



N3 Kanji Learning Patterns Among Japanese Language Education Students at UMY

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Info Artikel

Article History:

Received December 2025
Approved February 2026
Published March 2026

Keywords:

Kanji learning strategies,
JLPT N3, multimodal
learning, self-efficacy,
intermediate Japanese
learners

Abstract

This study examines N3-level Kanji learning patterns among students in the Japanese Language Education Program at Muhammadiyah Universitas of Yogyakarta. Using a descriptive qualitative design, the study involved 16 students who had passed the JLPT N3, selected through a mini-survey and purposive sampling. Data were collected through in-depth interviews and analyzed to identify dominant learning strategies and the internal factors shaping kanji learning at the intermediate level. The findings show that students adopt multimodal learning patterns that combine writing practice, flashcards, digital applications, and audiovisual exposure. These patterns are shaped by both intrinsic and instrumental motivation, as well as by authentic learning experiences. The study also found that students demonstrated higher self-efficacy in kanji Reading than in writing, with Reading skills developing more readily through contextual exposure, while structured learning patterns tended to produce more stable outcomes than flexible ones. By focusing on intermediate learners, a group that has received relatively limited attention in previous studies, this study highlights the interaction between multimodal learning strategies and self-efficacy in kanji learning and offers practical implications for designing more effective kanji instruction in Japanese language education at the tertiary level.

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E-ISSN 2685-6662
P-ISSN 2252-6250

INTRODUCTION

Japanese language education in Indonesia has shown significant growth over the past two decades, particularly at the tertiary level, as reflected in the increasing number of institutions offering Japanese language programs and the growing population of learners (The Japan Foundation, 2023). This development is closely related to students' academic interests, opportunities for cultural exchange, and expanding international career prospects, which have increasingly positioned Japanese language proficiency as a valuable academic and professional asset in higher education contexts (The Japan Foundation, 2023). Within this national trend, Japanese language education in higher education institutions such as the Japanese Language Education Study Program (PBJ) at Muhammadiyah University Yogyakarta (UMY) plays a strategic role in preparing students to meet both academic and professional demands.

Kanji literacy is a core component of Japanese language proficiency, as it is essential for understanding academic texts, media discourse, and formal written communication (Suzuki, 2021). In higher education contexts, kanji mastery is also closely associated with standardized proficiency assessment. In Indonesia, the Japanese Language Proficiency Test (JLPT), particularly level N3, is widely regarded as the minimum competency standard for intermediate learners and often functions as a requirement for graduation, internships, and access to international employment opportunities (The Japan Foundation, 2023). Therefore, mastery of kanji at the intermediate level has become a critical focus in Japanese language learning at universities.

Learning kanji remains one of the most challenging aspects of Japanese language acquisition for learners whose first language does not use a logographic writing system, including Indonesian learners. This difficulty arises not only from the large number of characters that must be acquired, but also from the complexity of kanji readings (*onyomi* and *kunyomi*), contextual meaning variation, and visually similar character forms (Fukuda, 2024; Tamaoka & Kiyama, 2013). Such characteristics impose a high cognitive load on learners and often lead to difficulties in recognition, retention, and production of kanji characters (Sweller, 1988; Okita, 1995).

Previous studies conducted in Indonesia likewise report that kanji learning poses substantial difficulties, particularly in reading accuracy, memorization, and long-term retention. Learners frequently identify pronunciation differences, stroke complexity, and visual similarity between characters as major obstacles (Sihombing et al., 2022; Halibanon et al., 2024). These findings indicate that kanji learning difficulties are not merely technical in nature, but also cognitive and strategic, requiring instructional support that can reduce cognitive burden and facilitate meaningful learning.

To address these challenges, numerous studies have examined learning strategies for kanji acquisition. Research has shown that methods such as kanji mapping, repetitive writing, cognitive illustrations, and the use of digital learning media can improve comprehension and retention compared to conventional memorization techniques (Fitriana, 2019; Sutedi & Juangsih, 2021; Aneros et al., 2024). In recent years, technological developments have further strengthened kanji learning through digital applications, including flashcard systems and spaced repetition tools, which support efficient review and long-term memory consolidation (Mulekova, 2024). In addition, a growing body of literature has emphasized the value of multimodal learning approaches that integrate visual, auditory, kinesthetic, and contextual input. Such approaches allow learners to connect kanji form, meaning, and usage more holistically, thereby facilitating deeper cognitive processing and retention (Paxton & Svetanant, 2017).

However, despite extensive research on kanji learning strategies, an important gap remains in the literature, particularly in the context of intermediate learners. Most existing studies in Indonesia focus either on beginner learners who are still acquiring basic kanji knowledge or on advanced learners dealing with more complex academic texts (Fitriana, 2019; Halibanon et al., 2024; Yulianti, 2021). As a result, intermediate learners, especially those at the JLPT N3 level, remain underexplored within Indonesian higher education. This gap is important because intermediate learners occupy a transitional phase in kanji acquisition. Although they have already mastered fundamental characters, they often continue to struggle with retention, the selection of appropriate readings, and the consistent application of kanji across contexts (Sutedi & Juangsih, 2021;

Saito, 2020). Given that JLPT N3 represents an important threshold for academic progression and professional mobility, a closer examination of how learners at this level develop and sustain their kanji learning is needed.

Another limitation in previous research is that kanji learning has often been examined in terms of individual strategies rather than broader learning patterns. In actual learning practice, students rarely rely on a single strategy. Instead, they tend to combine writing practice, flashcards, digital applications, audiovisual exposure, repetition, and contextual encounters with kanji. Understanding these combinations as learning patterns is important because kanji mastery at the intermediate level is likely shaped not only by the use of particular techniques, but also by the way learners organize, combine, and sustain them over time.

In addition to learning strategies, internal psychological factors also play an important role in language learning success. Motivation and self-efficacy influence learners' persistence, engagement, and strategic choices. Dörnyei (2001) distinguishes between intrinsic motivation, which derives from personal interest and enjoyment, and instrumental motivation, which is driven by practical goals such as academic requirements and career advancement. Bandura (1997) further argues that self-efficacy shapes learners' confidence in their ability to perform specific tasks and cope with learning difficulties. In the context of kanji learning, previous research suggests that learners often demonstrate higher self-efficacy in reading than in writing. Reading skills tend to develop more rapidly through frequent exposure to digital media and authentic texts, whereas writing requires additional motor memory and procedural knowledge related to stroke order (Tamaoka & Kiyama, 2012). This imbalance indicates the need to examine not only learners' strategies but also their perceptions of their own abilities, especially at the intermediate level.

These issues are highly relevant to the local context of the Japanese Language Education Study Program at Muhammadiyah University Yogyakarta. Internal research by Suryadi (2018) shows that intrinsic and instrumental motivation significantly influence the learning achievement of intermediate Japanese language students. Nevertheless, there has been no systematic investigation into the kanji learning patterns of PBJ UMY students who have

successfully achieved JLPT N3 certification. Within PBJ UMY, intermediate-level students face dual demands: they must comprehend kanji academically in coursework while simultaneously meeting the JLPT N3 competency standard required for graduation, internships, and international employment opportunities (The Japan Foundation, 2023). Although students have access to a range of learning resources, their success depends largely on how they develop learning patterns that align with their individual rhythms, motivations, and perceived strengths.

Accordingly, this study addresses the gap by examining the kanji learning patterns of PBJ UMY students who have passed JLPT N3. Unlike previous research that tends to focus on isolated strategies or different learner levels, this study adopts a more holistic perspective by integrating learning strategies, motivation, self-efficacy, and the use of both traditional and digital learning media. In doing so, this study seeks to contribute to the literature on intermediate-level kanji learning, particularly in the context of Japanese language education in Indonesian higher education.

Based on this background, the study is guided by the following research questions:

1. What learning patterns are used by PBJ UMY students in mastering N3-level kanji?
2. How do motivation and self-efficacy shape the kanji learning patterns of PBJ UMY students?
3. How do these learning patterns contribute to kanji mastery at the intermediate (JLPT N3) level?

Although previous studies have discussed kanji learning difficulties and various instructional strategies, most have focused on beginner or advanced learners and have tended to examine strategies separately. Consequently, there is still limited understanding of how intermediate learners, particularly those at the JLPT N3 level in Indonesian higher education, develop kanji learning patterns through the combination of multiple strategies, learning media, and internal factors such as motivation and self-efficacy. This study addresses that gap by focusing on PBJ UMY students who have successfully passed JLPT N3.

METHOD

Research Design

This study employed a qualitative research design to explore the kanji learning patterns of students in the Japanese Language Education Study Program (PBJ) at Muhammadiyah University Yogyakarta (UMY) who had passed the Japanese Language Proficiency Test (JLPT) N3. A qualitative approach was considered appropriate because it enables an in-depth examination of learners' experiences, the strategies they use, and the internal factors that shape their kanji learning process. Through this design, the study sought to capture not only what strategies students used, but also how and why those strategies were developed and sustained in their learning practices.

Participants and Sampling

The participant selection process began with a mini-survey distributed through Google Forms to PBJ students from the 2021 to 2025 cohorts. The mini-survey served as an initial screening tool and included brief questions concerning students' perceptions of kanji difficulty, their participation in the JLPT, and their JLPT N3 pass status. Based on the survey results, 16 active students who had officially passed JLPT N3 were identified as eligible participants. These students were then selected through purposive sampling, as they met the specific criteria relevant to the focus of the study. The final sample therefore consisted of learners with direct experience of studying and successfully mastering kanji at the intermediate level.

Data Collection

The primary data were collected through in-depth semi-structured interviews. The interviews were conducted over a one-week period, either online or offline, depending on participants' availability and scheduling preferences. Each interview lasted approximately 20 to 30 minutes. On average, two to five participants were interviewed per day, although in some cases only one interview was conducted in order to accommodate individual schedules. This flexible arrangement was intended to ensure that participants could share their learning experiences in a comfortable and accessible setting.

In addition to interview data, this study also collected supporting documentation related to participants' learning practices, such as screenshots of digital applications, handwritten notes, and other materials used in kanji study. These materials were

not treated as primary data, but were used to support and triangulate participants' interview responses.

Interview Instrument

The main research instrument was a semi-structured interview guide developed on the basis of theories of language learning strategies and supporting perspectives on learning, motivation, and media use. The guide drew on the cognitive, metacognitive, and affective learning strategy frameworks proposed by O'Malley and Chamot (1990) and Oxford (1990). To account for the role of multimodal and digital learning, the guide was also informed by multimedia learning theory (Mayer, 2001) and Dual Coding Theory (Paivio, 1986). Motivational and affective dimensions were further supported by Bandura (1997), Sardiman (2011), and Slavin (2006). Several items addressing perceptions of learning and outcomes were additionally informed by Gagné (1985), Kolb (1984), and Krashen (1982).

Rather than relying on a fixed list of rigid questions, the interview guide was organized into several thematic areas in order to maintain consistency while allowing participants sufficient flexibility to elaborate on their experiences. These themes included: (1) learners' background and general experiences, including prior exposure to kanji and early learning experiences; (2) kanji learning patterns, covering cognitive strategies such as memorization, repetition, and mnemonic use, metacognitive strategies such as planning, monitoring, and self-evaluation, and affective strategies such as motivation, learning attitudes, and anxiety management; (3) the use of learning media and resources, including both conventional materials and digital applications; (4) perceived learning outcomes, especially in relation to reading and writing kanji at the JLPT N3 level; (5) reflective perceptions of the importance of kanji mastery for academic and professional purposes; and (6) personal reflections and conclusions regarding the learning process and its challenges. The use of these broad thematic categories helped ensure that the interviews remained focused, coherent, and aligned with the objectives of the study.

Data Analysis

The interview data were analyzed using manual thematic analysis. The analysis began with verbatim transcription of all interview recordings. After transcription, the data were coded to identify recurring ideas and patterns related to learning

strategies, learning media, motivation, self-efficacy, and other internal factors associated with kanji learning. These initial codes were then grouped into broader thematic categories in order to reveal both common and distinctive learning patterns among participants. Finally, the interview findings were triangulated with the supporting learning documentation to strengthen the credibility and validity of the analysis.

RESULTS AND DISCUSSION

Students Learning Strategies: Multimodal Patterns as the Main Finding

The findings indicate that the dominant learning pattern among students is a multimodal approach, in which learners combine several strategies simultaneously to understand kanji form, meaning, and contextual usage. Fourteen out of sixteen respondents reported using a combination of writing practice, flashcards, digital applications, and audiovisual media, suggesting that kanji learning at the intermediate (JLPT N3) level rarely relies on a single method.

Overall, students combine traditional and digital strategies, with multimodal approaches emerging as the most effective pattern. This pattern reflects a growing consensus in language learning research that complex orthographic systems such as kanji require the integration of multiple sensory and cognitive channels to support retention and comprehension (Mayer, 2001; Paivio, 1986; Sweller, 1988). This finding supports Paxton and Svetanant (2017), who argue that the use of multiple sensory channels can reduce cognitive load and enhance information processing in kanji learning.

Beyond serving as a practical learning approach, the multimodal pattern observed in this study also reflects learners' strategic adaptation to the cognitive complexity of kanji at the intermediate level. By integrating writing practice, visual association, and contextual audiovisual exposure, students are able to distribute cognitive processing across multiple channels, thereby reducing overload and supporting more stable retention.

This finding reinforces the principles of cognitive load theory, which emphasize the importance of managing intrinsic and extraneous load in complex learning tasks such as kanji acquisition (Sweller, 1988). In the context of intermediate learners, multimodal strategies appear

to function not only as tools for memorization but also as mechanisms for sustaining engagement and learning continuity.

In the early stages of learning, rewriting kanji characters emerged as a foundational strategy, with 11 out of 16 respondents using repetitive writing to familiarize themselves with character shapes and stroke order. This method was perceived as effective for strengthening motor memory, as reflected in the following statement:

"So, when I was learning kanji, I started by rewriting them. I made a list of the kanji I wanted to memorize, then I rewrote each one, maybe about 20 times. Then, to review them, I used flashcards."

(F, personal interview, 2025).

This practice aligns with the concept of embodied cognition (Wilson, 2002), which emphasizes the role of physical activity in supporting cognitive processes.

However, rewriting alone was considered insufficient for long-term retention, as seven respondents noted that the increasing number and visual complexity of kanji led to overload and memorization difficulties. One respondent stated:

"So, in my opinion, kanji is really difficult. The most difficult part of Japanese language lessons."

(I, interview 2025)

This perception reflects Cognitive Load Theory (Sweller, 1988), indicating that students tend to combine writing with other, more adaptive strategies. In kanji learning, reliance on a single strategy may intensify cognitive burden, particularly for intermediate learners who are required to process more abstract and complex character forms (Koda; 2007).

Rewriting, Flashcards, and Digital Applications

A key contrast in learning strategies appears between rewriting and flashcard-based review, particularly through digital applications. Twelve respondents stated that flashcards especially in digital form were more efficient for reinforcing meaning, reading, and recall. One respondent explained:

"The flashcards are in the app." (B, personal interview, 2025).

Digital flashcards support spaced repetition, allowing learners to review kanji at intervals that match their level of mastery. Applications such as

Anki, Kanji Study, and Takoboto were commonly used by respondents to manage learning materials, track progress, and maintain motivation. Rather than replacing writing practice, these applications function as complementary tools, enabling learners to balance accuracy, efficiency, and engagement.

This pattern reflects self-regulated learning principles (DiBenedetto, 2011), where learners actively plan, monitor, and evaluate their learning processes. In addition, visual associations and mnemonic strategies were frequently mentioned as supporting techniques, particularly for understanding kanji meaning. By linking character shapes to familiar images or stories, students were able to strengthen conceptual understanding, consistent with Dual Coding Theory (Paivio, 1986).

Audiovisual Input and Contextual Learning

Another prominent finding is the role of audiovisual media as contextual reinforcement. Thirteen respondents reported exposure to kanji through Japanese songs, anime, YouTube videos, and learning platforms. These media were used not only to reduce boredom but also to encounter kanji in authentic contexts. One respondent stated:

"I usually use this media, watching videos on YouTube to learn kanji. So I watch people teaching so that I can understand it myself. Then the most helpful media is an application like Mazi." (AY, interview, 2025).

This exposure supports the development of contextual understanding, where learners recognize kanji usage beyond isolated memorization. Such input aligns with Krashen's Input Hypothesis (1985) and Schmidt's Noticing Hypothesis (1990), emphasizing the importance of meaningful and contextualized exposure in language learning.

Structured and Flexible Learning Patterns

Students' learning habits can be grouped into two tendencies: structured and flexible, both of which contribute differently to learning outcomes. Six respondents reported structured routines involving daily targets and consistent schedules, which were associated with more stable progress. One respondent noted:

"You can't learn kanji all at once. The important thing is to be consistent and have realistic targets." (L, interview, 2025).

Conversely, ten respondents described flexible learning patterns, studying based on mood or available time. Despite the lack of rigid schedules, these learners still demonstrated progress through

frequent engagement with digital and audiovisual media. This suggests that learning effectiveness is not determined solely by study duration but also by engagement and strategy selection (Muhammad et al., 2023; Sidabutar, 2020; Getenet et al., 2024; Ismiyati et al., 2022).

Perceived Difficulty, Motivation, and Self-Efficacy

Students showed varying perceptions of kanji difficulty at the JLPT N3 level, particularly in the reading (dokkai) section. Some respondents perceived kanji reading as challenging due to dense texts and time constraints, while others considered it relatively manageable. These differences were not primarily related to ability but to learning strategies and levels of contextual familiarity. One respondent noted,

"Honestly, I find the kanji section difficult, especially in dokkai" (D, personal interview, 2025), while another stated,

"In my opinion, the kanji section of the JLPT exam is the easiest so far" (F, personal interview, 2025)

This variation supports Cognitive Load Theory (Sweller, 1988), which explains how material complexity and visual density influence processing efficiency.

Motivation emerged as a key internal factor shaping learning consistency and engagement. Respondents demonstrated both intrinsic motivation, such as enjoyment of Japanese culture, and instrumental motivation related to academic and career goals. Intrinsic motivation enhanced persistence and enjoyment in learning, as reflected by one participant who learned kanji to understand Japanese song lyrics (RZ, personal interview, 2025).

Instrumental motivation further strengthened commitment, particularly when kanji mastery was linked to graduation requirements or internship opportunities in Japan, as expressed by another respondent (AF, personal interview, 2025). These findings align with Dörnyei's (2001) theory that intrinsic and instrumental motivation jointly support sustained language learning.

In terms of self-efficacy, most students reported greater confidence in reading than in writing kanji. Reading skills were perceived as developing more rapidly due to frequent exposure through contextual input, while writing was considered more demanding because it requires

accurate stroke order and motor memory. One respondent explained,

“When reading, I immediately understand the meaning, but when writing, I often forget the stroke order” (AY, personal interview, 2025).

This pattern reflects Bandura’s (1997) concept of self-efficacy, in which confidence grows through repeated successful experiences, particularly in receptive skills.

Furthermore, differences in students’ self-efficacy levels highlight the dynamic interaction between perception, strategy use, and learning outcomes. Learners who perceive kanji reading as more manageable tend to engage more frequently with authentic materials, which in turn reinforces comprehension skills and confidence. Conversely, lower self-efficacy in writing may limit learners’ willingness to practice productive skills consistently, despite their recognition of its importance. This finding suggests that affective factors play a crucial role in shaping not only learning intensity but also the selection of strategies employed by intermediate kanji learners.

Contribution to Kanji Learning Research

These findings extend previous studies by highlighting the learning patterns of intermediate-level learners (JLPT N3), a group that has received limited attention compared to beginner or advanced learners. Rather than focusing on isolated strategies, this study demonstrates how learners integrate multiple modalities, motivation, and self-regulation to manage kanji complexity at the intermediate level.

Thus, this study contributes to the literature by offering a nuanced understanding of kanji learning strategies among JLPT N3 learners in Indonesian higher education contexts.

Practical Implications and Limitations

Practically, the findings suggest that kanji instruction should integrate writing practice, digital tools, and authentic audiovisual input to support diverse learning preferences. Structured guidance combined with flexible learning opportunities may help learners maintain consistency without reducing engagement.

The main limitation of this study lies in the limited number of respondents and the absence of direct classroom observation. Nevertheless, the findings provide a foundation for future research using larger samples or longitudinal designs to further explore kanji learning development.

CONCLUSION

This study examined the N3-level kanji learning patterns of students in the Japanese Language Education Study Program at Muhammadiyah University Yogyakarta and found that their learning was characterized predominantly by multimodal patterns. Students did not rely on a single strategy, but combined writing practice, flashcards, digital applications, visual associations, and audiovisual exposure to understand kanji form, meaning, and contextual use. These findings indicate that kanji learning at the intermediate (JLPT N3) level is more effectively supported through the integration of complementary learning modalities than through the use of isolated strategies alone.

The study also showed that internal factors, particularly intrinsic motivation, instrumental motivation, and self-efficacy, played an important role in shaping students’ learning consistency and strategy use. Students with clearer academic or professional goals tended to demonstrate stronger persistence in learning, while differences in self-efficacy were reflected in their perceptions of reading and writing tasks. In particular, students generally reported higher confidence in reading than in writing kanji, suggesting that productive skills, especially writing, remain more demanding and require continued support.

Another important finding is that students’ learning patterns could be broadly understood as either structured or flexible. Structured learning patterns, characterized by regular targets and consistent routines, tended to produce more stable progress. At the same time, flexible learning patterns, particularly those supported by digital and audiovisual media, also facilitated learning by maintaining engagement and providing contextual exposure. This suggests that effective kanji learning at the intermediate level is shaped not only by the choice of strategy, but also by how learners organize and sustain their learning practices over time.

Taken together, these findings address the three objectives of the study. First, the study identified multimodal learning as the dominant pattern in students’ reported kanji learning practices. Second, it demonstrated that motivation and self-efficacy influenced learners’ consistency and strategic choices. Third, it showed that these patterns were associated with kanji mastery at the JLPT N3 level, particularly in relation to the difference

between reading and writing development. By focusing on intermediate learners, a group that has received relatively limited attention in previous studies, this study contributes contextualized evidence to the literature on kanji learning in Indonesian higher education.

From a practical perspective, the findings suggest that kanji instruction should not depend solely on repetitive writing or memorization. Instead, instruction may benefit from integrating writing practice with digital tools, flashcards, and authentic audiovisual input in order to support retention, engagement, and contextual understanding. From a theoretical perspective, the study reinforces the relevance of multimodal learning, motivation, and self-efficacy in understanding kanji learning at the intermediate level.

This study has several limitations. The findings are based on self-reported data from a relatively small number of participants, which may limit the broader applicability of the results. In addition, the study did not include direct observation of students' learning practices. Future research may therefore expand this work by involving larger samples, longitudinal designs, or observational data in order to provide a more comprehensive understanding of kanji learning development among intermediate learners.

REFERENCES

- Aneros, A., Dewi, S., & Fathurrahman, M. (2024). Mapping meaning in kanji: A quasi-experimental study on learning gains among Indonesian learners of Japanese. *Journal of Japanese Education Studies*, 12(1), 22–35.
- Bandura, A. (1997). Self-efficacy: The exercise of control. W.H. Freeman.
- DiBenedetto, M. K. (2011). Barry J. Zimmerman: An Educator with Passion for Developing Self-Regulation of Learning through Social Learning. Online Submission.
- Dörnyei, Z. (2001). *Motivational strategies in the language classroom*. Cambridge University Press.1
- Fitriana, R. (2019). Basic kanji learning strategy using the mnemonic and happyou methods in Japanese Literature Program, Faculty of Social Sciences and Humanities of Pakuan University. *Jurnal Pendidikan Bahasa Jepang*, 15(1), 45–55. <https://doi.org/10.15294/jpbj.v15i1.25631>
- Fukuda, M. (2024). Basic study of kanji recognition patterns in non-kanji-background Japanese learners based on eye-movement analysis. *Porta Linguarum: revista internacional de didáctica de las lenguas extranjeras*, (10), 99-115. <https://doi.org/10.30827/portalin.viX.27424>
- Gagné, R. M. (1985). *The conditions of learning and theory of instruction* (4th ed.). Holt, Rinehart and Winston.
- Getenet, S., Cattle, R., & Redmond, P. (2024). Students' digital technology attitude, literacy and self-efficacy and their effect on online learning engagement. *International Journal of Educational Technology in Higher Education*, 21, Article3. <https://doi.org/10.1186/s41239-023-00437-y>
- Halibanon, R., Pratama, A., & Lestari, N. (2024). Persepsi mahasiswa terhadap faktor kesulitan mempelajari kanji. *Sakura: Jurnal Pendidikan Bahasa Jepang*, 7(1), 1–12. <https://ojs.unud.ac.id/index.php/sakura/article/view/124946>
- Ismiyati, I., Pramusinto, H., Sholikhah, M., & Yulianti, N. D. (2022). Meta-analysis of digital-based learning to improve learning outcomes. *Psychology, Evaluation, and Technology in Educational Research*, 4(2), 53–62. <https://doi.org/10.33292/petier.v4i2.114>
- Japan Foundation. (2023). *Survey report on Japanese-language education abroad 2023*.
- Koda, K. (2007). Reading and Language Learning: Crosslinguistic Constraints on Second Language Reading Development. *Language Learning*, 57: 1-44. <https://doi.org/10.1111/0023-8333.101997010-i1>
- Kolb, D. A. (1984). *Experiential learning: Experience as the source of learning and development*. Prentice Hall.
- Krashen, S. (1982). *Principles and practice in second language acquisition*. Pergamon.
- Mayer, R. E. (2001). *Multimedia learning*. Cambridge University Press.
- Mulekova, L. R. (2024). Advancing Kanji Pedagogy: Challenges, Strategies, and Innovations in Teaching Japanese Characters. *International Journal of Formal Education*, 4(2), 284-289.
- Muhammad, I., Jaffar, R., Rahim, P., & Muhammad, S. A. (2023). The role of study habits in academic achievement: A comparative study between hostel-living and day scholars. *Academic Journal of Psychology and Counseling*, 4(1), 27–46. <https://doi.org/10.22515/ajpc.v4i1.5688>
- Okita, T. (1995). Memory processes in kanji learning. *Japanese Psychological Research*, 37(4), 181–190

- O'Malley, J. M., & Chamot, A. U. (1990). *Learning strategies in second language acquisition*. Cambridge University Press.
- Oxford, R. (1990). *Language learning strategies: What every teacher should know*. Newbury House.
- Paivio, A. (1986). *Mental representations: A dual coding approach*. Oxford University Press.
- Saito, A. (2020). Strategy use, self-efficacy beliefs, and self-regulatedness in adult foreign language learning. *Australian Journal of Applied Linguistics*.
<https://doi.org/10.29140/ajal.v3n2.282>
- Sardiman, A. M. (2011). *Interaksi dan motivasi belajar mengajar*. Rajawali Press.
- Schmidt, R. (1990). The role of consciousness in second language learning. *Applied Linguistics*, 11(2), 129–158. <https://doi.org/10.1093/applin/11.2.129>
- Sidabutar, M. (2020). Pengaruh motivasi belajar terhadap prestasi akademik mahasiswa. *Epistema*, 1(2), 117–125. <https://doi.org/10.21831/ep.v1i2.34996>
- Sihombing, L., Marpaung, J., & Siregar, D. (2022). Identifikasi tingkat kesulitan pembelajaran kanji pada mahasiswa program studi sastra Jepang. *Talenta Conference Series: Local Wisdom, Social, and Arts (LWSA)*, 5(1), 77–88. <https://talentaconfseries.usu.ac.id/lwsa/article/view/1349>
- Slavin, R. E. (2006). *Educational psychology: Theory and practice* (8th ed.). Pearson Education.
- Suryadi, D. (2018). Motivasi belajar bahasa jepang mahasiswa program studi pendidikan bahasa Jepang Universitas Muhammadiyah Yogyakarta. *Journal of Japanese Language Education and Linguistics*.
- Suzuki, T. (2021). Kanji literacy and academic reading competence in Japanese language learning. *Journal of Japanese Language Education*, 18(1), 23–37.
- Sutedi, D., & Juangsih, J. (2024). Utilizing cognitive illustration as a Kanji memorization strategy in Kanji learning. *JAPANEDU: Jurnal Pendidikan dan Pengajaran Bahasa Jepang*, 9(1), 63-75.
- Sweller, J. (1988). Cognitive load during problem solving. *Cognitive Science*, 12(2), 257–285. https://doi.org/10.1207/s15516709cog1202_4
- Tamaoka, K., & Kiyama, S. (2013). The effects of visual complexity for Japanese kanji processing with high and low frequencies. *Reading and Writing*, 26(2), 205-223. <https://doi.org/10.1007/s11145-012-9363-x>
- Wilson, M. (2002). Six views of embodied cognition. *Psychonomic Bulletin & Review*, 9(4), 625–636. <https://doi.org/10.3758/BF03196322>
- Yulianti, R. (2021). Strategi pembelajaran kanji: Studi kasus pada pembelajar bahasa Jepang tingkat pemula dan menengah di Universitas Al Azhar Indonesia. *Jurnal Literasi Bahasa*, 5(2), 99–113. <https://doi.org/10.32505/jlb.v5i2.2657>