

Internet Video Generation- The Differences in Children's Education for Dialectal Sustainability Through the Utilization of Nursery Rhyme Music Videos

Hsi-Jen Chen

Department of Industrial Design, National Cheng Kung University, Taiwan.

Chian-Fan Liou*

Department of Industrial Design, National Cheng Kung University, Taiwan. & Department of Visual Communication Design, Southern Taiwan University of Science and Technology, Taiwan.

Ya-Zhu Zhang

Department of Visual Communication Design, Southern Taiwan University of Science and Technology, Taiwan.

Corresponding author. Tel.: +886 6 2533131 #7301; E-mail: sss103103@stust.edu.tw

ABSTRACT: As wireless internet and mobile devices become ubiquitous, mainstream audiovisual content quickly spreads worldwide. Children are familiar with various popular videos and TikTok music online, yet they often lose their understanding of and connection to their own local culture for their heritage's continuity. Taiwan "Development of National Languages Act" Viewing Min-Nam language as a Tool for the Continuation of Indigenous Cultural Heritage. But with its dwindling usage among the younger generation, this dialect signifies not only a loss of language but also a rapid disappearance of our cultural heritage. Reviving language listening and reading habits, numerous studies advocate for starting from childhood, using nursery rhymes and audiovisual content to familiarize and learn the language. This study attempts to produce four different forms of nursery rhyme music videos. From the perspectives of multimedia education and cognitive load, we seek suitable methods for children's dialectal music and video education. Throughout the process, the Delphi method, focus groups, SAM questionnaires, and ANOVA analysis were employed. Through practical implementation and observation in educational settings, the effectiveness differences of various audiovisual forms were analyzed, along with recommendations. Hope to start the sustainable inheritance of local languages and cultures from children's education.

1 INTRODUCTION

As technology advances and becomes more widespread, people's lifestyles are undergoing significant changes. The rapid evolution of wireless networks and mobile devices has led to a new way of living for newer generations. After the Baby Boomers generation that appeared following World War II, followed by Generation X and Generation Y, we ushered in Generation I. Coined by Jean M. Twenge from the U.S. in 2017, "Generation I" refers to those who were born in an age brimming with networks and digital platforms. While Generation Y can be considered the generation who experiences a "seamless transition into the network and digital age" in all respects, they are still, strictly speaking, "digital immigrants" compared to today's Generation I. Despite early exposure to network and digital technology, Millennials are considered a generation that has transitioned into the network and digital age from a more traditional lifestyle (Jean M. Twenge, 2017). From a psychological perspective, each generation constitutes a quasi-spectrum group based on similar habits and beliefs. However, digital

or networked-based living has impacted all groups, with every generation living "online" to some degree. Even the Baby Boomers, furthest from Generation I, have been rapidly adapting to modern life (including sharing their lives and keeping in touch with family and friends online) (T.-H. Tsai, 2014). According to the 2019 statistics released by Taiwan's National Development Council, 89.9% of individuals between 60 and 64 years old own a mobile phone compared to 63.2% of individuals 65 and above. The percentage of group members using social media, news, and communication applications has reached 80% and is experiencing a consistent upward yearly trend (H.-J. Lai, 2022). This suggests that the Internet has become a daily necessity for people from all generations.

As the Internet becomes a central part of modern life, it undoubtedly provides convenience and several benefits, including access to information, everyday assistance, and entertainment. The Internet has streamlined global communication and accelerated progress in various fields. However, alongside these advantages come disadvantages. The widespread dissemination and adoption of popular languages and media content can dilute local cultures and languages, threatening their diversity

and sustainability. Professor Eiríkur Rögnvaldsson from the University of Iceland coined the term “digital extinction,” which indicates that a language will hinder the preservation and development of Indigenous languages when it evolves into a mainstream Internet language and tool. Currently, 21 languages in Europe are at risk of extinction. Furthermore, many Icelandic children converse in English but do not understand their native language (T.-C. Tsai, 2019). Within Taiwan’s unique historical context, the government prioritized Chinese as the official language and English as the second official language, resulting in negligence regarding the diversity of local languages over the years. In the past, students speaking dialects at schools in Taiwan would be punished. It was not until 2019 when the Development of National Languages Act was introduced that the Taiwanese government began emphasizing the balanced development and revitalization of languages. Considering this shift, the loss of Indigenous languages is severe, whether due to historical factors or modern Internet trends.

Taiwan has been a melting pot of diverse ethnic groups for several years. However, compared to Indigenous languages and Hakka Chinese, which have long been valued, the Minnan language has often been overlooked despite its widespread usage by senior individuals. It was not until July 2019 that the role of the Minnan language was solidified as a tool for passing down local cultures. In July 2019, the first Minnan TV channel, “PTS Taigi,” was established because of the Development of National Languages Act. This act encouraged using the Minnan language at all levels, from the central to local governments, from the government to the general population, and from businesses to individuals. This move was aimed at fostering a language-friendly environment and ensuring the co-existence of endangered Indigenous languages and cultural diversity. The most effective approach to language revitalization begins with daily life, immersing children in scenarios where they will become familiar with a language through listening, reading, and memorization while imitating pronunciation and usage scenarios. This process facilitates language integration into children’s daily lives and learning journeys (T.-C. Tsai, 2019; Allard, R. & Landry, R., 1992). However, in addition to its widespread adoption by seniors in Taiwan, the Minnan language has experienced a sharp decline in its usage rate among middle-aged adults and children, with the decline becoming more pronounced in younger age groups.

While the government and television stations have tried to revive Minnan dialects, the rise of streaming platforms in the Internet-dominated era has overshadowed traditional TV programs due to their high popularity and accessibility. For example,

the American nursery rhyme *Baby Shark* has garnered 14.1 billion views since its upload onto YouTube (Schreiber, T. T. V. et al., 2020). Nursery rhymes are commonly used in language instruction for children. Due to simple and repetitive vocabulary, content relatable to daily life, such as catchy tunes and nursery rhymes, is easy to memorize. Furthermore, in addition to teaching vocabulary and grammar, nursery rhymes contribute to learning pronunciation and phonetics, facilitating a more natural and comprehensive language acquisition process (J.-T. Wang & Y.-C. Wang, 2007).

Multimedia learning is a teaching approach familiar to students. Yet, prior studies have proposed differing combinations. Some scholars suggest that presenting diverse types of information yields optimal results. Others have suggested that excessive information can lead to cognitive overload. Furthermore, it is widely recognized that there are appropriate teaching materials for different content and target audiences (Mayer, Richard E. et al., 2005; Y.-S. Chen et al., 2000; H.-F. Chen, & Y.-W. Fan, 2000). Thus, there is no universal standard or consensus regarding learning. Factors such as emotional triggers and learning motives should be considered. Due to space constraints, this paper does not provide a detailed discussion.

This study aimed to produce and disseminate relevant multimedia teaching materials through online platforms to sustain the use of Minnan dialects. We selected local nursery rhymes as the study scope. Through literature exploration and classification, we classified multimedia teaching materials into two categories: Video-based and digital teaching materials. The video-based teaching materials encompass picture book animations, computer animations, stop-motion animations, and live-action videos. In contrast, digital teaching materials include games, audiobooks, interactive books, virtual reality (“VR”), augmented reality (“AR”), and live-streaming (Tom Gasek, 2017; S.-W. Kuo, 2008; C.-Y. Tseng, 2018; S.-Y. Lu et al., 2014). We began with video-based materials due to their high popularity and accessibility online. By exploring music videos (“MV”) combined with nursery rhymes, we attempted to determine the most effective form to facilitate children’s learning of the Minnan language.

2 METHODS

2.1 Determining the video format

The first step involved choosing from existing Minnan nursery rhymes. We developed a Delphi expert interview based on the four types of multimedia teaching materials: picture book animations, computer animations, stop-motion

animations, and live-action. The expert panel comprised five members: one animation professor, two elementary teachers, one children’s animation designer, and one Minnan language expert. After conducting independent and open-ended interviews and item evaluations, four video forms were determined: Sample A = animation; Sample B = static picture book; Sample C = live action; Sample D = subtitles only (see Table 1). However, computer and stop-motion animations were classified under two production form categories in the literature. Using the Delphi method led to the finding that the distinction resulting from production form differences did not significantly affect children who merely enjoy animations. Therefore, they were generally referred to as animations. Additionally, the experts emphasized the importance of considering the future cost and accessibility of producing teaching materials. They proposed adding a category focusing only on subtitles to facilitate comparative analysis. If there are no significant differences between subtitle only MVs and MVs of other types, the chances of practical production will be higher. This suggests that preschool and language teachers can produce teaching materials independently without needing assistance from professional designers, thus lowering production expenses.

Table 1. Four Different Types of Nursery Rhyme MV Samples

Sample	Video Type	Description
A	Animation	A complete animated video incorporating dynamic scenes and camera techniques.
B	Static picture book	A picture book video showcasing complete illustrations through single-page transitions.
C	Live action	A recorded and edited video featuring real actors in natural settings.
D	Subtitles only	A presentation of simple monochromatic background and text through page switching.

2.2 Selecting and producing the nursery rhyme sample

Before selecting the nursery rhyme sample, we conducted a focus group interview with seven experts, including two elementary teachers, two Minnan language experts, two children’s animation designers, and the researcher of this study. During the discussion, most participants held that nursery rhymes familiar to children might be unsuitable for this study. Considering children’s differences in family backgrounds, some may be familiar with common Minnan nursery rhymes, while others might not. This disparity may impact exploring the “differences in outcomes resulting from using different forms of media.” Therefore, we opted for the nursery rhyme album *Cooking the Moonlight* by

Mr. Ji-Lang Tseng, an acclaimed creator in the field. Among the 12 nursery rhymes in the album, the nursery rhyme *Dozing Off* was selected as the sample due to its engaging nature, relatability to daily life, rhythmic qualities, and moderate difficulty.

The nursery rhyme *Dozing Off* primarily depicts the tedious process of fishing, where the fisherman grows tired and dozes off, only to wake up to find no catch. During the focus group interview, some members noted that fishing might not be a universal childhood experience. However, others argued that fishing in this song does not necessarily refer to the literal act of fishing. Furthermore, they suggested that fishing should be a familiar concept among Taiwanese children as it is a common amusing activity occurring in night markets, where children can fish for toys, real fish, shrimp, or balloons. Additionally, the experts found the rhyme’s lyrics are appropriately simple, do not contain abstract elements or concepts, and feature a well-specified character and action. Upon thorough discussion and comparison, all members agreed to select this nursery rhyme as the sample.

First, the research team created a storyboard based on the context of the lyrics to establish the overall setting. Once the scenes and characters suitable for filming were determined, Sample C (live action) was filmed. Sample A (animation) was produced based on the character, settings, color scheme, and performances in Sample C. Following the completion of Sample A, we referenced key frames to facilitate the creation of pictures in a picture book style, which were used to compile Sample B (a static picture book). This sequential production process was aimed to minimize content differences among the samples. While sample videos differed in medium form, efforts were made to maintain consistency as much as possible regarding content, camera movements, shooting angles, performance intensity, and overall color tone, thus focusing primarily on the form difference. Among the four samples, Sample D was the exception, as it was subtitled only. Compared to Samples A, B, and C, which involved visual design, Sample D was designed using a simple black background with white text. Considering the potential vocabulary challenges children may encounter, each word representing the lyrics was marked with a phonetic symbol to facilitate children’s reading and comprehension, thus reducing potential errors caused by literacy level differences.

2.3 Experiment and questionnaire design

To ensure the experiment vividly resembled real-life scenarios, we used standard classroom equipment, including projectors and audio systems, instead of one-on-one computer screens typically used in computer classrooms. This is because

conventional language courses are conducted in standard classrooms, with computer classrooms reserved for specific software-related courses. Hence, a communal learning environment was adopted to better imitate an actual teaching environment. The study subjects were children aged 7 to 11 at the concrete operations stage. Throughout the process, the researcher verbally explained the questions to ensure the subjects' comprehension. At the same time, the class teacher managed order to prevent the children from influencing each other's opinions.

The questionnaire comprised two parts. Part I tested the subjects' prior knowledge to ensure the subjects of the four groups had similar Minnan language proficiency. In contrast, Part II was designed to survey the children's perceptions after they watched the samples. The questionnaire was developed using SAM's graphical representation and a five-point scale ranging from negative to positive emotions, thus providing the subjects with intuitive and direct options when they completed the questionnaire. A total of 120 questionnaires were collected, with three deemed not fully completed and thus excluded. Hence, 117 questionnaires were retained for analysis.

Part I, addressing prior knowledge, comprised four items. Item 1 was "Assess your proficiency in the Minnan language: I can use the Minnan language; I can listen to the Minnan language only; I do not understand the Minnan language." The remaining three items included three phrases: "Good morning!" "Are you full?" and "Mobile phone." For the latter three items, audio recordings in the Minnan language were played, and the subjects were asked to select the correct answer. Considering potential cognitive errors due to differences in subjects' subjective judgments in Item 1, the three common phrases were chosen to test the subjects' language proficiency. Part II focused on three constructs: emotional assessment, learning motives, and learning outcomes. Due to space constraints, this study focused on learning motives. We explored the differences in the feasibility of using these four medium forms of nursery rhyme MVs in education to promote the sustainable development of dialects among children.

3 ANALYSES AND CONCLUSIONS

For the 117 questionnaires successfully collected, 29 subjects were enrolled to participate in Sample A, 30 in Sample B, 30 in Sample C, and 28 in Sample D. For Part I, we conducted a Chi-squared test among the four groups to assess the subjects' prior knowledge. The Chi-squared value of Item 1 was 0.052, indicating no significant difference, though it approached a level of significant difference. For

Items 2, 3, and 4, the values were 0.103, 0.238, and 0.378, respectively, suggesting no significant differences. Notably, the children's subjective assessments of their proficiency in the Minnan language were not as objective or accurate as their responses to the remaining three items. This finding suggests a notable subjective error that caused the subjects in the four groups to appear different. However, the overall findings assert that there were no significant differences in the prior knowledge regarding the Minnan language among the four groups. This suggests that the four groups of subjects were similar in their previous knowledge of the language, validating subsequent comparisons among them.

In Part II of the questionnaire, we analyzed the variance ("ANOVA") regarding the significance of differences among the four groups. Furthermore, the statistical findings were shared among the five experts for a focus group discussion. The five experts included two elementary teachers, one producer of Minnan language programs, one animation professor, one children's animation designer, and the researcher of this study. This section presents the statistical findings and insights offered by experts in the focus group.

The learning motive construct included four items. Each was rated on a scale from one to five points, with "1" indicating the lowest and "5" the highest level of agreement. The items are detailed below:

- (1) I believe this video can aid me in learning the Minnan language.
- (2) It brings me joy to learn the Minnan language by watching this video.
- (3) I can fully concentrate on the entire video.
- (4) I would actively look for this video to watch.

The Item 1 ANOVA test results indicate a significant difference: $F(3, 113) = 17.545$, and $P < 0.001$. The post hoc comparison of Tamhane's T2 Test suggested no significant differences among Sample A ($M = 3.93$, $SD = 1.099$), Sample B ($M = 4.03$, $SD = 0.614$), and Sample C ($M = 3.96$, $SD = 1.188$). However, they all significantly outperformed Sample D ($M = 2.21$, $SD = 1.449$). The focus group's five experts unanimously agreed that the subtitles only videos can lead to boredom and distraction among children, failing to capture their attention and interest. Two experts stressed the importance of attractiveness. According to them, without visually engaging scenes, children would not watch the videos, let alone learn the Minnan language. The other three experts noted that regardless of the video form, the visuals, which function as illustrations in conventional textbooks, are aimed at assisting children in grasping context and practical usage. This can reduce the cognitive load of imagination and minimize the likelihood of

misunderstanding the context. They also noted that children will be placed under additional burdens if they are required to imagine the scenes independently.

The Item 2 ANOVA test result indicates a significant difference: $F(3, 113) = 12.562$, and $P < 0.001$. The post hoc comparison of Tamhane's T2 Test revealed that Sample A ($M = 3.65$, $SD = 1.203$) significantly outperformed Sample D, was significantly inferior to Sample B, and exhibited no significant difference compared to Sample C. Sample B ($M = 4.43$, $SD = 0.817$) significantly outperformed Samples A and D and showed no significant difference compared to Sample C. Sample C ($M = 3.76$, $SD = 1.135$) significantly outperformed Sample D and showed no significant differences compared to Samples A and B. Sample D ($M = 2.53$, $SD = 1.527$) was significantly inferior to Samples A, B, and C. The rankings are as follows: $B > A$; $A, B, \text{ and } C > D$. Sample C showed no significant differences compared to Samples A and B. After a thorough focus group discussion, the findings were summarized as follows: The static picture book in Sample B achieved a higher score in terms of happiness. This was mainly attributed to its simple scenes, a form familiar to children, regardless of whether it was a physical picture book or a static video. With the content being the same as that of other videos, the familiarity derived by the children from this medium resulted in a higher sense of joy among them (lower cognitive load pressure). In contrast, the animated and live-action medium contained more visual information and details. This potentially increased cognitive load pressure on the children's learning, thus impacting their expression of happiness. The subtitles only medium was inferior to the other three medium forms in terms of happiness derived by the children. This is likely because it was less visually appealing and engaging.

The Item 3 ANOVA test result indicates no significant difference: $F(3, 113) = 1.621$, and $P > 0.05$. The post hoc comparison of the least significant difference (LSD) test suggested no significant differences among the four groups despite their performance variations. The descriptive statistics of the four groups showed a mean of 4.35 and a standard deviation of 0.958. The mean and standard deviation for each group were as follows: Sample A ($M = 4.17$, $SD = 1.167$), Sample B ($M = 4.60$, $SD = 0.813$), Sample C ($M = 4.46$, $SD = 0.681$), and Sample D ($M = 4.14$, $SD = 1.078$). The subjects in all groups could observe the videos, with no significant differences found. Upon analysis within the focus group, the findings led to three conclusions. 1. The content of the nursery rhyme sample was new to the children, sparking their curiosity and helping them focus. 2. As they were previously taught using textbooks and flashcards, the MV-aided teaching form was novel to the children

and enhanced the appeal of the videos. 3. Since the videos were played in a classroom at school, children may have felt "a sense of obligation to complete the task assigned by the teacher," which helped them concentrate on watching the videos.

The Item 4 ANOVA test indicates no significant differences: $F(3, 113) = 1.413$, and $P > 0.05$. The post hoc comparison of Tamhane's T2 Test suggested no significant differences among the four groups despite variations in their performance. The descriptive statistics of the four groups exhibited a mean of 3.52 and a standard deviation of 1.342. The mean and standard deviation for each group was as follows: Sample A ($M = 3.82$, $SD = 1.415$), Sample B ($M = 3.73$, $SD = 1.014$), Sample C ($M = 3.26$, $SD = 1.201$), and Sample D ($M = 3.28$, $SD = 1.652$). The focus group determined the following aspects during the analysis. On the one hand, most children were unfamiliar with the Minnan language; they felt it was more like a subject or assignment, akin to foreign language or mathematics they have studied at school. Hence, the children were not interested in actively learning this language unless prompted by exams or practical needs. On the other hand, in addition to classroom or task requirements, the children may have more entertainment options available online during their leisure time, such as game-related videos or entertainment-oriented animations. Therefore, options inherently perceived as learning rather than entertainment activities may not be their top choice for active queries. However, some experts argued that although the mean of 3.52 was not significant, it was slightly higher than the median value, which can be interpreted as being better than "average." From the perspective of educational digital materials, the performance of this item was not too bad. However, from an entertainment perspective, there is room for improvement.

Based on the above, nursery rhyme MVs prove instrumental in promoting the sustainable development of Minnan language education among children. Particularly, nursery rhyme MVs can garner a higher level of attention and more positive emotional responses when used in classroom environments. Concerning the impact of different media types on students' learning motives, the visual aids significantly outperformed pure text. Regarding the three medium forms with visual aids, static picture books were the most preferred; they led to a higher level of enjoyment among the children during their learning processes, followed by the animated and live-action medium forms. Beyond classrooms, however, these videos may not inherently motivate children to search for and watch them on their own initiative. Therefore, although they demonstrated positive effects in teaching environments, their appeal in other aspects should be enhanced and integrated into children's daily lives to achieve

sustainable development and revitalize the Minnan language. Furthermore, due to constraints regarding time and the scope of this study, future studies should incorporate emotional assessments and memory retention constructs for more comprehensive discussions and analyses.

4 REFERENCES

- Jean M. Twenge, 2017. *iGen: Why Today's Super-Connected Kids Are Growing Up Less Rebellious, More Tolerant, Less Happy--and Completely Unprepared for Adulthood--and What That Means for the Rest of Us*. Atria Books, United States.
- T.-H. Tsai, 2014. Design and Development of an Online Platform and Innovative Social Networking Services for Older People. *Journal of Gerontechnology and Service Management*, 2(3), 281-296.
- H.-J. Lai, 2022. Integrating Digital Media Literacy into Courses for Older Adults: An Analysis of Instructors' Perspective. *Journal of Gerontechnology and Service Management*, 10(3), 125-138.
- T.-C. Tsai, 2019. "Kuochia yüyen fachan ts'aoan" tui t'aiyü chiaohsüeh tē yinghsiang. *Whale of Taiwanese literature*, 208, 78-82.
- Allard, R., & Landry, R., 1992. Ethnolinguistic vitality beliefs and language maintenance and loss. *Maintenance and loss of minority languages*, 1, 171-195.
- Schreiber, T. T. V., Kovačević, V., & Malada, D., 2020. "Baby shark" as a social and artistic phenomenon. *Universal Journal of Educational Research*, 8(10), 4449-4458.
- J.-T. Wang & Y.-C. Wang, 2007. Language Development and Whole Language Teaching To Early Childhood Children. *Bulletin of Education Research*, 1(1), 51-86.
- Mayer, Richard E., Hegarty, Mary Mayer, Sarah Campbell, Julie, 2005. When Static Media Promote Active Learning: Annotated Illustrations Versus Narrated Animations in Multimedia Instruction. *Journal of Experimental Psychology: Applied*, 11(4), 256-265.
- Y.-S. Chen, Y.-H. Chen, & Y.-H. Lin, 2000. Teachers' Experiences of Using Electronic Picture Books for Teaching Purposes Based on R. Mayer's Cognitive Theory of Multimedia Learning. *Curriculum & Instruction Quarterly*, 18(1), 31-58.
- H.-F. Chen, & Y.-W. Fan, 2000. A Study on the Impacts of Cognitive Load on Multimedia Learning. *Journal of E-Business(Information Management Research)*, 2(2), 45-60.
- Tom Gasek, 2017. *Frame-By-Frame Stop Motion: The Guide to Non-Puppet Photographic Animation Techniques*, Second Edition. CRC Press, United States.
- S.-W. Kuo, 2008. Preliminary Study on the Application of Augmented Reality in Museum Exhibition. *Technology Museum Review*, 12(4), 25-37.
- C.-Y. Tseng, 2018. Immersive experience of seamless virtual space: Virtual Reality. *The Elementary Education Journal*, 65(3), 105-120.
- S.-Y. Lu, W.-H. Hsieh, C.-C. Lo, & W.-C. Chang, 2014. The Context Analysis of the Utilization of 3D Camera Shots through Pixar Short Films. *Arts Review*, 26, 71-111.