The development of learning achievement in Chinese subjects by using Hanziwu program for grade 2 students, The Demonstration School Suan Sunandha Rajabhat University

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Abstract

This study aimed to (1) develop Chinese language skills in the topic Daily Activities (日常活动) using the Hanziwu program and (2) examine students' learning achievement before and after instruction with the program. The participants were 89 Grade 2 students from Suan Sunandha Rajabhat University Demonstration School in the 2025 academic year, selected through purposive sampling. The research instruments included (1) the Hanziwu program focusing on Chinese character stroke order, implemented through structured lesson plans, and (2) pretest and posttest achievement measures. Data were analyzed using mean scores, standard deviations, efficiency analysis, and a dependent samples t-test.

The results indicated that (1) Grade 2 students who learned Chinese character stroke order through the Hanziwu program demonstrated significantly higher posttest achievement than pretest achievement at the .05 level, with mean scores increasing from 3.55 to 9.03 and (2) the instructional efficiency of the Hanziwu-based lesson plans was 77.50/86.67, which approached the established 80/80 criterion. These findings suggest that the Hanziwu program is an effective instructional tool for enhancing Chinese character writing skills and improving learning achievement at the primary education level.

Keywords: Hanziwu program, learning achievement, Chinese character stroke order

1. Introduction

China's expanding global influence in politics, economics, trade, and technological innovation has increased the importance of Chinese language proficiency for international communication. With over one billion speakers worldwide, Chinese is distinguished by its logographic writing system, in which each character represents a syllable and conveys meaning through the integration of form, sound, and semantics (Xu, 2005). Effective communication is central to human activity, as individuals spend more time communicating than engaging in any other daily behavior (Wood, 2000). However, learning to write Chinese characters poses significant challenges for beginners due to the complexity of stroke order and the visual–semantic structure of characters, which require sustained and systematic practice.

Previous studies have emphasized that Chinese writing relies heavily on the form and structure of characters to convey meaning, making continuous practice essential for skill development (Songsa-acha, 1978). Despite this, traditional classroom instruction often provides limited opportunities for individualized and repetitive practice, particularly at the

primary education level. This gap highlights the need for technology-enhanced instructional tools that support flexible, interactive, and learner-centered practice. In response, this study explores the integration of Hanziwu, a specialized digital program designed to support Chinese character writing, Hanyu Pinyin, and tonal pronunciation. By examining its use in primary-level Chinese instruction, the study addresses the need for effective digital learning approaches to enhance foundational writing skills and prepare learners for internationally recognized proficiency standards such as the Hanyu Shuiping Kaoshi (HSK).

Research objectives

1. To develop students' Chinese language achievement in the topic *Daily Activities (日常活动)* through the use of the Hanziwu program for practicing Chinese character writing at a satisfactory level.

2. To compare students' Chinese language learning achievement before and after instruction using lesson plans integrated with the Hanziwu program.

3. To examine students' satisfaction with Chinese language learning on the topic *Daily Activities (日常活动)* through the use of the Hanziwu program.

Research Hypotheses

1. Students' Chinese language learning achievement on the topic *Daily Activities (日常活动)* after instruction using the Hanziwu program is significantly higher than before instruction at the .05 level of significance.
2. Students are able to accurately write Chinese characters related to the lesson content (e.g., "鸟", "翅膀", "飞") following instruction using the Hanziwu program.

Research Methodology

This study employed a pretest–posttest research design to examine the effectiveness of the Hanziwu program in developing Chinese character writing skills and *Hanyu Pinyin* pronunciation. Data were analyzed using descriptive statistics, including mean scores and standard deviations (SD). The efficiency of the instructional tools was evaluated using the E1/E2 criterion based on the established standard of 80/80.

Population and sample

Population

The population consisted of 89 Grade 2 students enrolled in the 2025 academic year at S Demonstration School. Of Suan Sunandha Rajabhat University .

Sample

The sample was selected using purposive sampling and included 30 Grade 2 students from Classroom 1 during the 2025 academic year at Demonstration School. Of Suan Sunandha Rajabhat University .

2. Research tools

2.1 The Hanziwu program, used to practice and verify correct Chinese character stroke order and *Hanyu Pinyin* pronunciation.

2.2 Lesson plans for Chinese language instruction on the topic *Daily Activities (日常活动)* developed by the researcher.

2.3 A pretest consisting of 20 writing items and 20 reading items to assess students' baseline skills.

2.4 assessments administered biweekly during instruction to evaluate students' progress in Chinese character stroke order and writing accuracy.

To create the research tool, the researcher did the following: (1) A test to measure the knowledge of the Chinese character writing sequence, and (2) Using the Hanziwu program to create a published vocabulary with interpretations so that students can understand the context of the term in a variety of ways and in writing correctly. (3) Do the exercises of reading vocabulary and relational lessons. 日常活动 (Daily Routine) (4) Vocabulary Writing Test, Chinese Script Writing Sequence, Consonants, Lynn After Using the program, the researcher took the test from the sub-exam after the writing test to measure vocabulary knowledge

Data Collection

Data were collected through the following procedures:

1. Students completed a pretest on Chinese character writing skills prior to instruction, and the results were recorded for analysis.
2. Lesson plans integrated with the Hanziwu program were implemented before and during classroom activities.
3. During instruction, students were assessed four times at two-week intervals.
4. Scores from each assessment were recorded and analyzed to calculate the E1 efficiency value.
5. After instruction, students completed a posttest on Chinese character writing skills, and the results were analyzed to calculate the E2 efficiency value.

3. Results

1. Analysis of Learning Achievement Development in Chinese Language

Topic: 日常活动 (Daily Routines) using the Hanziwu Program Target Group: Grade 2 Students, The Demonstration School of Suan Sunandha Rajabhat University

The learning management plan, utilizing the Hanziwu program for teaching the Chinese language topic 日常活动 (Daily Routines) to Grade 2 students at The Demonstration School of Suan Sunandha Rajabhat University, achieved an overall efficiency ratio (E1/E2) of 77.50/86.67.

Study: Comparison of Chinese learning achievement (Topic: 日常活动 - Daily Routines) before and after instruction using the Hanziwu Program for Grade 2 students at The Demonstration School of Suan Sunandha Rajabhat University. Comparison of Chinese Learning Achievement Scores (Pre- Post-test) using the Hanziwu Program mean = 9.03) was significantly higher than the achievement before the intervention (Pre-test mean= 3.55). This difference is statistically significant at the .05 level (t = 27.22). This result confirms the

effectiveness of the Hanziwu program in enhancing the Grade 2 students' Chinese language skills, particularly in the areas of writing, reading, and Pinyin pronunciation related to the topic of "Daily Routines" (日常活动).

4. Conclusion

This study demonstrates the effectiveness of using the Hanziwu program to enhance Chinese language learning on the topic *日常活动 (Daily Routines)* among Grade 2 students at the Demonstration School of Suan Sunandha Rajabhat University. The results indicate that the instructional management process achieved an efficiency level of **77.50/86.68**, meeting the predetermined criteria. This outcome reflects the quality of the instructional design, which was systematically developed, implemented, and refined based on expert recommendations to ensure instructional effectiveness.

The development of skill-based exercises in this study emphasized principles of effective practice, particularly those that support self-directed learning. The instructional materials were designed to allow learners to practice Chinese character writing through personalized yet accurate stroke formation, using colored pencils or highlighters to guide stroke order. This approach enabled students to internalize correct character structures while accommodating individual learning styles. When characters were written correctly, learners were able to further enhance their listening and pronunciation skills, demonstrating the interrelated nature of writing, reading, and auditory learning in Chinese language acquisition.

Moreover, the Hanziwu program allowed students to review lessons repeatedly at their own pace, reinforcing learning through continuous practice. This flexibility contributed significantly to improved learning outcomes, as evidenced by the higher post-test achievement scores compared to pre-test scores. The findings confirm that students' Chinese language learning achievement after instruction was significantly higher than before instruction, indicating that the Hanziwu-based learning activities effectively promoted language development.

These results are consistent with the findings of Kittipong Senaosap and Supanan Sitthiler (2021), who reported that Chinese communication skills of secondary school students improved significantly after learning through the Storyline Model. In both studies, learners demonstrated greater progress after instruction than before, highlighting the effectiveness of structured instructional models that emphasize learner engagement, meaningful practice, and active participation.

In conclusion, the findings suggest that both digital learning tools such as the Hanziwu program and creative instructional approaches like the Storyline Model are highly effective in improving Chinese language learning achievement. These instructional strategies promote learner autonomy, sustained practice, and meaningful language use, leading to significant gains in communication skills. The study provides valuable implications for curriculum development and instructional innovation in foreign language education, supporting the integration of digital technology and learner-centered pedagogy in alignment with international educational standards.

5. Suggestion

1. Promote Interactive Technology Integration:

Implementing the **Hanziwu program** encourages learning through **Interactive Technology**, allowing students to learn anytime and anywhere. This enhances the accuracy of recognizing Chinese character stroke order and has been shown to improve handwriting quality by up to 95% (Tamatjita et al., 2019).

2. Expand Program Use Across Grade Levels:

It is recommended to promote the use of the **Hanziwu program** across all grade levels. This will further enrich students' learning experiences through interactive technology (Hong et al., 2013), taking advantage of the **convenience and flexibility** the program offers, enabling students to study anywhere and at any time.

3. Address the Need for Self-Discipline and Communication Support:

While the Hanziwu program promotes independent learning, it inherently requires **self-discipline and self-motivation** from the students.

Due to the nature of the application, which may reduce direct communication/interaction with the teacher (**Laoshi**), it is necessary to **motivate and recommend complementary tools**. For instance, incorporating the **LinGo Play application** could serve as an additional tool to supplement Chinese language learning and enhance communicative interaction.

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