
Understanding Digital Natives Learning Experience through Japanese Language Exam at Nihongo Tesuto Bunkasai Competition by PGBJ Jabodetabek in 2023

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Abstract

Integrating technology into Japanese language education has revolutionized the methods of instruction and learning. Especially while instructing the present generation known as digital natives. Educational institutions need to incorporate technology as a tool for teaching and learning due to the close relationship between digital natives and technology. This research aims to assess the utilization of the web-based test (SHIGURU) during the 2023 Bunkasai events organized by PGBJ-SMK (Forum of Japanese Language Teachers for Vocational High Schools) within the area of Jabodetabek (Jakarta, Bogor, Depok, Tangerang, Bekasi). This study employs a descriptive research methodology that incorporates both quantitative and qualitative approaches. Data can be collected through direct observation, questionnaires, and interviews. The study utilized primary and secondary data sources, which were examined through triangulation procedures. This study examines the benefits and drawbacks of utilizing shiguru and delves into a comprehensive comprehension of how the digital generation acquires knowledge and how Japanese language education should incorporate pedagogical principles and practices to cater to the requirements of digital natives in contemporary Japanese language education.

Keywords: *application exam; digital natives; educational theory; generation of digital learning; shiguru*

INTRODUCTION

The notion of digital natives was initially introduced by Marc Prensky in 2001 in his article titled "Digital natives, Digital Immigrants" (Prensky, 2001). In his paper, Prensky introduces the concept of "digital natives" to refer to the generation that has grown up with the internet and has become

proficient in using it as part of their literacy development. On the other hand, he uses the term "digital immigrants" to describe individuals who have encountered the internet later in life, after their formative years. Prensky also asserted that digital immigrants, as a rule, are a generation that is captivated by the internet and embraces it in several domains. Meanwhile, digital natives are those who possess an innate proficiency in technology, effortlessly utilizing it in the same manner as they breathe (Tapscoot, 2009).

Moreover, numerous studies categorize individuals as digital natives or digital immigrants according to their year of birth. Hill (2010:22) defines digital natives as those belonging to the post-1980 generation who are constantly exposed to and proficient in the use of computers, video games, digital music players, video cameras, cell phones, and other digital devices. Meanwhile, digital immigrants refer to individuals who were born prior to 1980 and did not experience the upbringing in the period of digital culture. They require the capacity to adjust to technology in their daily existence.

The convergence of two distinct generations within this educational ecosystem is a novel and formidable undertaking. In addition, the role of instructors as primary conduits of knowledge is increasingly changing due to the rapid advancement of technology. Furthermore, the COVID-19 epidemic appears to be hastening the adoption of technology in the field of education and assessing the preparedness and capability of teachers to incorporate it into their teaching practices. A bridge is needed to facilitate the interaction between these two distinct generations.

These dynamics and events demonstrate that technology advancements have resulted in the emergence of a new generation with distinct requirements. Moreover, significant technological advancements have shaped a novel state of existence. The older generation, when referred to as immigrants, are commonly known as digital immigrants, whereas the younger generation, referred to as native speakers, are commonly known as

digital natives. This significant alteration has a profound effect on meeting the requirements of individuals who were born into the digital age, and it is crucial for those from earlier generations, who are less familiar with technology, to comprehend this.

Tapscoot (2009) asserted that comprehending the internet age equates to comprehending the future. Efficiently using technology is a deliberate endeavor to comprehend and meet the requirements of the digitally native generation. Hameed, Mellor, Badii, Patel, and Cullen (2007) outlined numerous attributes of digital native learning, including: 1) A preference for expeditiously acquiring information from diverse sources and media, and 2) A proclivity for engaging in concurrent tasks. 3) Exhibits a preference for multimedia content such as images, sounds, and movies above textual information. 4) I have a preference for working in groups. 5) Acquire knowledge when a favorable circumstance arises, 6) Similar to receiving feedback in the form of awards or prizes, 7) Select educational resources that are enjoyable, practical, and pertinent to his requirements.

The aforementioned characteristics of the digital native generation necessitate distinct treatment and techniques in the implementation of education. Digital technology has become an integral component of the current generation that cannot be separated from it. Hence, this study aims to comprehend the requirements of digital natives by creating a web-based examination application specifically designed for the Japanese language exam competition (nihongo no tesuto) during the Japanese cultural festival "bunkasai." The research will be conducted under the supervision of the Association of Japanese Language Teachers of Vocational Schools (known as PGBJ) in Jabodetabek, scheduled for 2023.

Background of the Improvement

The creation of this online examination was prompted by a request from the Japanese Language Teachers Association (PGBJ-SMK) in the Jabodetabek area to provide competition-level Japanese language questions for vocational schools. The request is motivated by the need to enhance the efficiency of technology in organizing Japanese language tournaments. Furthermore, this activity marks the resumption of offline events after a prolonged hiatus due to the necessary precautionary measures taken to curb the worldwide transmission of the COVID-19 pandemic. Hence, incorporating technology into competitive endeavors is seen as a practical strategy for developing novel, superior, and streamlined alternatives to outdated methods. Furthermore, this advancement serves as a catalyst for expediting the process of digital transformation in the realm of education at present.

Currently, the Japanese language exam competition, a component of the Jabodetabek PGBJ bunkasai event, has been conducted utilizing traditional paper-based methods. Conversations with the committee chairman determined that there were multiple hindrances to carrying out the Japanese language exam competition utilizing paper. The barriers encompass the following: 1) Evaluation of examination outcomes, wherein occasional proofreading errors may occur due to the need for fast announcement of the competition winner. 2) ascertaining the victor; In certain cases, participants may achieve the same scores. Typically, the winner is selected based on the sequence in which the participants complete the test. 3) Expenses for expanding the number of questions: As the number of participants increases, additional costs are incurred to include more questions. 4) There is a potential for fraud due to the absence of an option to randomize questions and/or answer selections. 5) Inflexibility of question kinds; Written tests conducted on paper do not allow for the inclusion of questions that assess

different language skills, such as listening or skills that require audio or image devices.

This research aims to examine the progress of Japanese language exams for vocational schools, specifically focusing on the utilization of the "Nihongo Raku-Raku" online web-based book. The study will specifically analyze its application in the upcoming 2023 Jabodetabek PGBJ "bunkasai" Japanese cultural festival, scheduled for Saturday, March 18, 2023. Request for consideration or use This is a technological implementation aimed at meeting the needs of Japanese language learners who are proficient in digital technology, particularly in the context of Japanese language competitions at the vocational school level. The criteria for this application mostly revolve around including technologies that can adjust to the technical implementation of the competition. These requirements include: (1) Real-time question answering methodology, (2) Computation of processing duration, (3) Pleasurable user interface and user experience, (4) A multitude of users, and (5) Automated assessment.

The development stages of this exam application entail a collaboration between PGBJ Jabodetabek and The Japan Foundation Jakarta to generate question indicators and test questions.

METHOD

PGBJ Jabodetabek collaborated with The Japan Foundation Jakarta in designing question indicators and testing questions during the exam application development stage. The development process of this exam application is divided into 5 specific sections.

1. Determine Examination Requirements

The first stage involves receiving the question criteria from the PGBJ bunkasai committee team regarding the test description and implementation

procedures. The activity took place online via a Zoom meeting on Friday, February 17, 2023. 12 PGBJ representative instructors and the research team participated in this activity.

2. Assessment Criteria and Question Structure

The organizers emailed the question indications on Monday, February 20, 2023. The researchers then started creating the exam structure based on the received indicators.

3. Prototyping (Rapid Design)

Technical requirements for the online real-time Japanese language competition were identified, followed by the development of a prototype and rapid design. The technical development process involves designing the system architecture, appearance, application interface, and prototyping.

4. Prototype Validation Phase

This step is conducted to assess the prototype's compatibility with the requirements of the Nihongo no Tesuto competition. The activity took place online via a Zoom meeting on March 26, 2023. 12 PGBJ representative instructors and the research team participated in this activity.

5. Testing Stage

The PGBJ committee team collaborates with The Japan Foundation in testing the applications at this point. The stage commenced with the delivery of an interface prototype to PGBJ and The Japan Foundation Jakarta on March 6, 2023. A Zoom meeting was conducted on March 10, 2023, for discussion, and enhancements were implemented based on the feedback and ideas received. Finally, talks and exam simulations were conducted once more via a Zoom meeting on Thursday, March 16, 2023, as the last testing phase.

Literature Framework

Educational Theory Perspective on Human Learning

History documents various learning theories in education, each aiming to

elucidate the process of human learning and enhance student learning outcomes through pedagogical methods. Jobrack (2013) categorizes educational theory into three main categories: behaviorism, cognitive, and constructivism. These three ideas are applied using a learning paradigm that assists educators in empowering students to enhance their learning autonomously. The writing team will briefly examine the main ideas of the three theories.

Behaviorist Learning Theory

B.F. Skinner's theory from 1953 posits that learning is the result of the interplay between a stimulus and an individual's reaction, which occurs through engagement with the environment. Learning is the process through which students develop the ability to exhibit new behaviors due to the interaction between stimuli and reaction. Learning is demonstrated when an individual can exhibit changes in behavior.

This approach emphasizes the correlation between stimulus and learner response, which is reinforced by learning motivation. Learning motivation is influenced by rewards and punishments, as stated by Bransford, Brown, and Cocking in Kivunja (2014). One effective learning model in the behaviorist method was created by Gagne (1977) and consists of nine steps: 1) Gain attention, 2) Inform learner about objects, 3) Stimulate recall of earlier learning. 4) Provide physical sensation; give stuff. 5) Offer learner supervision, 6) Prompt performance, 7) Give feedback, 8) Evaluate performance, 9) Improve retention and transfer of knowledge (ibid, 2014).

Cognitive Learning Theory

Cognitive theory focuses on the learning process rather than the learning outputs, unlike behaviorism. This theory posits that learning takes

place when students engage actively in learning activities. Learning is a cognitive process that occurs in humans through active engagement with their environment to acquire knowledge, understanding, behavior, skills, and values (Dharma, 2014).

Key figures in this idea are Jean Piaget, Bruner, Ausubel, and Robert M. Gagne. One commonly referenced learning paradigm for this notion is the Harris and Graham (1999) model, which promotes students' cognitive capacities through six stages: 1) Cultivate and utilize prior knowledge, including skills and information. 2) Explore methods to promote active engagement and foster a sense of ownership of learning strategies among students. 3) Demonstrating learning methodologies and exhibiting students' thought processes to provide a model for learning. 4) Teaching mnemonic techniques to help pupils comprehend the phases involved in the learning process. 5) Supporting tactics by promoting the implementation of learning strategies from teachers to students. 6) Independently study and assess to demonstrate the efficacy of learning methodologies.

Constructivist Learning Theory

This notion is commonly associated with the cognitive theories of Jean Piaget (1923) and Lev Vygotsky (1978), in which they argue that pupils spontaneously build information and meaning from their learning experiences. Constructivism has similar assumptions with social cognitive theory, proposing that humans, behavior, and the environment interact in a reciprocal manner.

Constructivism posits that humans are active learners who construct knowledge for themselves. Students have the autonomy to enhance their gained knowledge through exercises, experiments, or discussions with peers. Secondly, teachers should avoid imparting knowledge to students in a

conventional manner. Teachers should create scenarios that allow students to engage actively with the subject matter by analyzing the materials and participating in social interactions.

The learning model linked to and supporting constructivist learning theory is the learning cycle model created by Jobrack (2013) known as the 5 E model (engagement, exploration, explanation, elaboration, evaluation). This model is an advancement of the learning cycle developed by Thomas (2003), which includes exploration, concept introduction, and concept application. During the engagement stage, the teacher aims to pique pupils' curiosity about the upcoming topic. During the exploration stage, students engage in activities that include actively testing predictions and hypotheses through observation and discussing them with peers. During the explanation stage, teachers must articulate an idea using their own language, request proof and clarification from students, and engage in critical listening with their peers. During the elaboration stage, the teacher clarifies students' misconceptions and offers opportunity for them to further develop their gained concepts and skills. During the evaluation step, students are questioned to assess the execution of learning activities and gauge their comprehension of the acquired topics.

The Connection between Learning Theories and How Digital Natives Learn

The three learning theories mentioned above demonstrate varying perspectives on the learning process. The behaviorist viewpoint sees learning as a modification in behavior that is noticeable due to the interplay between stimuli and the learner's actions, fueled by motivation for learning. Technology has a role in education by integrating different learning elements such as audio, video, text, and graphics to stimulate learning. Subsequently,

provide educational material that facilitates students' ability to get it at any time and in any location.

From a cognitive theory standpoint, learning involves observable behavior and alterations in pupils' mental structure. Technology can help organize students' ideas and viewpoints through visual pictures, facilitating the process of gathering and storing information.

Constructivism theory views learning as the process by which students develop knowledge based on their experiences. Technology has a crucial role in speeding up and intensifying students' experiences during the process of constructing knowledge. One method is multimedia-based learning, which offers students experiential learning opportunities.

Thus, by creating the "shiguru" application, the aim is to enhance the influence of technology on the educational journey, particularly for the digital native population. Moreover, the author aims to elucidate the consequences for digital native education.

The Making of System Design

1. Use Case Diagram

Use case diagrams illustrate a series of interactions between two actors and a system. In the image, the individuals (administrator, instructor, and learners) are shown logging in to access the system. Students view the exam schedule set by the administration and proceed to take the exam.

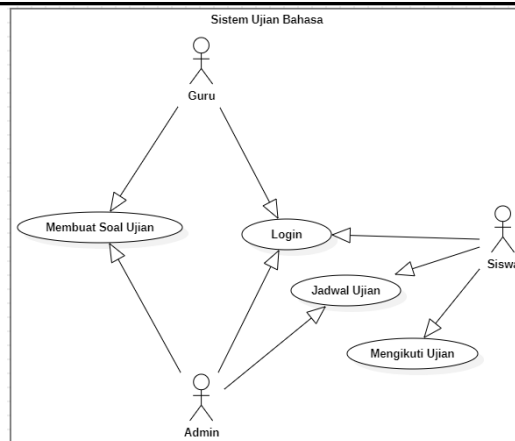


Figure 1. Use Case Diagram

Program Structure Design

Program structure design is a design that outlines the connections between program components. The author's proposed program structure design is depicted in the figure 2.

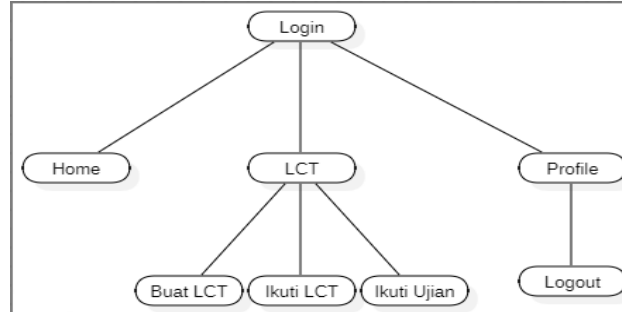


Figure 2. Program structure

Output Design

a. Design of Output Home Page



Figure 3. Design of Output Home Page

b. Design of Output LCT Page



Figure 4. LCT Page Design

c. Design of Output Exam

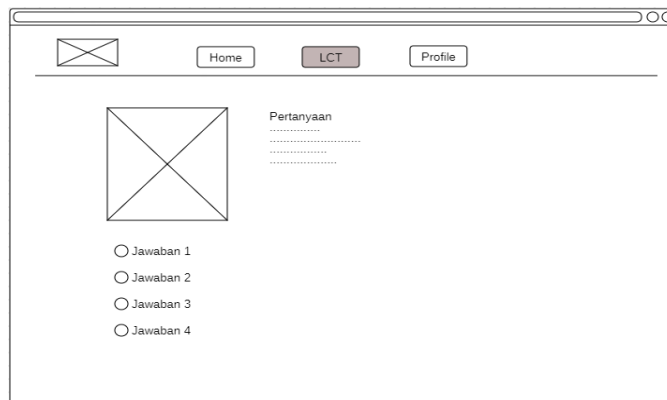


Figure 5. Design of Output Exam

Analysis of interview data used the content analysis technique of Miles and Huberman (2009) where the analysis is divided into 4 stages: data collection, data reduction, data presentation and verification or drawing conclusions. The stages of this technique are illustrated in the figure 6.

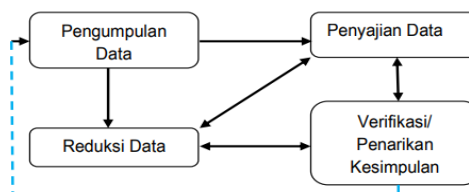


Figure 6. Scheme of data analysis by Miles dan Huberman (Miles & Huberman, 2009)

RESULTS AND DISCUSSION

The research team identified the procedures, benefits, and challenges of executing the nihongo tesuto competition with the "Shiguru" application during the 2023 Jabodetabek PGBJ bunkasai activities. This information is outlined in the table 1.

Table 1. Field observation results

No.	Indicator	Observation Result
1	Pre Test	1) Students enter the room. 2)The committee, assisted by operators, provide instructions to competition participants on opening the application and procedures for registering (signing in) as students by verifying each participant's email. 3) The committee provides an explanation of the structure, materials and timing of the competition as well as other rules while demonstrating the operation of the application with dummy questions.
2	Implementation	1) The operator gives instructions to the competition participants to log in to the application and provides a login code. 2) Students click start exam. 3) The operator checks the account of the teacher (examinee) 4) Checking teacher accounts is carried out by the operator with the aim of ensuring whether all students have logged in or not 5) The operator shows the exam display which displays the exam participants and the scores they obtained in real time.
3	Advantages	Advantages of Web-Based Exams 1) Exams become more orderly, 2) Exam results are more accurate, 3) Reduce paper usage, 4) Questions are in random form, 5) Final exam results can be seen immediately after students have finished taking the exam, 6) No need for time and human energy to proofreading, 7) The exam uses a cellphone so it can reduce costs, 8) The exam can be taken anywhere and at any time as long as there is an internet connection, 9) Reduces the potential for cheating by students, 10) The exam format is more modern because it is colored. SHIGURU's advantages 1) The operation of the Shiguru application is more detailed and security is guaranteed, 2) it does not only randomize the questions but also randomizes alternative answers, 3) It is difficult for questions to leak, 4) the exam start and end times can be set, 5) Students cannot exit the application; and if you exit, you will automatically log out and start from the beginning (avoiding potential cheating by opening another application) 6) The Shigiru application can also be used for competitions in which participants from various places participate at the same time, 7) The Shiguru application can display results displays real time exams which make the competition atmosphere even more interesting
4	Flaws	1) It really depends on the condition of the internet network, 2) There is no remaining working time, 3) The illustrations are heavy, 4) The audio sound is not optimal, 5) The winner is determined when the score obtained is the same between one participant and another

According to the data from table 2, 48% of the respondents reported taking a WEB-based Japanese language exam. All respondents who indicated they had taken a Japanese language exam did so through an independent learning program. Only 2 individuals (17%) reported taking a Japanese language exam at their school.

Table 2. Web-Based Exam Experience and Japanese Language Exam Media

	Total Respondent	Percentages
Gender		
Male	13	52%
Female	12	48%
Experience		
Having experiences	12	48%
Not yet having experiences	13	52%
Language Exam Media		
School exam	2	17%
Independent learning app	12	100%
Others	0	0%
Impression		
Very good	11	44%
Good	13	52%
Moderate	1	4%
Not good	0	0%
Not very good	0	0%
Expectation		
Very expected	8	32%
Expected	15	60%
Moderate	2	8%
Not expected	0	0%
Very not expected	0	0%

Online learning is gaining popularity in the education sector and is becoming well-known among students in the current digital age. Internet and digital media are widely used by students today, as their everyday lives are strongly intertwined with technology, particularly gadgets. Consistent with a questionnaire, about half of the participants reported using digital media for their Japanese language acquisition.

Interestingly, learning Japanese through the internet and digital media is typically done autonomously. This indicates that students use Japanese language learning websites on their own during the learning process. This learning style aligns with the traits of the digital generation, including the integration of technology and digital media as an essential component.

Conversely, a minority of participants reported having completed a web-based Japanese language exam at their school. This remark suggests a deficiency in school facilities to facilitate digital-oriented Japanese language learning activities. To enhance the learning experience of digital natives, help from the previous generation (digital immigrants) is essential in facilitating learning activities, as discussed in the preceding paragraph.

The questionnaire results regarding participants' feelings about using the "shiguru" application in the Japanese language competition indicated that 96% of responses were positive, with the majority of answers being very good or good. 92% of participants expressed hope and optimism for the future development and general use of the application.

Participants mostly cited ease of use, engaging images and music, the ability to independently assess language skills, and other factors as reasons for their expectation that the "shiguru" application will be widely utilized. Below are remarks from competitors in a Japanese language competition who utilized the "shiguru" application.

The answer is more assured and immutable compared to using GForm. Respondent 1 expressed optimism about the application's ability to facilitate proper answers for pupils due to its incorporation of listening components. Respondent 13 finds the tool useful, easy to use, and appreciates its intriguing features that support visual and auditory content. Participant 19

"Shiguru" application for enhancing digital exam experience

The Shiguru program serves as a virtual learning environment that incorporates technical advancements to cater to the evolving trends in

student learning methods, particularly the shift towards mobile learning and the growing need for remote education, often known as teleeducation. This dynamic learning method, together with the anticipated growth of teleeducation, necessitates preparedness to address contextual factors. The Shiguru application was developed and evaluated to assess learning requirements, particularly focusing on exam preparation. This was investigated during a Japanese language competition conducted by PGBJ in the Jabodetabek area.

Advantages of adopting shiguru for Japanese language competitions include its simplicity, efficiency, cost-effectiveness, and accuracy, as well as its user-friendly and modern interface. It is suitable for competitions conducted in various places.

The research team emphasized the advantage of Indonesia's archipelagic geographical situation, pointing out that current activities are concentrated in one location. In the future, the "shiguru" application will enable tournaments to be simultaneously conducted in multiple regions.

Japanese Language Competition experience of digital natives

According to table 1, participants did not encounter substantial challenges in the pre-test while signing in and logging into the program. This suggests that pupils, who are considered digital natives, can acquire information rapidly and adjust effortlessly. According to Hameed, Mellor, Badii, Patel, and Cullen (2008), digital natives prefer receiving information rapidly and adapting to new technologies.

Using visuals in the form of audio and illustrations in the program is believed to provide real-world context, which can increase players' attention. This is evident from the quantity of participants who provided favorable feedback on the images and sounds. Participants noted that school exams seldom include listening-based questions. Participants were highly

enthusiastic when working on listening questions that were supported by illustrations.

CONCLUSION

Behaviorism, cognitive, and constructivism learning theories all concur that engaging students actively and fostering connections to learning activities are effective ways to facilitate learning and ensure students grasp the significance of the activities. The author of this study acknowledges the significant importance of technology in learning and its connection to the behavior, cognitive processes, and learning methods of digital natives. It is important that the technology utilized can engage digital natives in the learning process, fostering a sense of connection and meaning.

Educational institutions must adapt to suit the learning requirements of digital natives based on the findings of this research. Every young person has the right to grow up digitally, as behaviorism, cognitivism, and constructivism suggest that a person's behavior is influenced by how they spend their time from childhood to adolescence. The brains of digital natives, who were raised with computers, electronics, and digital devices, are wired differently from those of prior generations. The research findings indicate that digital natives like to learn via media that they are familiar with, understand, and enjoy.

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