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Designing an E-learning Environment for Self-directed Japanese Language Learners

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Abstract

This study aims to design an e-learning environment to support autonomous learning in Japanese language education and to explore its applicability. In recent years, as the need for an educational environment that promotes learners' independent learning has increased, support methods using ICT have been attracting attention. As part of this study, an online learning portal was designed for Indonesian university students. The platform incorporates self-assessment tools, progress management functions, and interactive learning materials. Results showed that over 90% of learners reported increased motivation and a greater sense of self-regulation. Learners were observed to exhibit autonomous learning behaviors, such as selecting learning materials that suited their needs and actively reviewing and gathering information outside of class. On the other hand, some learners who were accustomed to the traditional sentence-based learning method had difficulty adapting to the new approach. As a result, it was shown that a structured and flexible e-learning design with self-assessment functions and progress confirmation tools is effective in supporting autonomous learning. This study suggests that a technology-based learning environment may contribute to improving learning motivation and autonomy in the context of Japanese language learning.

Keywords: technology; e-learning; autonomous learning

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1. Introduction

In recent years, school education has been shifting toward learner-centered approaches. In language education, autonomous learning is essential for sustaining proficiency, requiring learners to move from passive learning to self-regulation and critical thinking. However, the transition from traditional teacher-centered methods remains challenging, especially for teachers accustomed to direct instruction. Self-regulated learning has been emphasized by

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Gomez (2016) and further supported by technology. Urbia (2021) highlights that learning management systems such as Moodle and Blackboard enable learners to plan, monitor, and assess their learning, while studies by Susantini (2021) and Gambo (2021) show that ICT tools can enhance metacognitive skills, self-regulation, and motivation.

In language learning, continuous practice is crucial, and e-learning can complement classroom instruction by providing flexible opportunities for independent study. For Japanese, with its complex writing system and sound character mismatches, ICT's multimodal features such as visual support, repeated practice, and listening reading integration can facilitate vocabulary acquisition and accurate pronunciation. Nishina (2003) emphasized the importance of ICT in diversifying learning environments, while Otani et al. (2021) and Chen (2020) demonstrated how ICT-based repetition and virtual learning foster autonomous learning behaviors. This study investigates the potential of an e-learning portal designed for Indonesian university students learning Japanese. The portal incorporates self-assessment, progress tracking, and interactive learning materials to encourage goal setting, reflection, and flexible study. Data will be collected through class observations, interviews, questionnaires, and learning analytics to explore how ICT tools support learner autonomy and Japanese language proficiency.

Ultimately, the study aims to provide insights for Japanese language educators and curriculum designers on integrating ICT into instruction. The findings are expected to contribute to the field of technology-enhanced language learning (TELL) by offering strategies to develop learner-centered, sustainable Japanese language education in higher education contexts..

2. Methods

This study uses a qualitative approach to investigate how an e-learning environment supports learner autonomy among second-year university students in Indonesia who are studying Japanese language education. It focuses on how technology-based learning tools help students become more motivated, manage their own learning, and develop a positive attitude toward studying Japanese independently.

2.1 Participants and Learning Context

The participants consisted of 40 sophomore-level university students enrolled in a Japanese language major at an Indonesian university. These learners were selected based on their foundational proficiency in Japanese, including familiarity with Hiragana, and Katakana, and basic grammar and vocabulary. The intervention was conducted over a period of several weeks, during which the learners engaged in intensive e-learning sessions lasting 90 minutes in the morning (starting at 7:30a.m.), held once a week under the supervision and guidance of an experienced Japanese language lecturer.

The e-learning material used in the class was "Irodori" published by the Japan Foundation. The reason for choosing this material is that an increasing number of universities and schools are introducing it as their main teaching material, and it has elements that are different from conversational teaching materials. These elements are that this e-learning material, "Irodori", encourages independent learning. In addition, it is in line with the Japanese language education guidelines presented by the Ministry of Education, Culture, Sports, Science and Technology (MEXT) (2024)

2.2 Feature of the e-learning environment

The e-learning platform utilized in this study was designed to support autonomous learning behaviors and included the following three key components:

1. Self-assessment tools: These allowed learners to reflect on their own progress, evaluate their understanding of the content, and set personal learning goals, thereby fostering meta-cognitive awareness.
2. Progress tracking mechanisms: These provided real-time visual feedback on the learners' achievements over time, helping them stay aware of their progress and maintain motivation.
3. Interactive learning materials: These materials enabled learners to engage in meaningful practice activities at their own pace, encouraging active participation, repetition, and self-regulation.

2.3 Data Collection Methods

To understand the effects of the e-learning system on learner autonomy, motivation, and attitude, the study collected data using multiple methods:

1. Classroom observations: Systematic observations were conducted during the sessions to capture learners' behavior, interaction with the e-learning tools, and indications of self-directed learning and motivation in real-time.
2. Pre- and Post- questionnaires: Learners completed structured questionnaires before and after the e-learning sessions to assess changes in motivational levels, self-regulatory capacity, and attitudes toward technology-assisted learning.
3. Semi-structured interviews: In-depth interviews were conducted with selected participants to explore their subjective experiences with the e-learning system, including their perceived ease of use, sense of achievement, engagement, and challenges encountered during the process.

The qualitative data collected in this study were analyzed using content analysis. This helped identify and group key themes related to learner autonomy, different types of motivation (such as motivation from within or from outside), and students' attitudes toward learning Japanese with the help of digital tools. By utilizing multiple data sources and examining the topic from various angles, the study enhanced the reliability and trustworthiness of its findings. As a result, it offers a clear and well-rounded understanding of how digital learning environments can support independent learning in Japanese language education.

3. Result and Discussion

In this section, the results of the study are described and discussed. The focus is on how the e-learning environment influenced students' autonomy, motivation, and attitudes toward learning Japanese autonomously.

3.1 Classroom observation

The students' attitudes such as their motivation to learn and level of active participation during class were observed over a period of approximately 10 weeks. During the first three

weeks, most students exhibited a traditionally passive attitude, with only four students actively participating. In the e-learning class, students began each lesson by discussing in their native language brainstorming ideas, listening to new vocabularies, repeating after the model, and then engaging in listening and conversation activities. The conversation sessions followed a set pattern: listening to a model conversation, shadowing, practicing basic sentence patterns, and finally participating in applied conversation practice.

Although individual personalities varied, students' proactiveness began to change as they became accustomed to listening, speaking aloud, and participating in conversation. By the fifth week, the number of students who voluntarily raised their hands to speak increased from four students to approximately ten students. Around the same time, students who had previously sat in the middle of the classroom began moving toward the front. About the four students who were active from the beginning, one consistently sat at the front, while the other three remained seated at the back throughout the course. As students gradually gained confidence, many moved forward in their seating and responded more readily to questions. By the ninth week, 35 out of 40 students demonstrated a positive attitude toward both listening and speaking. More students were raising their hands voluntarily, sowing a clear desire to participate. Additionally, about 75% of the class showed their comprehension by making eye contact and speaking aloud. The remaining 25% could be divided into two groups: those who had difficulty participating due to a lock of foundation skills that they studied in first year, and those who had the skills but continued to have passive attitude.

The e-learning textbook used in this class set four learning goals for each lesson. To assess whether these goals were achieved, evaluations were conducted twice: once through group discussions in class, and once through group video production activities. In both activities the overwhelming majority of students actively participated in speaking. Although the 25% who were consistently active varied over time, they showed a sustained desire to engage in conversation. However, while 75% of the students were eventually able to speak spontaneously in class, the remaining 25% often missed opportunities to speak and primarily remained in a listening role.

3.2 Questionnaires

The questionnaire examined three points: the effect of e-learning on autonomous study, its influence on motivation, and students' self-management. As can be seen from Tables 1 and 2, results showed a strong mutual relationship between motivation and effort: students with sufficient or greater effort were also more motivated, while low motivation corresponded to less effort. Most students (29 out of 34) actively sought clarification when encountering difficulties, further supporting this link. Regarding motivation for e-learning, 76% expressed positive attitudes, highlighting benefits such as natural communication, a sense of progress, and easier understanding of Japanese. About 15% reported decreased motivation due to environmental challenges, while 8% attributed issues to external factors unrelated to e-learning. Students reported diverse independent learning strategies, including YouTube, TikTok, Duolingo, Minato, Nihongo no Mori, and online dictionaries. Many used teacher-recommended JLPT materials, which were seen as credible and effective. These findings indicate that students use digital tools for both productive (speaking, writing) and receptive (reading, listening) skills, though reliance on teachers' recommendations remains strong. Finally, 88% agreed that e-learning supports independent study, describing it as enjoyable and user-friendly, while 12% expressed concerns about distractions or preferred offline study. Overall, more than 70% of students demonstrated

the potential for autonomous learning through e-learning. Although some struggled to adapt due to prior grammar-focused education, teacher guidance helped them gradually transition toward active, autonomous learning.

3.3 Semi-structured interviews

Several key insights were gained from the structured interviews. First, students reported that the illustrations, photos, audio, and videos embedded in the e-learning materials made it easier to visualize conversation scenes. Compared to traditional learning methods, they found it more helpful in understanding what kind of Japanese should be used in specific situations. Nearly all students used the university's e-learning platform and, in addition, independently accessed other e-learning resources to look up unfamiliar content or watch instructional videos on online platforms. Regarding dictionary use, almost all students used traditional paper dictionaries during class, while outside of class (for homework or self-study) they primarily used online dictionaries. This appears to be due to restrictions on smartphone use during class time. E-learning materials were also used as supplementary tools for studying Kanji and grammar. Many students specifically turned to e-learning platforms that specialize in these areas when focusing on those topics. For conversation practice, e-learning was found to be effective for input (listening and understanding), but students emphasized that output (conversation) is best developed through actual interactions with Japanese people or their friends. As a result, the preferred learning method was to first study using e-learning and then apply that knowledge in face-to-face conversations.

Based on the analysis of data obtained from classroom observations, questionnaires, and semi-structured interviews, the following key findings were identified regarding the implementation of an e-learning environment to promote autonomous learning among university-level Japanese language learners in Indonesia.

3.4 Enhancement of Learners' Awareness and self-Regulation Skills

According to Deci & Ryan's (1985) motivation theory, when intrinsic motivation is increased, the tendency to continue making an effort is stronger. This is evident in the motivation and effort consciousness in Table 1. More than 90% of the participants responded that their awareness of effort and motivation to improve their language skills increased through the use of e-learning. In other words, the questionnaire and interview survey on the design method for e-learning to improve learning motivation suggests that e-learning should be fun, easy to use, and allow learners to clearly recognize their own motivation to learn. Many students were able to use not only the e-learning materials provided by the university, but also additional supplementary materials to deepen their understanding of the class, delve into unclear points, and apply the learning content. One of the students interviewed (Student A) commented, "I find it easier to learn in this way because stimulating my visual and auditory senses helps me learn more effectively." This learner's opinion would fit Mayer's (2001) "multimedia principle." The multimedia principle states that learning that combines visual and auditory senses promotes integrated understanding. For learners like this student, the colorful illustrations and appropriately paced listening materials provided by e-learning are more effective than traditional black-and-white textbooks. However, due to the difference between the teaching method of e-learning and the traditional approach, two of the 34 students answered that it was difficult to adapt to the new method. The reason given by these two was that they were more familiar with the traditional learning method and found it easier. This is thought to be a state in which "unfamiliar formats (new learning environments and e-learning interfaces)

increase unnecessary load and hinder concentration on the original learning content" as stated by Sweller (1988). One possible way for such learners to cope would be Scaffolding (learning how to use it step by step) as mentioned by Ayres (2006). Peer support and cognitive assistance are also thought to be ways to cope. According to Topping (2005), peer tutoring (a method of learning with the assistance of other learners) is effective. And supporting learners' deficiencies in the meta-cognitive theory of John Flavell (1976);"knowing what you know and how you are learning improves learning outcomes" is also considered to be a way to greatly improve learning outcomes. E-learning often features examples of conversations that reflect actual daily life in Japan, adding a sense of realism. To enhance this further, many students supplement their learning by watching videos of native speakers on platforms such as YouTube, Ticktock, and Instagram. While the grammar explanations in the university's e-learning materials are provided in Indonesian, they are relatively brief and not deeply elaborated. Since there are no accompanying grammar videos, students tend to rely on Japanese-language video sites for additional explanations, effectively utilizing technology to support their learning.

3.5 Learners' Motivation and Engagement

The results showed that interactive learning materials were more effective in increasing learners' motivation to learn than traditional worksheets and textbook-based exercises. This is based on Deci & Ryan's (2000) Self-Determination Theory, which shows that interactive materials are materials that allow learners to feel autonomy, competence, and relatedness, and increase intrinsic motivation. Many students highly valued the flexibility and interactive features of the digital content, and reported that it increased their motivation to learn independently outside of class. Regarding learners' self-assessment of effort and motivation to learn, the responses were generally positive. Regarding effort, 18 students rated themselves as "very good" and 7 as "excellent." Only one student rated themselves as "poor," and 2 as "sufficient." In other words, about 84% of students rated their effort as "good" or higher (see Table 1). A similar trend was seen for motivation to learn, with 31 students (about 84%) selecting "good" or above, with "good" (18) and "very good" (9) being the most common, and only a few students giving negative evaluations. These data indicate that learners generally had high motivation to learn throughout the e-learning course. "The e-learning materials are fun. They are practical and give a sense of accomplishment" (Interviewee B). This impression corresponds to "Competence" in the Self-Determination theory of Deci & Ryan (2000). This idea is that learners who have a sense of accomplishment are significantly more motivated to continue learning. Another possible explanation is the Flow theory of Csikszentmihalyi (1990). This theory states that when a learner is immersed in a task of appropriate difficulty and has a successful experience, they experience a psychological pleasure called "flow" as a sense of accomplishment. This "task of appropriate difficulty" is one of the characteristics of e-learning. This sense of accomplishment leads to "I want to do it again." It means the learner continuous motivation to learn. Regarding student motivation, 26 students reported that it was easy to stay motivated. Reasons cited included that the materials were easy to understand, practical, focused on real-life communication, and included interesting topics. They also appreciated the systematic steps of the materials, the attractive visual aids, the sense of accomplishment and improvement, and the overall enjoyment of learning. On the other hand, three students found it difficult to stay motivated, citing issues such as adapting to new learning methods, the difficulty of e-learning, and their preference for traditional learning methods such as sentence-type approach and structuralist language teaching. In addition, five students expressed other concerns, such as the long time it takes to complete one level of the textbook, the constant need for support from the teacher, and the early start time of classes.

3.6 Development of Autonomous Learning Behaviors

With the introduction of the new learning environment, students have begun to demonstrate a variety of autonomous learning behaviors. They have begun to select learning materials based on their individual needs, independently review past lessons, and independently research parts they did not understand. In addition, they have begun to supplement their learning with external resources such as online dictionaries, Japanese content on YouTube, Tick-tock, Instagram, Duo lingo, etc. These behaviors indicate that autonomous learning strategies are being applied across multiple platforms beyond the formal learning environment. Several studies and articles have suggested that interactivity, feedback frequency, and the integration of various channels (sound, video, and operation) have a direct impact on motivation, continuity, and comprehension. In particular, game elements and immediate feedback from AI are effective in improving learning outcomes. Mayer's (2001) Multimedia Learning Theory claims that "images + audio + text" are more effective at learning than text alone, and that active processing through vision, hearing, and operation contributes to deepening understanding. This has an impact on motivation and continuity because the principles are consistent as interactive teaching materials, and comprehension can be measured through immediate feedback.

According to Chen (2020), the learning process and skills of learners taking classes in a virtual classroom environment (VLE) changed as follows: (1) The virtual classroom promoted the behavior of autonomously managing learning, (2) Learners acquired the process of self-verifying the validity of learning goals and reflecting on and correcting their plans and execution, and (3) Learners became able to maintain motivation and self-evaluate their learning results, and their autonomous learning skills improved with the VLE. According to Fujimura (2017), a study on the use of JPLANG, a language education-specific app with an emphasis on audio, and the relationship between the use of JPLANG by learners and the improvement of Japanese language proficiency showed that learners spent more time using JPLANG as the lesson progressed. Some learners with good grades did not use JPLANG at all. Others who are good grades and use JPLANG, they did not stop at the grammar explanations in the 12 languages but also included drills. Learners who had gone as far as drills not only scored higher on tests, but were also able to produce Japanese with fewer grammatical errors.

3.7 Challenges and Learners' Concerns

While the overall impact was positive, a small number of learners expressed concerns regarding the use of digital tools. Some students faced technical difficulties, such as unfamiliarity with the platform's interface, and others struggled with the content of the materials. One common comment in the survey was:

> "I prefer traditional learning methods (sentence pattern and grammar centered, and teacher-centered instruction"

This suggests a gap between discovery-based learning, where students notice language patterns through engagement, and conventional instruction, where the teacher directly explains the content. The e-learning materials in this study were based on a flipped classroom model, in which learners are encouraged to notice grammar and patterns through listening and speaking activities first, followed by grammar explanations provided later in the lesson. While many students described this approach as "enjoyable," those who were accustomed to traditional learning styles appeared to experience some difficulty. As one interviewee noted:

"It is hard to get used to the new learning process. I find it easier to study with 'Minna no Nihongo' than with e-learning materials." (Interviewee C)

3.8 Tables, figures, and Charts

Table 1. the relationship between student effort and motivation

	Poor	Enough	Good	Very Good	Excellent
Effort	1	2	6	18	7
Motivation	2	1	18	9	4

Table 2. Student motivation for self-directed learning with e-learning and its components

	Number of studetns	Number of each reason	Reasons
Easy to motivate	26	5	*Easy to understand
		2	*Practical
		5	*Learn real life communication
		2	*Interesting topics
		1	*Simple to learn because the material has certain procedure
		3	
		4	*Visual aids are interesting
		4	*Feel achieved and improved
			*Enjoy to learn
Difficult to motivate	3	1	*Having trouble adapting to the new way of learning
			*Feel difficulty to learn e-learning
		1	*It is easier to study *traditional way
		1	*Traditional way means Sentence Pattern Approach, and teachers teach structuralist Language Teaching
Others	5	1	*It takes a long time to finish one level of the textbook
		2	*I still need lecturer's support
		3	*Class is too early in the morning

3.9 Discussion

This study examined how an e-learning environment featuring self-assessment tools, progress tracking, and interactive learning materials could support autonomous learning among Indonesian university students studying Japanese. The findings suggest that such an environment had a positive impact on students' self-awareness, motivation, and autonomous learning attitudes.

3.9.1 Self-Regulation and Learner Autonomy

The findings of this study suggest that providing structured yet flexible e-learning tools such as self-assessment features and progress tracking encourages students to take greater responsibility for their own learning. This aligns with the findings of Buddha et al. (2024), who argue that e-learning environments can enhance learners' self-regulation by allowing them to manage their own learning processes. Furthermore, Gomez (2022) emphasized that even in passive learning environments, learners can develop self-regulated strategies when given appropriate guidance. This was reflected in the increase in autonomous behaviors observed in the present study. These results also support Zimmerman's (2002) social cognitive model of self-regulated learning, which posits that self-regulation is a cyclical process involving self-observation, self-judgment, and self-reaction. The learners in this study appeared to move through these phases as they tracked their progress, reflected on their performance, and adjusted their strategies accordingly.

3.9.2 Motivation and Engagement

Students' motivation and engagement significantly improved, with a notable increase in their willingness to learn outside the classroom. This supports previous findings which demonstrate that technology-enhanced learning environments help sustain student interest and promote continued learning. The interactivity and autonomy provided by e-learning lessons appear to reduce students' emotional concerns such as "What if I make a mistake?" or "What if I fail? By creating a more supportive and low-pressure learning environment. As a result, increased interest and motivation encourage learners to use technology effectively, allowing them to explore language tasks more comfortably and without fear of failure.

3.9.2 The Importance of Context in Japanese Language Learning

For overseas learners of Japanese, access to authentic language environments is often limited, making the ability to engage in interactive and autonomous learning particularly important. As Zimmerman and McMeekin (2022) noted, technology-enhanced learning tools can serve as alternative gateways to immersive language experiences. This study supports the idea that, in contexts where opportunities for Japanese language activities and input/output practice are limited, integrating learning tools and implementing e-learning can complement traditional instructional approaches. It also highlights the importance of leveraging media and other e-learning resources to expand language learning opportunities and support learners in developing contextual understanding.

3.9.3 Challenges and the Need for Support

Although many students found that e-learning offered numerous advantages and was easy to use, a small number still expressed concerns regarding anxiety and motivation. One of the key reasons identified was the gap between traditional language learning methods and current e-learning approaches. Panadero (2017) systematically reviewed SRL (self-regulated learning) models and highlighted that the three phases such as planning, performance, and reflection are commonly found across models. This framework is widely accepted as essential for supporting students in developing autonomous learning. Therefore, fostering habits based on this framework appears to be necessary. As Holec (1981) stated, "Autonomous learning is the ability to take responsibility for one's own learning," and it is a skill that must be acquired through training. However, as Zimmerman (2002) noted, self-regulated learning develops gradually and requires clear guidance and a phased transition, particularly for passive learners.

3.9.4 Implications for Language Education, with a Focus on Japanese Language Learning

The results of this study yield several implications for the effective integration of e-learning in Japanese language education, particularly in fostering learner autonomy and supporting self-regulated learning.

Promotion of Meta-cognitive Engagement through E-learning Tools: E-learning platforms offer a range of functionalities such as self-assessment, progress tracking, and structured review modules that can enhance learners' meta-cognitive awareness. As emphasized by Panadero (2017), fostering self-regulation requires structured guidance across planning, performance, and reflection stages. Educators should scaffold learners' engagement with these tools to promote habitual self-monitoring and reflective practices, thereby nurturing the foundations of autonomous learning (Holec. 1981; Little, 1991)

Addressing Technological Readiness and Digital Literacy Gaps: Disparities in technological proficiency among both students and educators present a challenge to the effective implementation of e-learning. As emphasized in previous studies on educational technology adoption (Gomez 2022), a lack of familiarity with digital platforms can hinder learner engagement and increase anxiety. Institutional support through systematic teacher training and student orientation programs is therefore crucial. Shared on boarding experiences can lower the affective filter (Krashen 1982), building a psychologically safe space in which learners feel confident using technology without fear of failure.

Blended Learning as a Transitional Pedagogical Model: Blended learning environments which combine the flexibility of e-learning with the interactive support of face-to-face instruction, provide an ideal transitional model particularly for students accustomed to teacher-centered approaches. According to Zimmerman (2002), self-regulated learning develops in stages and requires guided autonomy. In a blended model, learners benefit from both immediate social feedback and the asynchronous opportunities for autonomous exploration. Moreover, such an environment accommodates diverse learning preferences (e.g., visual, auditory), while gradually encouraging learners to shift from passive to active roles in the language acquisition process. Educators must also be attentive to the emotional dimension of learning, creating environments where errors are viewed as constructive steps in the learning journey. In

summary, the integration of e-learning in Japanese language education should be framed not merely as a technological shift, but as a pedagogical reorientation that promotes agency, adaptability, and student-centered. This requires both technical infrastructure and a paradigm shift in instructional design, in line with the goals of fostering life-long, autonomous language learners.

3.10 Limitations

This study has several limitations:

1. The research was conducted with a limited number of university students at a city in Indonesia. Therefore, the findings may not be generalizable to learners from different cultural or institutional backgrounds.
2. The duration of both the observation and the use of the e-learning platform was relatively short. As a result, insights into the long-term impact on learners' autonomy and language proficiency may be limited.
3. Some data were collected through interviews and questionnaires, which are based on learners' self-perceptions and may include biases or inaccuracies.

4 Conclusion

This study explored the implementation of an e-learning environment designed to promote autonomous learning among Indonesian university students studying Japanese. The findings suggest that e-learning tools featuring self-assessment, progress tracking, and interactive materials can positively influence learners' self-awareness, motivation, and autonomous learning behaviors. Despite some learners experiencing challenges adapting to new digital learning methods particularly those accustomed to traditional teacher-centered instruction, the majority demonstrated increased engagement and willingness to study independently. The study also highlighted the importance of providing structured yet flexible support to facilitate gradual development of self-regulation skills, especially for learners transitioning form passive to active learning roles. Furthermore, this research underscores the critical role of contextualized and interactive learning experiences for environments. E-learning platforms, supplemented by external media resources, can serve as valuable alternatives to immersive language practice, enhancing learners' motivation and enabling more effective language acquisition. However, to maximize the benefits of e-learning, educators should address learners' concerns related to technical difficulties and provide sufficient guidance to ease the transition from conventional learning methods. Future research should consider larger, more diverse samples and longer-term studies to better understand the sustained impact of e-learning on language learning autonomy.

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