

## Learning Dental Vocabulary in Japanese Using Artificial Intelligence-Based Animated Media

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### ABSTRACT

Innovation in educational media, particularly in language acquisition, has been driven by the rapid growth of digital technology. The purpose of this project is to create an animated educational video about Japanese terminology related to oral and dental health using artificial intelligence. This study uses a Research and Development (R&D) approach based on the ADDIE model, limited to the analysis, design, and development stages. The result of this study is an animated educational film that combines text, audio, and visual components to aid the acquisition of specialized vocabulary. According to the development process, learning materials can become more engaging and interactive by incorporating multimedia and artificial intelligence components, making them more suitable for contemporary learners. In conclusion, this study successfully produced an educational media product with the potential to support the understanding of specialized Japanese vocabulary. The impact of this research lies in providing an innovative alternative learning medium that can be utilized to improve the quality of language learning, especially in a professional context.

**Keywords:** *Learning media, Learning video, Artificial Intelligence.*

### INTRODUCTION

The rapid advancement of digital technology in the twenty-first century has fundamentally altered the nature of education. One of the most notable advances is the use of video-based learning materials, including animated instructional movies, which can convey content in a more engaging and dynamic way. Mastering vocabulary is crucial for enhancing communication abilities when learning a language, particularly Japanese. To meet professional standards, such as those in the dentistry and oral health areas, learners must understand particular language in addition to basic vocabulary. YouTube is one of the entertaining interactive components that are necessary for optimal learning, according to Setiana & Rahayu (2024) YouTube is seen to have a beneficial effect, specifically boosting drive to learn. The incorporation of digital platforms such as YouTube enhances learning accessibility and flexibility by allowing student to access information at any time and from any location (Tutisari et al., 2020).

The importance of digital media in language learning has been shown in earlier research. Video-based learning materials can enhance learning effectiveness and suit various learning styles (Agustini & Ngarti, 2020). Perdana & Hidayati (2024) found that technology-based learning reduces the use of monotonous lecture methods and increases learner engagement. Research by Salma et al. (2025) revealed that short video platforms such as YouTube Shorts, TikTok, and Instagram Reels make Japanese learning more interesting and accessible. Anwar et al. (2020) additionally emphasized how well-known YouTube channels like Yuko Sensei and Nihongo no Mori promote learning Japanese. Furthermore, Septipani & Wijayanti (2023) discovered that students proficiency with specialist Japanese terminology is still comparatively poor, suggesting a disconnect between educational resources and professional requirements.

Although these studies emphasize the effectiveness of digital media, most of them focus on general vocabulary learning and do not specifically address the development of animated learning media for specialized vocabulary, particularly in the field of dental and oral health. Therefore, this study extends previous research by focusing on the development of AI-based animated instructional media for specialized Japanese vocabulary.

This study aims to develop an AI-based animated instructional video focusing on Japanese dental vocabulary. The research employs a Research and Development (R&D) method using the ADDIE model, which includes the stages of analysis, design, and development. The study focuses on producing a learning media product that integrates visual, audio, and textual elements to support the learning of specialized vocabulary.

### **LITERATURE REVIEW**

In order to effectively transfer knowledge during the educational process, learning media is essential. Video based media has been widely acknowledged as an efficient method to improve learners engagement and comprehension in the context of digital learning. Agustini & Ngarti (2020) claim that by accommodating different learning types, such as visual and auditory learners, instructional videos can increase learning efficiency. Perdana & Hidayati (2024) who claim that technology based media might lessen tedious teaching techniques and boost students motivation, provide more evidence for this. These results suggest that video-based learning resources have significant pedagogical value in contemporary education.

Vocabulary mastering is a crucial aspect of language development that has a direct impact on communication skills. According to Maysarah & Setiana (2021), language is a tool for communicating ideas, and a lack of vocabulary can be a significant obstacle for students. Because Japanese has several writing systems, including Hiragana, Katakana, Kanji, and Romaji, learning the language becomes more difficult (Sinta et al., 2020). As a result, sufficient learning materials are required to aid with gaining vocabulary particularly when it comes to simplifying difficult and abstract concepts.

Additionally, the potential of learning media has increased due to the integration of digital platforms and developing technology. Students can interact with materials outside of the classroom and have flexible access to instructional content because to platforms like YouTube (Tutisari et al., 2020). Furthermore, the application of artificial intelligence (AI) in the creation of educational materials has demonstrated a great deal of promise for enhancing productivity, originality, and content quality (Suanrti, 2024). Learning can be made more engaging by using AI based techniques to create interactive and visually appealing educational media.

However, most prior research has concentrated on general language learning rather than specialist vocabulary, despite the widespread use of digital platforms and video-based learning. The need for more specialist learning tools is highlighted by research by Septipani & Wijayanti (2023), which shows that learners understanding of specialized Japanese terminology is still limited. In order to bridge the gap between general language learning and professional language requirements, this work expands on earlier research by creating AI based animated instructional materials tailored for Japanese dentistry terminology.

### **METHODOLOGY**

The ADDIE model is used in this study's Research and Development (R&D) methodology. Research and development, which includes the stages of analysis, design, development, implementation, and evaluation, is a research methodology used to create a product and evaluate its efficacy (Okpatrioka, 2017). Nevertheless, this research is restricted to the stages of analysis, design, and development. Through a survey of the literature, a book analysis of Atarashii Ha no Kyoukasho, and documentation from a year-long internship at a Japanese dentistry clinic, the analysis stage was carried out to determine the needs of the learners. Finding gaps between student's requirements and the resources available for learning is the goal of this stage. Planning the educational media in the form of animated movies and creating prompts for AI based content generation were part of the ideas of multimodal learning, the design incorporates textual, audio, and visual components. Using artificial intelligence tools like Animation Lab and Leonardo, the development stage concentrated on creating the animated instructional film. An animated film with Japanese dental vocabulary is the end result.

One of the instructional design approaches that acts as a basic framework for creating efficient learning platforms or media is ADDIE. Because of its methodical and procedural features, this framework is highly well liked and extensively used in the creation of multimedia applications. Developers may handle learning difficulties in phases, from need analysis to final evaluation, due to its dynamic yet structured framework, which guarantees that the final media is both technically sound and tailored to learning needs. The process consists of five interrelated stages, namely: (1) Analyze, (2) Design, (3) Development, (4) Implementation, and (5) Evaluation. Through these stages, media development is carried out gradually to minimize errors (Galindra et al., 2023).

In this study, the development of video learning media on Japanese dental vocabulary was based on secondary data sources. Secondary data sources are data sources that are obtained indirectly, rather than directly, through existing sources such as books, journals, articles, documents, and other sources. The researcher used the book *Atarashii Ha no Kyoukasho* “新しい歯の教科書” (New Dentistry Textbook), published in April 2025, and several documents from the place where the researcher did an internship at 山口歯科クリニック.

The following are the steps in the ADDIE model:

#### 1. Analyze

At this stage, the researcher examined the issues that formed the basis for the creation of this instructional video. After further review, the researcher needed to examine the feasibility of the instructional video that the researcher would create. The sources used by the researcher in making this instructional video came from documents in the form of notes obtained from an internship at 山口歯科クリニック (Yamaguchi Dental Clinic) that the researcher conducted for one year and a Japanese medical textbook entitled *Atarashii Ha no Kyoukasho* “新しい歯の教科書” (New Dentistry Textbook). This vocabulary video was created because, based on what the researcher has read, Japanese vocabulary in specialized fields is still rarely discussed or studied. And in this era of digitalization, the creation of images or videos using artificial intelligence is booming. Therefore, researchers created this learning media using artificial intelligence to make animated videos about dental vocabulary.

#### 2. Design

At this stage of the design process, researchers design videos based on their analysis. The design process that researchers will carry out at this stage is as follows:

a. Organizing the material flow.

b. Designing images, video scripts, character designs, music, voiceovers, and educational videos using artificial intelligence (AI).

c. Determining the channel name and educational video titles.

#### 3. Development

At this stage of development, researchers began developing and compiling video learning media for Japanese vocabulary in the field of dentistry. At this stage, researchers compiled vocabulary material, video scripts, and visual and audio designs in line with the objectives of this study. The learning videos that were created were then uploaded to YouTube as learning media to be used in the study.

## DISCUSSION

The result of this study is an animated instructional video designed to facilitate the learning of Japanese dental vocabulary. This media focuses on providing specialized vocabulary that is often overlooked in general Japanese language learning. In the analysis stage, it was found that many learners still struggle to understand specialized vocabulary, particularly in professional fields such as dental health. This result is in line with earlier studies showing that general vocabulary continues to predominate in Japanese language learning resources (Septipani & Wijayanti, 2023). This situation emphasizes the need for learning materials that are more contextualized and customized.

During the design phase, the media was created as an animated video by combining text, audio, and visual components. It has been demonstrated that video-based learning resources improve student engagement and support a variety of learning preferences (Agustini & Ngarti, 2020). Furthermore, the application of AI enables more creative and effective content production (Suanrti, 2024). The finished result during the creation phase is an animated video

with text, narration, and accompanying images that includes dental language. Multimedia learning theory, which contends that combining various components can enhance student's comprehension, is consistent with this combination. As a result, the created media could facilitate more efficient acquisition of specialist vocabulary.

However, this study has not yet been performed on students and is restricted to the developmental period. As a result, it is currently impossible to quantify its efficacy in enhancing language mastery.

## CONCLUSION AND RECOMMENDATION

An animated instructional movie for Japanese dental terminology has been effectively created by this study using artificial intelligence. The media combines textual, audio, and visual components to make learning more dynamic and interesting. The created material may help students comprehend specialized vocabulary more successfully. Nevertheless, this study is restricted to the development phase and does not include implementation or assessment. Therefore, it is advised that future studies carry out empirical testing to assess the created media's efficacy in actual learning environments. Further development can also be extended to additional specialized vocabulary domains.

## REFERENCES

- Agustini, K., & Ngarti, J. G. (2020). Pengembangan Video PemAgustini, K., & Ngarti, J. G. (2020). Pengembangan Video Pembelajaran Untuk Meningkatkan Motivasi Belajar Siswa Menggunakan Model R & D. *Jurnal Ilmiah Pendidikan Dan Pembelajaran*, 4(April 2020), 62–78. <https://ejournal.undiksha.ac.id/index.php/JIPP/article/download/18403/14752>
- Anwar, K., Aibonotika, A., & Budiani, D. (2020). Japanese Language Learning With Youtube. *JOM FKIP*, 7, 1–9.
- Cynthia Octavania Putri Salma, Icha Maulidya, Adli Farizi, Glorian Hilarius Kiantin Beda, & Humannisa Rubina Lestari. (2025). Efektivitas Pembelajaran Bahasa Jepang Melalui Video Singkat (YouTube Shorts, TikTok, dan Reels). *Semantik : Jurnal Riset Ilmu Pendidikan, Bahasa Dan Budaya*, 3(3). <https://doi.org/10.61132/semantik.v3i3.1717>
- Galindra, G., Adnan, F., & Putra, J. A. (2023). Pengembangan Game Visual Novel Sebagai Media Pembelajaran Bahasa Inggris Menggunakan Metode ADDIE. *INFORMAL: Informatics Journal*, 8(1), 76. <https://doi.org/10.19184/isj.v8i1.31540>
- Maysarah, D., & Setiana, S. M. (2021). Tanggapan Responden Terhadap Media Pembelajaran Alternatif Katagana. *MAHADAYA: Jurnal Bahasa, Sastra, Dan Budaya*, 1(1), 33–42. <https://doi.org/10.34010/mhd.v1i1.4841>
- Okpatrioka. (2017). Metode Penelitian dan Pengembangan (Research and Development). *Alfabeta*, 9(2), 724.
- Perdana, S. (2024). Video Dalam Proses Pembelajaran: Peran Pentingnya Sebagai Media Pembelajaran. *Biogenersi*, 9(1), 628–634.
- Putu Cicilia Septipani, & Wijayanti, A. A. R. (2023). Pengenalan Bahasa Jepang Khusus Medis bagi Calon Caregiver pada Kelas Peminatan Bahasa Jepang di STIKes Buleleng. *Stilistika : Jurnal Pendidikan Bahasa Dan Seni*, 12(1), 39–49. <https://doi.org/10.59672/stilistika.v12i1.3162>
- Setiana, S. M., & Rahayu, A. B. (2024). Utilization of Social Media as Interactive Learning Media: Tiktok. *Atlantis*, 168–174. [https://doi.org/10.2991/978-2-38476-269-9\\_15](https://doi.org/10.2991/978-2-38476-269-9_15)
- Sinta, T., Silang, T., Stovia, A., & Firmansyah, D. B. (2020). Peningkatan Penguasaan Kosakata Bahasa Jepang dengan Menggunakan Media Teka-Teki Silang\_AnggitaStovia & Dian Bayu Firmansyah. *CHI'E*, 8(2), 77–84.
- Suanrti, S. (2024). Transformasi Pembelajaran Digital Dan Artificial Intelligence. *Jurnal Perspektif*, 17(1), 85–96.
- Tutisari, R. P., Laminto, N. K., & Nazri, K. (2020). Pemanfaatan Youtube Sebagai Media Pembelajaran Bagi Mahasiswa di Tengah Pandemi Covid-19. *Jurnal Komunikasi, Masyarakat Dan Keamanan*, 2(2), 1–15.

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Niezalya Nurul Haq is a student of Japanese literature. Her academic interests focus on Japanese language education. She is also interested in integrating digital media and animation. In addition to her academic activities, she has experience working in the dental field as dentist assistant, which inspires her research on Japanese dental

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