction and facilitating extensive language practice both inside and outside the classroom [44, 45]. It has also improved motivation, confidence, and social skills by broadening access to online educational materials beyond those provided by instructors, encouraging a transition to self-directed learning [33, 46, 47].

2.5. *The Challenges of Learner Autonomy in Language Learning in the Era of Digitalization of Learning*

The era of digitalized learning offers numerous opportunities to enhance learner autonomy but also introduces significant challenges. While the abundance of digital resources empowers learners to customize their strategies, it can also overwhelm them, complicating the selection and effective use of tools aligned with their preferences and learning styles [30, 46]. Without adequate guidance, EFL learners may struggle to develop effective strategies, as the vast array of resources often creates confusion [48, 49]. Additionally, restricted access to technology and resources hinders learners' ability to participate fully in self-directed learning activities [3].

Challenges such as locating authentic materials and utilizing language learning applications further complicate independent study for EFL learners [50]. Inadequate internet connectivity and diverse learner characteristics also affect the successful implementation of digital learning technologies [51]. Moreover, insufficient support from policymakers presents a critical barrier to fostering autonomy in foreign language learning [52]. Finally, maintaining motivation and self-discipline in fast-paced digital environments remains a significant obstacle, potentially undermining learners' long-term commitment to education [53].

2.6. *Related Studies*

Recent research highlights the critical role of learner autonomy in foreign language learning, especially within the framework of digitalization. Choi [14] explored the autonomous learning habits of South Korean secondary school students using digital technologies for EFL reading. Through questionnaires and interviews with 275 students, the study found that 60.4% exhibited autonomous learning practices, although some students expressed motivational challenges. Similarly, Tuan [54] investigated Vietnamese EFL students' perceptions of autonomy and found that while students acknowledged its importance, their participation was only slightly above average, suggesting a need for further support in fostering autonomy.

In the Indonesian context, Melvina, et al. [12] reported moderate levels of autonomy among EFL students at a state institution. Their mixed-method study identified autonomy as vital for improving English proficiency but revealed significant areas requiring enhancement, such as self-regulated learning strategies. Complementing this, Daflizar, et al. [45] examined the interplay between learning techniques, autonomy, and engagement among Indonesian tertiary students, highlighting positive relationships but leaving the role of digital tools largely unexplored.

Pratiwi and Waluyo [55] extended this discussion by examining how digital tools in online EFL courses influence autonomy and academic outcomes. Their findings suggest that digital technologies enhance autonomy in listening, structuring, and reading skills, even in low-resource settings. However, they emphasize the need for structured guidance to maximize these benefits. On a broader scale, Nematipour [56] linked Iranian students' autonomy to their learning styles, noting strong associations with visual and auditory preferences, yet underscoring the need to address kinesthetic learners' needs.

Despite these contributions, a critical gap remains regarding how specific digital resources—such as web-based platforms, videos, and learning management systems—can effectively promote autonomy in EFL learning, particularly in underrepresented contexts like Indonesia. Moreover, the extent to which students self-manage their learning processes and overcome challenges in digital environments remains inadequately studied. Addressing this, the current study aims to provide nuanced insights into EFL learner autonomy in Indonesia's digitalized educational landscape, focusing on autonomy levels, influencing factors, and associated challenges. By doing so, this research seeks to bridge existing gaps and contribute to the development of effective strategies for fostering autonomy in digitally enhanced learning environments.

3. Methodology

3.1. Design of Research

This research utilized a quantitative survey approach to evaluate the degree of learner autonomy among EFL students, considering the impact of digital learning environments. It also explored the factors that contribute to autonomy and the challenges students face in becoming self-directed learners. The study's design aims to offer a thorough analysis of the data, focusing on trends, patterns, and variations in student responses [57]. By prioritizing numerical data and statistical analysis, the research ensures an objective and precise interpretation of the findings. This approach helps pinpoint the key elements that influence learner autonomy and the specific obstacles encountered in the context of digitalized learning.

3.2. Participants

This study involved a total of 272 students enrolled in the English Language Education (ELE) study program at the State Islamic University of Mataram, West Nusa Tenggara, Indonesia. They were the second and third-year students in the academic year of 2024/2025. They were selected purposively due to the accessibility and the accomplishment of their first-year study which their lecturers had introduced them to digital-based learning activities. The participants' demographic is presented in Table 1.

Table 1.
Participants' demographic.

| Criteria | Category | Freq. |
|----------|----------|-------|
| Sex | Male | 129 |
| | Female | 143 |
| Age | 19-20 | 208 |
| | 21-22 | 58 |
| | 23-24 | 6 |

3.3. Research Instruments and Data Collection Procedure

This study utilized a structured questionnaire to assess learner autonomy among EFL students in digital learning settings. The 38-item questionnaire with 5 points Likert scale was designed based on relevant theories and literature regarding learner autonomy, its influencing factors, and the challenges in fostering autonomy within digital environments. It was distributed via Google Forms through the Students' ELE program WhatsApp group. Before distribution, two experts in English language education validated the questionnaire for content, clarity, and relevance, ensuring its ability to gather accurate and meaningful data.

3.4. Data Analysis

The data gathered from the questionnaire were analyzed using descriptive statistical methods using the SPSS 24 version. The measurement results mean and standard deviation scores, for answering the first study's objective then converted into learners' autonomy levels. The autonomy level conversion criteria is tabulated in Table 2.

Table 2.

The criteria for the interpretation of the mean values.

| Score | Level |
|-------------|-----------|
| 1.00 - 1.80 | Very low |
| 1.81 - 2.60 | Low |
| 2.61 - 3.40 | Moderate |
| 3.41 - 4.20 | High |
| 4.21 - 5.00 | Very High |

4. Results

4.1. Level of Learner Autonomy among EFL Students in the Era of Digital Education

The present study explores the level of autonomy among EFL learners, the factors that influence it, and the challenges that hinder its development. The results are presented in alignment with The first research objective of this study is to measure the level of autonomy among EFL learners in the era of digital education. After the data was collected, a statistical analysis of the quantitative data was conducted, and the results are presented in Table 3.

Table 3.
Level of EFL learners' autonomy.

| Items | Statements | M | SD | Level |
|-------|---|------|------|----------|
| 1. | I established my learning objectives before learning English via digital platforms, including e-learning, language learning applications, websites, and additional resources. | 3.70 | 0.97 | High |
| 2. | I do not have specific goals for learning English via digital platforms such as e-learning, language learning applications, websites, and other resources. | 2.65 | 1.15 | Moderate |
| 3. | I can identify and select English learning materials that align with my needs and objectives using various digital platforms, including e-learning, language learning applications, and websites. | 3.82 | 0.92 | High |
| 4. | I can choose and apply English learning strategies that correspond to my individual learning preferences and style in the current digital learning environment. | 3.69 | 0.88 | High |
| 5. | I can evaluate my learning progress and outcomes after following English learning activities via various digital platforms, including e-learning, English learning applications, and websites. | 3.49 | 0.91 | High |
| 6. | I can not evaluate my learning progress and outcome after participating in English learning activities using various digital platforms, including e-learning, language learning applications, and websites. | 2.86 | 1.01 | Moderate |
| 7. | I can effectively allocate my study time to learning English by attending online classes, accessing or downloading study materials, and completing assignments. | 3.45 | 0.91 | High |
| 8. | I can motivate and persuade myself to persist in enhancing my English skills in the current era of digitalization of learning. | 3.72 | 0.94 | High |
| 9. | I can communicate effectively in English during learning activities in the current digital environment. | 3.43 | 0.88 | High |
| 10. | I can utilize various digital media during English lessons, including videos, conferences, mobile applications, podcasts, emails, and text messages. | 3.56 | 0.91 | High |
| 11. | I frequently engage in English lessons via multiple digital platforms to enhance my English proficiency. | 3.58 | 0.91 | High |
| 12. | I rarely utilize digital platforms for English lessons to improve my English proficiency. | 2.85 | 1.02 | Moderate |
| 13. | I can independently access the internet through various devices, including computers, laptops, and smartphones. | 4.05 | 0.91 | High |
| 14. | I can use various applications and software for English learning, including those for skills practice, vocabulary enhancement, pronunciation improvement, interactive games, etc. | 3.85 | 0.91 | High |
| 15. | I can access and utilize learning materials in diverse formats, such as text, images, audio, and video, to enhance my English comprehension and proficiency. | 3.82 | 0.88 | High |
| 16. | I lack skills in utilizing digital devices or technology to facilitate my English learning activities. | 2.58 | 1.12 | Low |
| 17. | I readily adjust to changes in learning systems, including the introduction of new applications that facilitate my English learning. | 3.50 | 0.81 | High |
| 18. | I can utilize new technologies or systems to support my English learning process. | 3.52 | 0.85 | High |
| 19. | I can comprehend English learning materials in diverse digital formats, such as written text, audio, video, interactive resources, etc. | 3.64 | 0.80 | High |
| 20. | I can establish a learning environment that supports my English learning activities in the current era of digitalization, such as a reliable internet connection, a comfortable study space, suitable digital platforms, etc. | 3.49 | 0.83 | High |
| 21. | I can address challenges encountered during English lessons, including internet connectivity problems, technical settings, comprehension of the subject matter, etc. | 3.38 | 0.89 | Moderate |
| 22. | I can independently search for and locate information using various digital resources, such as the Internet, digital libraries, language learning applications, etc. | 3.73 | 0.92 | High |
| 23. | I still depend on lecturers and have not fully utilized digital learning resources to study English. | 3.35 | 0.97 | Moderate |

Table 3 presents the means and standard deviations of student responses to specific items regarding learner autonomy in the context of digital learning. The findings indicate that the overall level of learner autonomy among students in English language learning within the digital education era was categorized as "High" ($M = 3.46$, $SD = 0.93$).

Students exhibited considerable autonomy in several areas, particularly in identifying and selecting English materials that met their needs and goals through various digital platforms, such as e-learning tools, language learning apps, and websites ($M = 3.82$, $SD = 0.92$). They also showed strong autonomy in accessing and utilizing learning materials in diverse formats, including text, images, audio, and video, to support their comprehension and English proficiency ($M = 3.82$, $SD = 0.88$). Additionally, students demonstrated proactive use of digital resources, like the internet and digital libraries, for information retrieval ($M = 3.73$, $SD = 0.92$), as well as intrinsic motivation to improve their English skills within a digital learning environment ($M = 3.72$, $SD = 0.94$).

The highest score was recorded for students' ability to independently access the internet via devices such as computers, laptops, and smartphones ($M = 4.05$, $SD = 0.91$). This was closely followed by their use of various language learning applications, particularly for vocabulary and pronunciation practice ($M = 3.85$, $SD = 0.91$). High scores were also observed in students' ability to set learning goals before participating in digital English lessons ($M = 3.70$, $SD = 0.97$) and in selecting learning strategies that matched their personal preferences and learning styles ($M = 3.69$, $SD = 0.88$). However, students showed moderate performance in managing challenges encountered during lessons, such as internet connectivity issues and technical difficulties ($M = 3.38$, $SD = 0.89$). Additionally, their ability to self-assess their progress after engaging in digital learning activities was relatively lower ($M = 2.86$, $SD = 1.01$). These findings highlight both the strengths of learner autonomy in digital learning contexts and areas that require improvement, particularly in addressing technological barriers like internet issues and enhancing self-evaluation practices.

4.2. Factors Influencing Learner Autonomy in Digital Education

The second research question aims to identify the factors influencing EFL learners' autonomy in digital education. The results of the data analysis are presented in Table 4.

Table 4.
Factors affecting EFL learners' autonomy.

| Items | Statement | M | SD |
|-------|---|------|------|
| 24. | The available digital resources for learning English, including videos, e-learning materials, websites, mobile applications, and interactive content, are sufficient and enough. | 3.74 | 0.85 |
| 25. | The available digital resources for learning English, including videos, e-learning materials, websites, mobile applications, and interactive content, are widely and flexibly accessible, facilitating my English learning. | 3.75 | 0.91 |
| 26. | The available digital resources for learning English, including videos, e-learning materials, websites, mobile applications, and interactive materials, do not diminish my reliance on lecturers' direct explanations. | 3.42 | 0.92 |
| 27. | I am strongly motivated to study English, so I took the initiative to enrol in English lessons via a digital platform. | 3.72 | 0.89 |
| 28. | I actively use various internet tools and resources, enhancing my creativity in managing my English learning activities. | 3.53 | 0.88 |
| 29. | My social environment facilitates access to technology, allowing me to learn English online. | 3.63 | 0.90 |
| 30. | Lecturers offer guidance and direction for independent English learning via technology. | 3.71 | 0.91 |
| 31. | Lecturers never guide or encourage students to utilize accessible digital resources to learn English. | 2.43 | 1.14 |
| 32. | The technology-assisted approach to learning encouraged me to take the initiative to learn English independently in this digitalized era of learning. | 3.67 | 0.77 |
| 33. | The English learning curriculum in my major contains independent assignments that encourage me to be more engaged in learning English via digital platforms. | 3.75 | 0.83 |
| 34. | The independent assignments in the curriculum help me develop my autonomy in learning English using technology. | 3.74 | 0.86 |

Table 4 presents the mean and standard deviation of students' responses regarding factors that influence learner autonomy in learning English in the digital age. The results show that several specific factors significantly contribute to learner autonomy. One of the most influential factors is the accessibility of digital English learning resources, such as videos, e-learning materials, and mobile applications. These resources were noted for being both broad and flexible ($M = 3.75$; $SD = 0.91$). Additionally, the integration of independent tasks into the curriculum increased student engagement with digital platforms for learning English ($M = 3.75$; $SD = 0.83$). Other significant factors include the sufficiency and adequacy of digital English learning resources, such as videos, websites, and mobile applications ($M = 3.74$; $SD = 0.85$). The incorporation of independent tasks into the curriculum that promotes student independence in using technology for English learning also had a positive impact ($M = 3.74$; $SD = 0.86$). Furthermore, students' motivation to learn English through digital platforms, which encourages them to take the initiative in engaging with these resources, was identified as a crucial factor ($M = 3.72$; $SD = 0.89$). Finally, the role of lecturers in supporting independent learning through technology ($M = 3.71$; $SD = 0.91$) and the overall impact of technology-assisted learning on fostering student autonomy ($M = 3.67$; $SD = 0.77$) underscore the importance of digital resources in enhancing student independence and encouraging initiative in independent learning.

4.3. Challenges in Becoming Autonomous EFL Learners in the Digital Education

The last research question explores the challenges faced by EFL learners in developing learning autonomy. The results of the data analysis are presented in Table 5.

Table 5.
Challenges in becoming autonomous EFL learners in the digital education.

| Items | Statements | M | SD |
|-------|--|------|------|
| 35. | I often feel confused and lack concentration in learning English due to the abundance of digital English learning resources available. | 3.27 | 1.02 |
| 36. | I find it easier to select the English learning materials that best suit my needs because of the excessive availability of digital English learning resources. | 3.68 | 0.95 |
| 37. | I find it challenging to utilize the technologies necessary for studying English, including mobile applications and online learning platforms. | 2.91 | 0.95 |
| 38. | I have difficulty accessing online materials or references that could enhance my English proficiency due to technological constraints | 2.90 | 0.95 |
| 39. | I struggle to find digital English learning resources that align with my interests, requirements, and proficiency level. | 2.93 | 1.04 |
| 40. | I frequently encounter challenges getting the required digital English learning resources because of inadequate internet connectivity. | 3.15 | 1.11 |
| 41. | I have no difficulties accessing or downloading the necessary digital materials for my English learning due to internet connectivity problems. | 3.42 | 0.94 |
| 42. | I find it challenging to develop autonomy in learning English due to the lack of support from institutions or policymakers regarding the digitization of learning. | 3.08 | 0.97 |
| 43. | I frequently struggle to maintain self-discipline and consistently engage in practice and drills while utilizing digital platforms for my English learning. | 3.25 | 1.05 |
| 44. | I struggle to maintain attention and consistency while learning English using digital platforms. | 3.33 | 1.01 |

Table 5 summarizes the mean and standard deviation of issues associated with EFL learners' challenges in learning English through the digitalization of education. The findings reveal that the primary difficulties EFL learners face when learning English via digital platforms include maintaining long-term focus and consistency ($M = 3.33$, $SD = 1.01$). Additionally, EFL learners experience confusion in selecting appropriate learning materials due to the overwhelming number of digital resources available ($M = 3.27$, $SD = 1.02$).

A significant challenge is EFL learners' struggle to sustain self-discipline and engage in regular practice during digital language acquisition ($M = 3.25$, $SD = 1.05$). Inadequate internet connectivity further limits their access to crucial digital learning tools ($M = 3.15$, $SD = 1.11$). Moreover, the lack of

sufficient institutional or regulatory support for the digitization of education hinders the promotion of student autonomy in learning English ($M = 3.08$, $SD = 0.97$). EFL learners also face difficulties in using technology effectively and obtaining online resources, with mean scores of ($M = 2.93$, $SD = 1.04$) and ($M = 2.90$, $SD = 0.95$), respectively. These challenges highlight the need for improved infrastructure, targeted support, and policy enhancements to help students navigate digital learning environments more effectively.

5. Discussion

Following the pattern of the study's results, the discussion is organized thematically based on these findings.

5.1. Level of Learner Autonomy among EFL Students in the Era of Digital Education

The results indicate a high level of learner autonomy among EFL students in digital learning environments, particularly in using digital resources and platforms for English language learning. This finding underscores the transformative role of digital technologies in promoting self-directed learning, as highlighted in previous studies. Choi [14] found that digital tools enhance autonomy by providing students with greater control over their learning processes and access to diverse resources. Similarly, Pratiwi and Waluyo [55] demonstrated that digital platforms and mobile applications empower students to plan, monitor, and manage their learning more effectively, fostering independence in various language skills.

Students' proficiency in identifying and selecting suitable English materials and their effective use of multimedia formats reflect the practical integration of technology in autonomous learning. These findings align with Noskova, et al. [58] who emphasized that digital tools create unique opportunities for learners by offering authentic materials and diverse modalities. Moreover, Shen, et al. [48] and Octaberlina and Afif [4] highlighted how web-based autonomous learning systems enhance access to up-to-date resources, thereby increasing learners' motivation and interest. This study extends these findings by demonstrating how such technological benefits manifest in the Indonesian context, where the integration of digital tools is rapidly evolving.

The highest scores in independent internet access and the use of language learning applications highlight students' strong technical self-efficacy. This finding is consistent with Alakrash and Abdul Razak [10] who identified digital literacy as a cornerstone of learner autonomy in the digital era. However, in the Indonesian context, this technical competence may be attributed to the increasing availability of smartphones and affordable internet access, which enable students to navigate and utilize digital resources effectively. Such self-efficacy is critical, as it equips learners with the confidence to engage independently in their educational pursuits.

Furthermore, students exhibited elevated scores in goal-setting and the selection of learning strategies, which correspond to the framework of autonomous learning proposed by Nikitenko, et al. [8]. This framework emphasizes the role of personalized learning and adaptive strategies in enhancing student performance and meeting individual needs. The findings suggest that Indonesian EFL students have developed essential skills for autonomous learning through exposure to digital platforms. These skills not only align with global trends but also signify a shift towards more student-centered learning approaches within the local educational landscape.

However, moderate scores in addressing technical challenges reveal areas that require improvement. Consistent with Abdullateef [19] the findings indicate a need for timely assistance and structured guidance to help students overcome barriers such as unstable internet connectivity and limited access to high-quality digital resources. The relatively lower score in self-assessment highlights another area for development. As Wang [59] noted, many students struggle with self-evaluation, which is critical for reflective learning. This gap suggests the importance of incorporating training on self-regulatory strategies and digital literacy into the curriculum to enhance learners' ability to evaluate their progress effectively.

Finally, the high motivation levels exhibited by students reinforce the positive impact of digital platforms on learner engagement. Čolović [52] demonstrated that digital learning environments foster motivation by providing accessible and interactive opportunities. In the Indonesian context, this finding underscores the potential of digital tools to bridge traditional classroom limitations, particularly in fostering intrinsic motivation among students. However, motivation alone is insufficient; it must be complemented by robust infrastructure and institutional support to sustain engagement and autonomy.

5.2. Factors Influencing Learner Autonomy in Digital Education

The findings reveal key factors that significantly influence learner autonomy in digital English learning contexts, emphasizing the critical roles of resource accessibility, curriculum design, student motivation, teacher support, and technology-assisted learning. Broad and adaptable access to digital learning resources emerged as one of the most significant factors, enabling students to tailor their learning to their individual needs. This finding is consistent with Wardat and Akour [11] who highlighted the importance of resource accessibility and flexibility in fostering learner independence. In the Indonesian EFL context, where resource availability varies widely, this accessibility serves as a vital enabler of self-directed learning practices, allowing students to overcome traditional classroom limitations.

The sufficiency and quality of digital resources were also highlighted as pivotal. Zhou and Wei [49] emphasized that the effectiveness of such resources depends not only on their abundance but also on their alignment with learners' needs and the support provided by educators. Similarly, this study found that students benefitted most when educators provided structured guidance on how to navigate and utilize these resources. This underscores the necessity of integrating autonomy-supportive tasks into the curriculum, as suggested by Nasri, et al. [37]. Such tasks, which encourage students to take responsibility for their learning while maintaining a balanced relationship with their instructors, were found to be essential for fostering independent learning skills.

Intrinsic motivation was another critical factor influencing learner autonomy. Nikitenko, et al. [8] emphasized the strong link between motivation and autonomy, a connection corroborated by the present findings. Motivated students were more inclined to engage with digital platforms proactively, leveraging their features to support self-directed learning. This aligns with Begum and Chowdhury [25] and Dogan and Akbarov [7] who highlighted the role of motivation in driving students to take initiative in digital learning environments. In the Indonesian context, the integration of engaging and interactive digital tools appears to enhance this intrinsic motivation, providing a pathway to sustained autonomy.

The role of lecturers in facilitating autonomous learning through technology was another critical insight. Chang [29] and Han [13] stressed that while digital tools empower students, teacher support remains essential in cultivating independent learning skills. This study extends these findings by showing that educators who actively guide students in using digital resources not only enhance their technical competencies but also promote deeper engagement and autonomy. Such teacher-student interactions are particularly important in Indonesia, where many students may lack prior experience with self-directed learning due to traditionally teacher-centered educational models.

Finally, technology-assisted learning was found to significantly enhance learner autonomy. Yu [39] highlighted the transformative potential of technology as both a tool and a catalyst for fostering independence. This study reinforces their findings, demonstrating that digital tools, particularly the internet, provide students with unrestricted access to authentic materials and diverse learning resources. This access allows for out-of-class learning opportunities, empowering students to take control of their educational journey. In Indonesia, where infrastructure challenges can sometimes limit access, the strategic implementation of such tools holds immense potential for bridging gaps in resource availability.

5.3. Challenges in Becoming Autonomous EFL Learners in the Digital Education

The findings highlight multiple challenges that hinder the development of learner autonomy in digital English learning contexts. A primary challenge identified is sustaining long-term focus and consistency, a concern that aligns with Lee and Xie [47] observation that maintaining engagement in digital environments is a significant obstacle for language learners. This difficulty is further compounded by what Wang [59] describes as the "digital distraction phenomenon," wherein students struggle to concentrate amidst the multitude of digital stimuli. In the Indonesian EFL context, this challenge may be exacerbated by a lack of prior exposure to self-directed digital learning environments, as traditional classroom models often emphasize teacher-centered instruction.

Another critical issue is the difficulty students face in selecting appropriate learning materials from the overwhelming variety of online resources. Ferri, et al. [60] similarly noted that the abundance of digital content can hinder effective learning by making it difficult for students and educators to navigate and utilize these resources effectively. For Indonesian EFL learners, this challenge is particularly pronounced due to the lack of standardized guidelines for resource selection and the variable quality of digital materials. These factors not only deter effective self-regulation but also limit students' ability to optimize their learning experiences.

The issue of self-discipline and consistent practice presents another notable challenge. Dincer [32] findings on the unique demands of digital learning environments, compared to traditional settings, underscore the difficulty of maintaining regular study habits without external accountability. Similarly, Brammer and Punyanunt-Carter [53] highlighted how the absence of immediate oversight in digital settings can lead to lapses in self-discipline. For Indonesian learners, the cultural shift from heavily guided instruction to self-directed digital learning may further amplify these struggles, emphasizing the need for targeted interventions to build self-regulatory skills.

Technical infrastructure challenges, particularly inadequate internet connectivity, were also identified as significant barriers to autonomy. This finding is consistent with Syafryadin, et al. [51] who emphasized how disparities in infrastructure contribute to a "digital divide" that limits access to learning opportunities. In the Indonesian context, inconsistent internet access in rural or underserved areas continues to pose significant challenges for learners attempting to engage in autonomous digital education. Additionally, the absence of robust institutional and policy support, as noted by Brammer and Punyanunt-Carter [53] further hinders the effective implementation of autonomy-driven digital learning initiatives. Addressing these systemic issues is critical to ensuring equitable access to autonomous learning opportunities.

While relatively less significant, challenges related to technology use and accessing online materials remain important. Ting [61] highlighted how digital literacy barriers can obstruct autonomous learning, a sentiment echoed in this study's findings. The identified "technical competency gap," as noted by Hussein and Hasan [31] reflects the need for comprehensive training in digital literacy to enable students to navigate and utilize online resources effectively. For Indonesian learners, this gap often stems from limited exposure to advanced digital tools during their earlier educational experiences, further underscoring the importance of skill-building initiatives.

5. Conclusion

This study sheds light on the autonomy of EFL students in Indonesia within the context of digitalized education, revealing both opportunities and challenges. The findings indicate that students exhibit high autonomy in utilizing digital platforms and resources for English learning, with significant proficiency in selecting and accessing diverse materials. Factors such as resource accessibility, curriculum integration of independent tasks, and lecturers' supportive roles were identified as critical in fostering learner autonomy. However, challenges remain, particularly in maintaining focus, navigating the overwhelming variety of digital resources, and addressing technical barriers like unstable internet connectivity. These results underscore the transformative potential of digital technology in enhancing learner autonomy while highlighting areas requiring targeted support. Strengthening digital

infrastructure, integrating self-regulatory skills into the curriculum, and providing structured guidance on resource utilization are essential for maximizing the benefits of digital learning. This study contributes to understanding how digital education can empower students to become independent learners while addressing the unique challenges within the Indonesian context.

6. Recommendations

This study emphasizes the need to enhance EFL students' autonomy by promoting self-regulatory skills and incorporating self-assessment practices. Educators should design independent tasks and provide tailored guidance on using digital resources to optimize digital learning. Institutions must improve digital infrastructure, ensure device accessibility, and offer user-friendly platforms. Training programs for students and educators are crucial for effective tool usage, while policymakers should focus on equitable access to technology to bridge the digital divide and support autonomous learning.

7. Limitations

This study offers significant insights into learner autonomy within digital learning but presents notable limitations. The emphasis is primarily on students' perspectives, neglecting the contributions of educators, policymakers, and institutional support. Although it identifies key factors influencing autonomy, it fails to examine their interactions or relative significance. The dependence on self-reported data can lead to biases, and the results focused on EFL learners in particular contexts may lack full generalizability. Furthermore, the broader socio-economic, cultural, and institutional factors affecting autonomy are not thoroughly examined. Future research should integrate various stakeholder perspectives to understand the factors promoting learner autonomy comprehensively. Longitudinal studies can monitor its progression over time and evaluate the enduring effects of particular interventions. Comparative studies across cultural and socio-economic contexts provide insights into variations in autonomy. Additionally, exploring interactions between factors such as self-regulation and access to digital resources can enhance understanding. Emerging technologies, including artificial intelligence and adaptive learning platforms, present significant opportunities for improving learner autonomy. Future research may investigate how these tools tackle issues such as maintaining engagement and choosing appropriate learning materials, offering practical strategies to enhance autonomy in dynamic digital learning contexts.

Transparency:

The authors confirm that the manuscript is an honest, accurate, and transparent account of the study; that no vital features of the study have been omitted; and that any discrepancies from the study as planned have been explained. This study followed all ethical practices during writing.

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