CHI'E Vol. 13 (2) (2025)

Chi'e: Jurnal Pendidikan Bahasa Jepang

Terindeks Sinta 3

https://journal.unnes.ac.id/journals/chie/index

Evaluating the Effect of Digital Media and Coginitive Styles on Kanji Learning: An Experimental Study Using Tanoshiijapanese.com

Muhamad Aldillah[1], Nia Setiawati[2*], Cut Erra Rismorlita[3]

Japanese Language Education Programme, Faculty of Languages and Art, Universitas Negeri Jakarta, Indonesia

email: muhammad.aldillah98@gmail.com[1], niasetiawati@unj.ac.id[2*], erralita@unj.ac.id[3]

*) Corresponding Author

Article Info

Article History:
Received: July 2025
Approved: September 2025
Published: October 2025

Keywords:
Kanji learning; cognitive style; digital learning media; tanoshiijapanese.com; Japanese language education

Abstract

This study examines the effect of digital learning media and cognitive styles on kanji learning outcomes, focusing on the use of the tanoshiijapanese.com website as a learning platform. The research aims to determine how this website supports students with different cognitive styles—Field Dependent (FD) and Field Independent (FI)—in learning kanji. As online and blended learning continue to evolve, the integration of interactive web-based tools has become essential in language instruction, particularly for complex writing systems such as Japanese kanji. This study employed a one-group pretest–posttest experimental design involving students enrolled in a Kanji I course. Participants completed a pretest, underwent learning sessions using tanoshiijapanese.com, and then completed a posttest. Results indicated that both FD and FI learners experienced significant improvement after the intervention, confirming the positive impact of the digital platform on kanji acquisition. Furthermore, FD learners achieved slightly higher gains than FI learners, suggesting that the website's guided and visually structured format aligns more closely with the cognitive tendencies of FD learners. These findings underscore the potential of web-based tools to enhance kanji instruction while addressing individual learning preferences.

✉ Alamat korespondensi:
Gedung B4 Lantai 2 FBS Unnes
Kampus Sekaran, Gunungpati, Semarang, 50229
E-mail: chie@unnes.ac.id

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

INTRODUCTION

Globalization has led to a growing emphasis on foreign language education, both in secondary and tertiary institutions. Among the foreign languages studied in Indonesia, Japanese occupies a prominent place due to the strong educational and cultural ties between Indonesia and Japan. Japanese language instruction requires mastery of not only vocabulary and grammar but also its unique writing system, which integrates three types of scripts—hiragana, katakana, and kanji. According to Hadamitzky and Spahn (2012), kanji, which originated from Chinese ideographic characters, are used for conceptual words such as nouns, verbs, adjectives, and proper names. Hiragana serves primarily grammatical functions that do not correspond to kanji, while katakana is used to write loanwords, foreign names, and emphasize certain expressions. Collectively, this system forms the kanji–kana majiri writing style, which constitutes the foundation of written Japanese.

For learners from non-kanji-using countries such as Indonesia, kanji learning presents significant challenges. Ishida (1992) identifies five common difficulties encountered by foreign learners: hitsujun (stroke order), moji no katachi(character shape), douongo (homophones), onyomi and ku nyomi (Chinese and native readings), and jukugo (compound words). These challenges arise not only from the complexity of form but also from the multiplicity of meanings and readings. Hirai (in Sudjianto et al., 2014) notes that although there are approximately 50,000 kanji, around 2,000 are used in everyday Japanese. The Japanese Ministry of Education, Culture, Sports, Science and Technology (Monbukagakusho) has standardized 2,136 kanji for teaching, while Kato (in Sudjianto et al., 2014) emphasizes that learning goals for foreign students must be adapted to their proficiency level and available learning time.

In the Japanese Language Education Study Program at Jakarta State University, for instance, students are expected to master approximately 1,000–1,200 kanji within four semesters using Basic Kanji Book Volumes 1–2 and Intermediate Kanji textbooks. However, many students face persistent difficulties due to limited exposure and lack of effective instructional media aligned with these materials.

Kanji Learning Outcomes

Learning outcomes are essential indicators of students' academic progress and instructional effectiveness. According to Ma'rufah (2018), learning is a deliberate process that brings about lasting changes in knowledge, attitudes, and behavior. Bloom (in Ma'rufah, 2018) classifies learning objectives into three domains: (a) cognitive—related to thinking, knowing, and problem solving; (b) affective—related to attitudes and social adjustment; and (c) psychomotor—related to manual or motor skills.

Nurmala et al. (2014) further classify learning outcomes as being influenced by both internal and external factors. Internal factors include physiological condition, intelligence, motivation, and cognitive ability, while external factors involve environmental and instructional conditions. Sumardi (2020) outlines four activities essential to determining learning outcomes: testing, measuring, assessing, and evaluating. These processes collectively assess how effectively learning goals are achieved.

Kanji, as one of the three Japanese writing systems, differs fundamentally from kana (hiragana and katakana) and romaji. While kana are syllabic characters representing sound, kanji represent both sound and meaning (hyōi moji). Iwabuchi (in Sudjianto, 2014) explains that kanji originated in China and were introduced to Japan around the 4th century during the Han (Kan) period—hence the name kanji, meaning "characters from the land of Kan." To learn kanji effectively, students must understand elements such as bushu (radicals), kakusuu (stroke count), hitsujun (stroke order), and onyomi and kunyomi readings.

Kano (in Setiawati, 2020) identifies three key components of kanji: form (形), sound (音), and meaning (意). Learners must also understand

the usage of kanji in context. For learners from non-kanji-using backgrounds, challenges include the difficulty of recognizing complex forms, memorizing multiple readings, and distinguishing homonyms. Kano suggests setting short-term goals and associating form with meaning to improve retention. Similarly, Prasetiani and Diner (2014) note that each kanji character's multiple values—radicals, stroke counts, writing order, and readings—make memorization demanding for beginners.

Learning Media and Digital Tools

Learning media play a vital role in facilitating comprehension and engagement. Hamid et al. (2020) define media as intermediaries that transmit messages from source to recipient, stimulating cognitive and affective engagement. They identify nine categories of instructional media: audio, print, audio-print, still visual, moving visual, audio-visual, object-based, and computer-based media.

With rapid technological advancement, digital-based learning media have gained increasing importance. Afriyadi et al. (2023) highlight that digital media enhance access to information, support self-regulated learning, and help teachers organize classroom activities. However, Khosiyono et al. (2022) caution that technological barriers, such as limited device access and poor internet connectivity, can hinder effective implementation. According to Ismayani (2018), combining diverse technology-based approaches promotes active learning, independence, and collaborative skill development.

In Japanese language education, various digital tools now assist learners in mastering kanji. One such platform is tanoshiijapanese.com, created by Akiko Saito, which offers comprehensive learning materials including hiragana, katakana, vocabulary, grammar, and kanji. The kanji section allows students to study characters based on Basic Kanji Book chapters, featuring stroke order animations, readings, meanings, and example sentences. Permatasari and Karyati (2020) found that the website aligns well with classroom materials and enhances student engagement, as learners can access lessons easily and practice writing through interactive exercises. However, they also noted limitations, including dependence on internet access and the need for teacher guidance.

During the COVID-19 pandemic, Setiawati (2020) used Edmodo to deliver Kanji II lessons, finding that while it enabled remote access to materials, students struggled with stroke order and writing accuracy due to limited visual feedback. These findings reinforce the need for interactive platforms like tanoshiijapanese.com that support visual and kinesthetic aspects of kanji learning in both synchronous and asynchronous contexts.

Cognitive Style and Language Learning

Learners differ in how they process and interpret information. Susanto (2015) defines cognitive style as an individual's characteristic mode of perceiving, storing, and using information to solve problems. Armstrong, Allinson, and Hayes (2004) describe cognitive style as a habitual way of processing and evaluating information, while Uno (2007) emphasizes that these differences reflect variations in approach rather than intelligence. Keefe (in Uno, 2007) situates cognitive style within the broader framework of learning styles, linking it to intellectual functioning.

According to Woolfolk (in Uno, 2007), two major cognitive style dimensions are Field Independent (FI) and Field Dependent (FD). FD learners tend to rely on external guidance and contextual cues, preferring structured and socially interactive environments. In contrast, FI learners are more analytical, self-directed, and capable of separating information from its surrounding context (Witkin, 1971; Witkin et al., 1977). GEFT (Group Embedded Figures Test), developed by Witkin (1971), measures these tendencies by requiring individuals to identify simple figures embedded in complex designs.

Witkin (in Susanto, 2015) characterizes FI learners as analytical, independent, and less influenced by environmental context. Sternberg and Zhang (2013) further note that FI learners process information systematically, prefer

solitary work, and take satisfaction in personal achievement. Conversely, FD learners focus on global information, learn best with guidance, and rely more on external sources of information. They also benefit from social and experiential learning and often require structured support (Sternberg & Zhang, 2013).

From the perspective of Self-Determination Theory (SDT), Deci and Ryan (in Hamzah, 2019) argue that autonomy, competence, and relatedness foster intrinsic motivation, which enhances satisfaction and long-term learning outcomes. Therefore, when instructional media align with students' cognitive styles, they not only facilitate comprehension but also promote sustained motivation and engagement in learning kanji.

Previous research has explored various dimensions of kanji learning. Permatasari and Karyati (2020) examined tanoshiijapanese.com as a digital tool during the pandemic and found it effective for independent learning. However, their study was descriptive and did not measure the platform's impact on learning outcomes.

Other studies (Setiawati, 2020; Ismayani, 2018) emphasized the importance of combining technology and pedagogy but did not specifically examine how cognitive differences influence learning outcomes in online environments. To date, few studies have experimentally investigated how digital media interact with cognitive styles to affect kanji acquisition.

To address this gap, the present research integrates three dimensions—learning outcomes, digital media (tanoshiijapanese.com), and cognitive style—to evaluate their combined influence on kanji learning. This study assumes that tanoshiijapanese.com enhances kanji learni ng outcomes and that this effect may differ between FD and FI learners, given their contrasting information-processing tendencies.

Building upon the theoretical and empirical context above, this study aims to answer the following research questions:

1. Does the use of tanoshiijapanese.com significantly improve students' kanji learning outcomes?
2. Is there a difference in kanji learning outcomes between students with Field Dependent (FD) and Field Independent (FI) cognitive styles after using tanoshiijapanese.com?
3. How does cognitive style influence the effectiveness of tanoshiijapanese.com as a digital medium for learning kanji?

Learning Media

Learning media are essential components of modern pedagogy, serving as tools that mediate communication between instructors and learners. According to Hamid et al. (2020), instructional media function as intermediaries that transmit messages from the source to the recipient, stimulating learners' thoughts, emotions, attention, and motivation to participate actively in the learning process. Hamid et al. identify nine major categories of learning media: (1) audio media such as radio broadcasts or podcasts, (2) print media such as textbooks and modules, (3) audio-print media such as exercise books with accompanying CDs or cassettes, (4) still visual media such as overhead projectors, (5) moving visual media such as silent films, (6) moving audio-visual media such as educational videos, (7) still visual media with audio such as slideshows, (8) object-based media including models and real objects, and (9) computer-based media that employ digital technology for instruction.

In contemporary education, the use of digital-based media has become increasingly significant. Afriyadi et al. (2023) explain that digital learning platforms enhance access to instructional content, facilitate the application of effective learning strategies, and assist teachers in managing classroom activities. Nevertheless, Khosiyono et al. (2022) note that the effectiveness of digital media is often constrained by limited digital literacy among educators, students' unequal access to technological devices, and poor internet infrastructure in some areas. To overcome these limitations, Ismayani (2018)

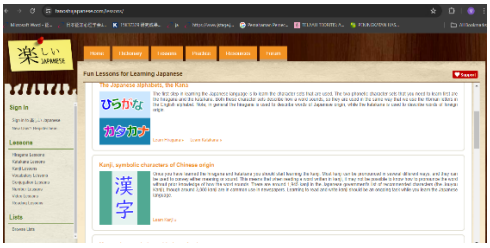
emphasizes the importance of integrating diverse technological tools and pedagogical approaches to transform learning from passive to active and from teacher-centered to learner-centered modes, while promoting collaboration and independent problem-solving.

Within Japanese language education, the adoption of digital learning media is especially relevant for supporting the acquisition of complex writing systems such as kanji. Among various available tools, tanoshiijapanese.com, developed by Akiko Saito, represents an effective example of computer-based learning media. The website provides structured and interactive kanji learning resources that align with classroom instruction, particularly with the Basic Kanji Book. Its key features—stroke-order animations, example sentences, and self-paced practice exercises—reflect the principles of multimedia learning, which encourage learner autonomy and engagement.

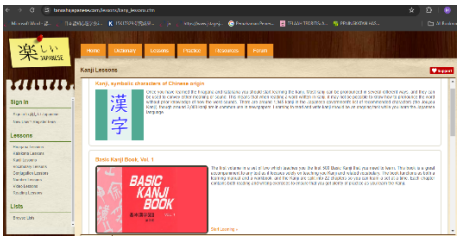
According to Permatasari and Karyati (2020), tanoshiijapanese.com offers several pedagogical benefits: it is easily accessible, requires no user registration, and closely parallels textbook content, making it a valuable supplement for students studying independently. The website's interactive elements enhance learners' motivation and understanding of kanji structure and use. However, challenges remain for students with limited internet access or those requiring teacher guidance to maximize the platform's potential.

In sum, tanoshiijapanese.com exemplifies the effective integration of digital technology into language instruction. When incorporated into classroom or blended learning contexts, such media not only reinforce kanji comprehension but also foster learner engagement, digital literacy, and self-directed study habits consistent with 21st-century educational goals.

Picture 1. Home page of tanoshiijapanese.com



Picture 2. Lesson page on tanoshiijapanese.com



Picture 3. The kanji lesson page on tanoshiijapanese.com

METHOD

Research Design

This study employed an experimental research design to examine the effect of digital learning media and cognitive style on students' kanji learning outcomes. Specifically, a one-group pretest–posttest design was used to measure students' performance before and after the treatment using the website tanoshiijapanese.com. Although this design does not involve a control group, it enables the observation of learning progress attributable to the intervention within the same participant group.

The independent variable in this study was the use of the website tanoshiijapanese.com, while the moderator variable was cognitive style (Field Dependent [FD] and Field Independent [FI]). The dependent variable was

students' kanji learning outcomes, particularly their ability to recognize and write *kanji* characters.

Participants

The participants were 24 first-semester students enrolled in Class A of the Japanese Language Education Study Program at Universitas Negeri Jakarta (UNJ). The selection of first-semester students was based on their status as beginners in *kanji* learning, making them suitable subjects for evaluating digital learning media effectiveness. All participants were of similar academic backgrounds and had not previously
used *tanoshiijapanese.com* for *kanji* learning.

Instruments

Two instruments were used in this study:

1. Group Embedded Figures Test (GEFT): Developed by Witkin et al. (1977), this test was administered to classify students into Field Dependent (FD) and Field Independent (FI) cognitive style groups.
2. Kanji Learning Test: A pretest and posttest were designed to measure students' kanji mastery. The tests were aligned with materials from the Basic Kanji Book Vol. 1, focusing on kanji recognition, meaning, and writing accuracy.

Procedure

The experiment was conducted over four learning sessions. The procedure consisted of the following stages:

1. **Cognitive Style Classification:** Students first completed the GEFT to identify their cognitive style.
2. **Pretest:** A pretest was administered to assess students' initial *kanji* knowledge and writing ability before using *tanoshiijapanese.com*.
3. **Treatment:** Over four consecutive sessions, students learned *kanji* using the *tanoshiijapanese.com* website. The lessons focused on stroke order, reading, and meaning, using materials consistent with the *Basic Kanji Book Vol. 1*.
4. **Posttest:** After completing the treatment, students took a posttest identical in format to the pretest to measure improvement in *kanji* learning outcomes.

Data Analysis

Data from the pretest and posttest were analyzed quantitatively. A simple linear regression analysis was used to determine the effect of using tanoshiijapanese.com and cognitive style on kanji learning outcomes. Additionally, the difference between pretest and posttest scores for FD and FI students was compared to identify which cognitive style group demonstrated greater improvement.

RESULT AND DISCUSSION

Data collection in this study was conducted using a hybrid approach, combining both online and offline methods. During the initial phase, students' cognitive styles were identified through the administration of the Group Embedded Figures Test (GEFT), which was carried out in a classroom setting. The results of the GEFT provided the basis for categorizing students into Field Dependent (FD) and Field Independent (FI) cognitive style groups. The distribution of cognitive styles among the 24 participants from Class A of the Japanese Language Education Study Program at Universitas Negeri Jakarta is presented below.

Table 1. Cognitive Styles of Students in Class A

No	Name	GEFT Score	Cognitive Style
1	Sample 1	1	FD
2	Sample 2	2	FD
3	Sample 3	0	FD
4	Sample 4	4	FD
5	Sampe 5	5	FD
6	Sample 6	8	Neutral
7	Sample 7	4	FD
8	Sample 8	3	FD
9	Sampel 9	0	FD
10	Sample 10	8	Neutral
11	Sample 11	1	FD

12	Sample 12	10	Netral
13	Sample 13	4	FD
14	Sample 14	1	FD
15	Sample 15	12	FI
16	Sample 16	3	FD
17	Sample 17	12	FI
18	Sample 18	6	FD
19	Sample 19	5	FD
20	Sample 20	3	FD
21	Sample 21	4	FD
22	Sample 22	10	Neutral
23	Sample 23	7	Neutral
24	Sampel 24	0	FD

Based on the GEFT results, 17 students were identified as having a Field Dependent (FD) cognitive style, two studentsas Field Independent (FI), and five students showed no clear tendency toward either category (neutral). The classification was determined using GEFT scores, which ranged from 0 to 12, with higher scores indicating a stronger FI tendency and lower scores reflecting a stronger FD tendency.

Following the identification of cognitive styles, students completed both a pretest and a posttest to measure their kanjilearning performance before and after the use of the tanoshiijapanese.com website. The results of these assessments are summarized below.

Table 2. Pre-test and Post-test Scores

No	Sample	Pre-test Score	Post-tes Score
1	Sample 1	58.18	50.91
2	Sample 2	56.36	56.36
3	Sample 3	54.54	50.91
4	Sample 4	52.73	58.18
5	Sample 5	56.36	72.73
6	Sample 6	45.45	49.09
7	Sample 7	27.27	25.45
8	Sample 8	29.09	63.64
9	Sample 9	52.73	83.64
10	Sample 10	65.45	89.09
11	Sample 11	49.09	63.64
12	Sample 12	40	58.18
13	Sample 13	61.82	76.36
14	Sample 14	40	41.82
15	Sample 15	30.91	65.45
16	Sample 16	40	52.73
17	Sample 17	54.54	78.18
18	Sample 18	47.27	50.91
19	Sample 19	49.09	50.91
20	Sample 20	36.36	52.73
21	Sample 21	81.82	94.54
	Total	1029.06	1285.45
	Average	49	61.21

Based on the table above, the average pretest score was 49.00, while the average posttest score increased to 61.21, indicating an overall improvement in students' kanji learning performance after using tanoshiijapanese.com. The highest pretest score recorded was 81.82, rising to 94.54 in the posttest. Conversely, the lowest pretest score was 27.27, while the lowest posttest score slightly decreased to 25.45.

Prior to conducting hypothesis testing, the researchers performed assumption tests, including normality and homogeneity analyses, to ensure that the data met the necessary statistical requirements for further testing.

Normality test

The normality test was conducted to examine whether the data were normally distributed. This analysis was performed using the One-Sample Kolmogorov–Smirnov test in SPSS version 23.

Table 3. Normality Test Results

One-Sample Kolmogorov-Smirnov Test

		Unstandardized Residual
N		21
Normal Parameters[a,b]	Mean	.0000000
	Std. Deviation	12.25104712
Most Extreme Differences	Absolute	.145
	Positive	.145
	Negative	-.098
Test Statistic		.145
Asymp. Sig. (2-tailed)		.200[c,d]

Based on the table above, the significance value obtained was 0.20. Since the significance level (0.20) is greater than 0.05, it can be concluded that the data are normally distributed.

Homogeneity Test

The homogeneity test was conducted to determine whether the data had equal variances across groups. This test was performed using the one-way ANOVA procedure in SPSS version 23.

Table 4. Homogeneity Test Results

ANOVA

Hasil belajar kanji

	Sum of Squares	Df	Mean Square	F	Sig.
Between Groups	4433.258	14	316.661	1.810	.239
Within Groups	1049.741	6	174.957		
Total	5482.999	20			

Based on the table above, the significance value obtained was 0.239. Since this value is greater than 0.05, it can be concluded that the data variances are homogeneous, indicating that the assumption of homogeneity has been met.

The Effect of Using the Website Tanoshiijapanese.com on Kanji Learning Outcomes

The hypothesis testing in this study was conducted using SPSS version 23 by entering the pretest and posttest scores as representations of the respective variables. The pretest scores served as the independent variable, while the posttest scores represented the dependent variable. Subsequently, the data were entered into the SPSS data editor for analysis, as illustrated in the following figure.

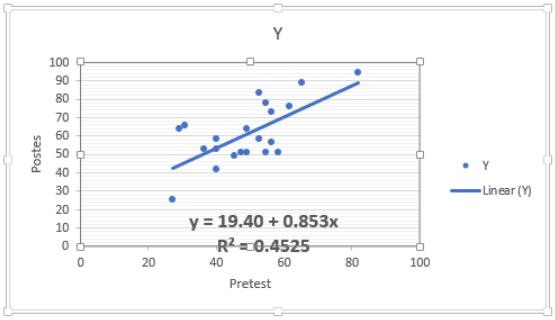
Table 5. Thitung Score and Constant a and b

Model		Unstandardized Coefficients		Standardized Coefficients	T	Sig.
		B	Std. Error	Beta		
1	(Constant)	19.400	10.901		1.780	.091
	Penggunaan Website Tanoshiijapanese.com	.853	.215	.673	3.963	.001

From the table above, column B contains the intercept constant (a) value of 19.40 and the regression constant (b) value of 0.853. Therefore, based on this data, the equation is:

$$Y = a + bX$$
$$Y = 19{,}40 + 0{,}853X$$

Based on the regression equation above, the constant value of the dependent variable is 19.40, while the regression coefficient (β) for the independent variable (X) is 0.853. This indicates that for every one-unit increase in the independent variable, the dependent variable increases by 0.853 units. The positive coefficient demonstrates a direct (positive) relationship between the independent and dependent variables. The regression equation is illustrated in the line graph below.



Picture 4. Simple linear regression equation diagram

Referring to the coefficient table, the hypothesis of this study was tested using the t-test. The obtained t-value was 3.963, while the t-table value at a significance level of 0.05 with 20 degrees of freedom (df) was 2.085. Since the calculated t-value (3.963) is greater than the critical t-value (2.085), it can be concluded that the independent variable—the use of

the tanoshiijapanese.com website—has a statistically significant positive effect on the dependent variable, namely students' kanji learning outcomes.

Table 6. Result of R^2 Hypothesis Test 1

Model	R	R Square	Adjusted R Square	Std. Error of the Estimate
1	.673[a]	.453	.424	12.56931

Based on the results of the simple linear regression analysis, the coefficient of determination (R^2) was found to be 0.453. This indicates that 45.3% of the variance in students' kanji learning outcomes can be explained by the use of the tanoshiijapanese.com website, while the remaining 54.7% is influenced by other factors not examined in this study.

Although the website contributed positively to students' learning outcomes, the effect size remains moderate. The 45.3% contribution suggests that while tanoshiijapanese.com provides beneficial learning support, it does not fully determine students' motivation or achievement. This aligns with Self-Determination Theory (SDT) proposed by Deci and Ryan (in Hamzah, 2019), which emphasizes that intrinsic motivation—rooted in autonomy, competence, and relatedness—is crucial for sustained learning. Given the relatively short treatment period of approximately one week, the improvement observed may not fully capture the long-term impact of the website. Despite offering comprehensive and engaging materials, mastering kanji remains a cognitively demanding process that requires continuous practice and deeper internal motivation.

Effects of Digital Media and Cognitive Styles on Kanji Learning Outcome

In this section, a multiple linear regression analysis was conducted to examine the simultaneous influence of the two independent variables on kanji learning outcomes. This analysis determines whether both variables jointly have a significant effect by assessing the F-value.

Table 7. Result of f_{value} Hypothesis Test 2

Model		Sum of Squares	Df	Mean Square	F	Sig.
1	Regression	2508.361	2	1254.181	7.589	.004[b]
	Residual	2974.637	18	165.258		
	Total	5482.999	20			

Based on the results shown in the table, the F-value was 7.589, with a significance level of 0.004. The corresponding F-table value at a significance level of 0.05, with n = 21 (n – k – 1 = 21 – 2 – 1), is 3.52. Since $F_{(}value_{)}$ (7.589) > $F_{(}table_{)}$ (3.52) and the significance level is below 0.05, it can be concluded that the model is statistically significant. This indicates that the two independent variables—the use of the tanoshiijapanese.com website and students' cognitive styles—jointly have a significant effect on kanji learning outcomes.

Table 8. R^2 Hypothesis Test 2

Model	R	R Square	Adjusted R Square	Std. Error of the Estimate
1	.676[a]	.457	.397	12.85526

The results indicate that the R^2 value is 0.457, meaning that 45.7% of the variance in kanji learning outcomes can be explained by the combined influence of the tanoshiijapanese.com website and students' cognitive styles. The remaining 54.3% is attributed to other factors not examined in this study.

The additional contribution of cognitive style as a moderator variable increased the explained variance by only 0.3%, suggesting that its moderating effect was minimal. This may be due to the uneven distribution of cognitive styles among students in Class A, with a predominance of field-dependent learners and only a small number of field-independent students, resulting in limited variance in the moderator variable.

Effect of Using Tanoshiijapanese.com on Kanji Learning Outcomes Among Students with a Field-Independent Cognitive Style

To examine the effect of using the tanoshiijapanese.com website on kanji learning outcomes among students with a Field-

Independent (FI) cognitive style, the analysis was conducted specifically for participants classified as FI based on the GEFT results. The calculation focused solely on this subgroup to determine whether their learning gains differed from other cognitive styles. The table below presents the pretest and posttest scores of students with an FI cognitive style.

Table 9. Pretest and Posttest Results of FI Students

No	Sample	Pre-test	Post-tes
1	Sample 12	40	58.18
2	Sample 14	40	41.82
	Average	40	50

Since there were only two students with a Field-Independent (FI) cognitive style, it was not possible to perform a simple linear regression analysis. Therefore, the researchers analyzed the data descriptively by comparing the average pretest and posttest scores. The FI students showed an average improvement of 10%, while the Field-Dependent (FD) students improved by 10.91%. This indicates that the tanoshiijapanese.com website had a slightly greater impact on FD students than on FI students. These results align with Sternberg and Zhang's (2013) observation that FI learners tend to seek and process information independently, which may limit the additional benefits gained from structured digital media. In summary, the effect of using the tanoshiijapanese.com website on kanji learning outcomes was marginally lower for FI students compared to FD students.

Effect of Using Tanoshiijapanese.com on Kanji Learning Outcomes Among Field-Dependent Learners

To examine the effect of using the tanoshiijapanese.com website on kanji learning outcomes among students with a Field-Dependent (FD) cognitive style, the analysis was focused exclusively on participants identified as FD through the GEFT results. The calculation was therefore limited to this subgroup to assess how their cognitive style influenced their learning performance after using the website. The table below presents the GEFT and posttest scores of students with an FD cognitive style.

Table 10. Pretest and Posttest Results of FD Students

No	Sample	Skor Cognitive Style Scores (X2)	Post-tes
1	Sample 1	2	50.91
2	Sample 2	0	56.36
3	Sample 3	4	50.91
4	Sample 4	5	58.18
5	Sample 6	4	49.09
6	Sample 7	3	25.45
7	Sample 8	0	63.64
8	Sample 11	4	63.64
9	Sample 13	3	76.36
10	Sample 15	6	65.45
11	Sample 16	5	52.73
12	Sample 17	3	78.18
13	Sample 18	4	50.91
14	Sample 20	7	52.73
15	Sample 21	0	94.54

The next step involved analyzing the data using SPSS version 23 through a simple linear regression procedure. The results are presented in the following table.

Table 11. R^2 Hypothesis Test 4

Model	R	R Square	Adjusted R Square	Std. Error of the Estimate
1	.312[a]	.097	.028	15.64007

a. Predictors: (Constant), X2

The results show that the coefficient of determination (r^2) is 0.097, indicating that the use of the Tanoshiijapanese.comwebsite accounts for 9.7% of the variance in kanji learning outcomes among students with a Field-Dependent (FD)cognitive style, while the remaining 90.3% is influenced by other factors. Although the effect size is relatively small, there was a measurable improvement between the pretest and posttest scores. The average pretest score for FD students was 48.36, which increased to 59.27 in the posttest—an improvement of 10.91%. This gain is slightly higher than that of

the Field-Independent (FI) group, which showed an average improvement of 10%.

These findings suggest that the Tanoshiijapanese.com website had a marginally greater positive impact on FD learners' kanji performance. This aligns with Sternberg and Zhang's (2013) view that FD learners tend to rely more on structured guidance and provided information. Although Tanoshiijapanese.com is designed for self-directed study, in this study it was used as a digital substitute for Basic Kanji Book Vol. 1, thereby maintaining a sense of instructional structure that benefitted FD students.

Overall, the hypothesis testing confirms that both the use of Tanoshiijapanese.com and cognitive style influence students' kanji learning outcomes. The website's comprehensive features—such as English-meaning matching exercises and stroke-order practice—make it a practical resource for both teachers and students. Moreover, when integrated with students' cognitive styles, Tanoshiijapanese.com can serve as an effective alternative medium for Kanji I instruction, supporting both guided and independent learning environments.

CONCLUSION

This study examined the influence of using the Tanoshiijapanese.com website and cognitive styles on students' kanji learning outcomes. Three key findings emerged.

First, the use of Tanoshiijapanese.com had a measurable positive impact on kanji learning outcomes, accounting for 45.3% of the variance in students' performance. Although the effect size was moderate, the website proved useful as an instructional tool, supporting classroom learning through its interactive and accessible features.

Second, when both the Tanoshiijapanese.com website and cognitive style were considered together, their combined influence explained 45.7% of the variance in learning outcomes. This suggests that integrating digital media with an understanding of students' cognitive preferences can enhance kanji learning effectiveness.

Third, cognitive style differences affected students' engagement with the platform. Students with a Field-Dependent (FD) cognitive style showed slightly higher improvement than those with a Field-Independent (FI) style. FD learners benefited more from the structured guidance provided by the website, consistent with Sternberg and Zhang's (2013)observation that FD learners prefer guided and contextualized instruction.

Overall, this study highlights that digital media such as Tanoshiijapanese.com can serve as an effective complementary tool for kanji learning when aligned with students' cognitive characteristics. Future research could further explore how adaptive digital platforms can be tailored to different learner profiles to maximize long-term language acquisition outcomes.

REFERENCES

Afriyadi, H., Hayati, N., Laila, S. N., Prakasa, Y. F., & others. (2023). Media pembelajaran berbasis digital (Teori & praktik). PT Sonpedia Publishing Indonesia.

Armstrong, S. J., Allinson, C. W., & Hayes, J. (2004). The effects of cognitive style on research supervision: A study of student–supervisor dyads in management education. Academy of Management Learning & Education, 3(1), 41–63.

Hadamitzky, W., & Spahn, M. (2012). Japanese kanji & kana: A complete guide to the Japanese writing system. Tuttle Publishing.

Hamid, M. A., Ramadhani, R., Masrul, M., Juliana, J., & others. (2020). Media pembelajaran. Yayasan Kita Menulis.

Hamzah, I. F. (2019). Aplikasi self-determination theory pada kebijakan publik era industri 4.0. PSISULA: Prosiding Berkala Psikologi, 1.

Ishida, T. (1992). Nihongo kyoujuhou (10th ed.).

Ismayani, A. (2018). Cara mudah membuat aplikasi pembelajaran berbasis Android dengan Thunkable. Elex Media Komputindo.

Khosiyono, B. H. C., Fajarudin, M., Jayanti, E. D., & others. (2022). Teori dan pengembangan pembelajaran berbasis teknologi digital di sekolah dasar. Deepublish.

Ma'rufah, S. (2018). Telaah teoritis: Apa itu belajar? HELPER: Jurnal Bimbingan dan Konseling, 35(1), 31–46.

Nurmala, D. A., Tripalupi, L. E., & Suharsono, N. (2014). Pengaruh motivasi belajar dan aktivitas

belajar terhadap hasil belajar akuntansi. Jurnal Pendidikan Ekonomi Undiksha, 4(1), 1–10.

Paxton, S., & Svetanant, C. (2014). Tackling the kanji hurdle: Investigation of kanji learning in non-kanji background learners. International Journal of Research Studies in Language Learning, 3(3), 89–104.

Permatasari, K. M., & Karyati, A. (2020). Peranan media online "Tanoshiijapanese.com" sebagai solusi pembelajaran kanji di masa pandemi. Jurnal Abdimas Sosial dan Humaniora, 1(1), 1–5.

Prasetiani, D., & Diner, L. (2014). Meningkatkan kemampuan kanji mahasiswa melalui media kartu huruf kanji. Jurnal Izumi, 3(2), 15.

Setiawati, N. (2020). Pembelajaran Kanji II di masa pandemi COVID-19 dengan bantuan media Edmodo. Janaru Saja: Jurnal Program Studi Sastra Jepang, 9, 13–27.

Sternberg, R. J., & Zhang, L. F. (2013). Perspectives on cognitive, learning, and thinking styles. Routledge.

Sudjianto, Dahidi, A., & Yoko, M. (2014). Kanji dasar bahasa Jepang (pp. 1–13).

Sumardi, M. H. (2020). Teknik pengukuran dan penilaian hasil belajar. Deepublish.

Susanto, H. A. (2015). Pemahaman pemecahan masalah berdasar gaya kognitif. Deepublish.

Uno, H. (2007). Teori motivasi dan pengukurannya: Analisis di bidang pendidikan. Bumi Aksara.

Witkin, H. A. (1971). A manual for the embedded figures test. Consulting Psychologists Press.

Witkin, H. A., Oltman, P. K., Raskin, E., & Karp, S. A. (1977). Embedded figures test, children's embedded figures test, group embedded figures test: Manual. Consulting Psychologists Press.