



Development of Congklak Media on Wuxing Radical Material for Chinese Language Education Students at Universitas Negeri Semarang

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*Instructional media,
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Abstract

This research is based on the observation of the use of instructional media in the Chuji Hanyu Xiezu Xia course, which is limited to PPT and textbooks, leading to suboptimal Mandarin language learning. This is evidenced by the fact that students still struggle to understand and memorize Hanzi and their strokes. Additionally, students appear to easily become bored during lessons. Therefore, there is a need for media to assist students in learning Hanzi and its radicals. Based on these issues, the researcher developed a Congklak game as a tool for both learning and playing for students. The objectives of this research are: 1) To determine the results of the needs analysis for the Congklak game media on the Wuxing radicals material for the 2022 cohort of Mandarin Language Education students at Universitas Negeri Semarang, 2) To describe the prototype results of the Congklak game media on the Wuxing radicals material for the 2022 cohort of Mandarin Language Education students at Universitas Negeri Semarang, and 3) To describe the expert validation results of the Congklak game media on the Wuxing radicals material for the 2022 cohort of Mandarin Language Education students at Universitas Negeri Semarang. This research employs the Research and Development (R&D) method, consisting of five stages: 1) identification of potential and problems, 2) data collection, 3) product design, 4) design validation, and 5) design revision. This study resulted in the development of the Congklak game media to enhance students' understanding of the Wuxing radicals material. The needs assessment questionnaire results indicated that both students and lecturers agreed on the development of this media. Validation by media experts yielded an average score of 87.8 with a rating of 4, categorized as highly suitable for use. Meanwhile, validation by material experts obtained an average score of 87.9 with a rating of 4, also categorized as highly suitable for use. Based on feedback from material experts, the media was subsequently revised.

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INTRODUCTION

Chinese Language Education Program Universitas Negeri Semarang provides students with the opportunity to learn Mandarin language skills, cultural understanding, and practical application in daily activities. The fundamental Mandarin language skills that must be studied include listening, speaking, reading, and writing. The courses offered in this program are diverse, divided into basic, intermediate, and advanced levels. Each level has varying degrees of difficulty. Some of the courses at each level include Tingli (listening), Yuedu (reading), Kouyu (speaking), Xiezu (writing), and Zonghe (comprehensive) (Sari & Anggraeni, 2020). Xiezu course focuses on the rules of writing Hanzi strokes, sentence structure, and composing effective paragraphs. In this course, the lecturer first explains the stroke order of Hanzi and then asks the students to create compositions based on the Hanzi they have learned.

It can be said that learning Mandarin inevitably involves learning Hanzi. As previously explained, one of the courses that focuses on Hanzi is the Xiezu course. Hanzi is the Mandarin script known for its complex writing system, comprising various strokes that form complete characters (Sholikha & Subandi, 2020). Each Hanzi character represents a single syllable or specific meaning, and each character has its own stroke order rules. Hanzi falls into the category of ideograms, meaning that any change in the structure or appearance of a Hanzi character will result in a change in its meaning. Upon closer examination, learning Mandarin becomes easier by understanding Hanzi radicals, also known as piānpáng bùshǒu (偏旁部首). These radicals are the smallest elements in Hanzi characters, used to group or refer to specific characters based on their general meaning or concept (Tjaturrini et al., 2021). In simple terms, radicals can be considered the smallest parts of Hanzi characters that provide clues about the general meaning of a character. By understanding radicals, it becomes easier to recognize or identify related Hanzi characters that share similar meanings.

Based on the results of a questionnaire administered to second-semester students of the 2022 cohort in the Mandarin Language Education program, 81.6% of students indicated that learning Mandarin is enjoyable, yet 86.8% stated that learning Hanzi is difficult. Observations in the Chuji Hanyu Xiezu Xia class revealed that some students did not pay attention to the lecturer's explanations and were preoccupied with their own issues. This can be attributed to several factors, with one of the main reasons being the difficulty of memorizing Hanzi. Additionally, the complex and hard-to-remember stroke order can also contribute to the difficulty (Leonardo & Tandonyo, 2023). Therefore, there is a need for media to assist students in learning Hanzi and its radicals.

Media is a tool used to convey messages or information. It is referred to as media when it is used to transfer information during the learning process. The use of media plays a crucial role, as conducting learning activities without media is almost impossible. Instructional media can be defined as tools containing instructional information or messages that can be utilized in the learning process

(Hasan et al., 2021). The use of instructional media can not only enhance students' interest and understanding but also provide diverse teaching methods to prevent boredom and encourage active participation in the learning process (Pagarra et al., 2022). Therefore, one of the instructional media that can be used is the traditional Congklak game.

The traditional Congklak game is a heritage game from our ancestors that is important to preserve as part of cultural heritage (Roostin et al., 2022). This game often has different names in various regions. In Java, it is known as Congklak or Dakon. This wooden game board has seven pairs of holes and uses shells as playing pieces, as they are considered more durable and resistant to burning.

Based on interviews with the instructor of the Chuji Hanyu Xiezu Xia course, researchers identified several issues in the classroom. In their learning process, the media used was limited to PowerPoint presentations, which made students easily bored with the repetitive delivery of content. The course materials were also deemed insufficient, requiring instructors to supplement from other sources. Despite student enthusiasm during lessons, some still struggled with understanding and memorizing Hanzi strokes.

From the questionnaire results with Mandarin Language Education students of the 2022 cohort, researchers concluded that 73.7% of students prefer learning through play, showing interest in using games as a learning medium. Students expressed interest in using the traditional Congklak game to enhance their Mandarin language knowledge, as many were familiar with and had played Congklak before. Therefore, the researchers developed a traditional game media in the form of Congklak to boost motivation and engagement among students in learning Mandarin, especially focusing on the Wuxing radicals.

Based on this background, the researcher is interested in exploring and developing engaging, creative, and innovative instructional media beyond the conventional use of PowerPoint presentations and textbooks. Therefore, the researcher intends to implement the traditional Congklak game to motivate, enhance students' learning enthusiasm, and broaden their knowledge of Mandarin Chinese through this media, aiming to improve their learning outcomes. The researcher chose to develop this Congklak media because it has not been previously used in the Chinese Language Education Program Universitas Negeri Semarang. Thus, the researcher intends to conduct research and develop instructional media titled: "Development of Congklak Media on Wuxing Radical Material for Chinese Language Education Students at Universitas Negeri Semarang".

METHODS

In this research, the researcher utilized the Research and Development (R&D) method. According to Sugiyono, Research and Development (R&D) is a research approach applied to create a specific product and assess its effectiveness (Okpatrioka, 2023). Sugiyono outlined ten stages in

conducting developmental research: 1) potential and problems, 2) information gathering, 3) product design, 4) design validation, 5) design revision, 6) product testing, 7) product revision, 8) usage testing, 9) product revision, and 10) mass production (Sugiyono, 2022). In this study, the researcher followed these ten stages proposed by Sugiyono, albeit stopping at stage five due to cost and time constraints.

RESULTS AND DISCUSSION

Congklak Prototype Design Results

Based on the analysis of the needs of students and teachers, this design was created with the aim of enhancing motivation to learn in understanding the Wuxing radicals and improving learning outcomes. This design consists of two media: congklak and question, answer, and material cards.

Congklak Media

The congklak design was created based on the analysis of the needs of students and teachers, using a wooden congklak with a shape similar to the traditional congklak. The size of this congklak was adjusted according to the available platform, along with the kuwuk seeds, which are shell seeds. Below is an image of the congklak along with the shell seeds.

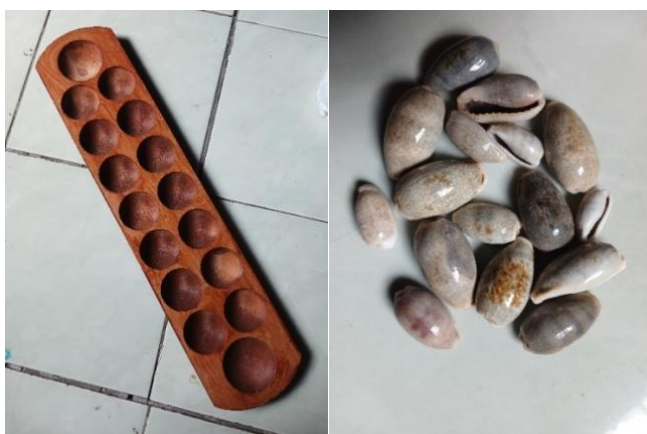


Figure 1. Congklak and Shell Seeds

Question Cards

Based on the analysis of students' needs, the question cards were designed with pastel colors to attract students' attention. Due to the researcher's limitations, only the question cards were printed, while the materials and answer cards are stored in Google Drive and can be accessed by scanning the QR code on the back of the question cards. The front of the question cards not only contains questions related to Wuxing radicals but also includes a QR code that provides the answers to those questions. Additionally, considering the field conditions, ivory paper was used. Below are the design results of the question cards, answer cards, and materials. There are 50 question cards measuring 61x87 mm,

divided into five colors, each representing a different radical. The peach color represents the radical 三点水 (sān diǎn shuǐ) with a total of 10 questions, the purple color represents the radical 木字旁 (mù zì páng) with a total of 10 questions, the maroon color represents the radical 火字旁 (huǒ zì páng) with a total of 10 questions, the green color represents the radical 土字旁 (tǔ zì páng) with a total of 10 questions, and the blue color represents the radical 金字旁 (jīn zì páng) with a total of 10 questions. The back of the cards contains a QR code that can be scanned to access the answer cards and the complete materials.



Figure 2. Question Cards

Answer Cards

The answer cards were created to match the question cards. There are 50 answer cards that can be accessed through the QR codes on the front and back of the question cards. To facilitate finding the answer to a question, students can scan the QR code on the front of each question card.



Figure 3. Answer Cards

Material Cards

The material design contains explanations for each radical. The material can be accessed through the QR code on the back of the question cards.



Figure 4. Material Cards

Validation Results

After completing the development of the congklak media and question cards, the next step is validation. This subsection will present the validation results and the improvements suggested by experts for the development of the congklak media and question cards. The following are the evaluation categories used.

Table 1. Evaluation Categories for Congklak and Question Cards

Score	Value Range	Category
4	86-100	Very decent/very suitable
3	71-85	Decent/suitable
2	56-70	Not decent/not suitable
1	41-55	Very not decent/very not suitable

Material Expert Validation

The validation of the material product design was conducted by language expert Mrs. Almira Agwinanda, S.Pd., MTC SOL, from Universitas Negeri Semarang. The validation covers three aspects: (1) content feasibility aspect, (2) presentation feasibility aspect, and (3) language feasibility aspect. The following is a summary of the validation results by the material expert.

Table 2. Summary of Congklak Validation by Material Expert

Number	Aspect	Assesment Criteria	Score
1.	Content Feasibility	Alignment of material with learning objectives	89
		Clarity of material	88
		Accuracy of material	88
		Timeliness of material	89
		Completeness of material	87
2.	Presentation Feasibility	Relevance of material to learning needs	87
		Ease of understanding the material	88
		Enhancement of learning enthusiasm	88
		Stimulating curiosity	89
		Attractiveness of media	88
3.	Language Feasibility	Appropriateness of sentence structure and language	86
Overall Average			87,9

Based on the table above, it can be concluded that the congklak media aimed at enhancing understanding of the Wuxing radicals received an overall average score of 87.9 from the material expert, which falls within the range of 86-100 and is categorized as highly suitable/very appropriate (score 4). This indicates that the congklak media is highly suitable for use in terms of content feasibility, presentation feasibility, and language feasibility. However, some improvements are still needed to maximize the potential of the congklak media.

Media Expert Validation

The validation of the product design for media was conducted by Mrs. Retno Purnama Irawati, S.S., M.A., a lecturer at Universitas Negeri Semarang. The validation covers three aspects: 1) physical feasibility aspect of the media, 2) media presentation aspect, and 3) media functionality aspect. The following is a summary of the results from the media expert.

Table 3. Summary of Congklak Validation by Media Expert

Number	Aspect	Assesment Criteria	Score
1.	Physical Feasibility	Quality of material used	89
		Ease of media use	87
		Durability of media	89
2.	Media Presentatin	Ease of media storage	88
		Suitability of color selection	86
		Accuracy of media size	87
		Accuracy of font type	88
		Aesthetics of product packaging	88
3.	Media Functionality	Suitability of media design	88
		Clarity of media design	88
Overall Average			87,8

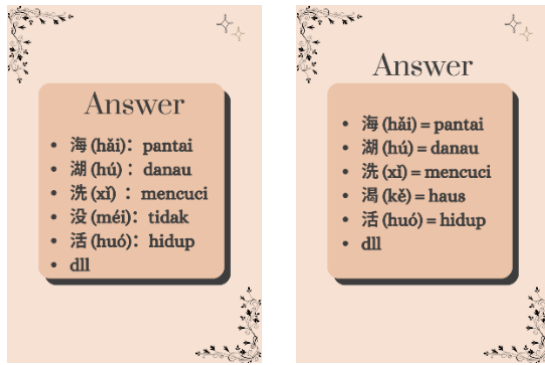
Based on the table above, it can be concluded that congklak received an overall average score of 87.8 from the media expert, which falls within the range of 86-100 and is categorized as highly suitable/very appropriate (score 4). This indicates that the congklak media is highly suitable for use in terms of physical feasibility, media presentation aspect, and media functionality, without any suggestions or improvements.

Improvement to Congklak Media

After progressing through various stages to reach the validation phase by experts to identify the strengths and weaknesses of the product, the next step is to address the product's weaknesses based on the suggestions and feedback provided by the experts during the validation test. The results of the improvements based on these suggestions are as follows.

Punctuation Improvement

The material expert suggested changing the punctuation on the answer cards to '=' to make them more engaging. The following are the improvements made to the punctuation in the question sentences.



Before

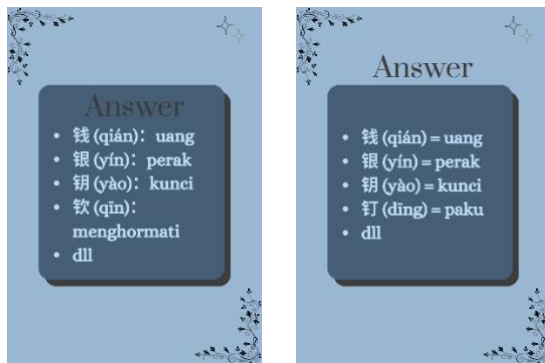
After

Figure 5. Punctuation Improvement

Based on the design, there is a noticeable difference in the use of punctuation, which previously used ':' and, after the improvement, now uses '='.

Improvement to Hanzi Examples

The material expert suggested selecting hanzi on the answer cards that correspond to the meaning of the radicals being studied to avoid confusing students while learning those radicals. The following are some of the improvements made.



Before

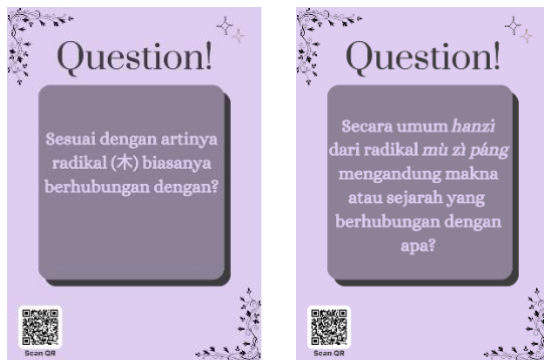
After

Figure 6. Improvement to Hanzi Examples

Based on the design, there is a noticeable difference in the use of hanzi examples, which previously used the example 软 (rǎn) meaning 'to respect,' and after the improvement, uses the example 钉 (dīng) meaning 'nail'.

Improvement to Question Sentences

The material expert suggested modifying the structure of the question sentences to make them clearer and easier to understand. The following are the improvements made to the question sentences.



Before

After

Figure 7. Improvement to Question Sentences 1

Based on the design, there is a noticeable difference in sentence structure, which previously used the sentence 'Sesuai dengan artinya radikal (木) biasanya berhubungan dengan?' and after the improvement, uses the sentence 'Secara umum hanzi dari radikal mù zì páng mengandung makna atau sejarah yang berhubungan dengan apa?'.



Before

After

Figure 8. Improvement to Question Sentences 2

Based on the design, there is a noticeable difference in sentence structure, which previously used the sentence 'Di mana biasanya radikal (木) terletak pada sebuah hanzi?' and after the improvement, uses the sentence 'Secara umum di mana letak radikal (木) pada sebuah hanzi?'.

Improvement to Language Style Errors

The material expert suggested changing certain words or sentences on the question and answer cards due to the use of language styles that have not yet been taught to first-year students. The following are the improvements made.



Before

After

Figure 9. Improvement to Language Style Errors 1

Based on the design, there is a noticeable difference in the use of language styles, which previously used the sentence 'Teruskan kalimat berikut. 妈妈在做炒饭...,' and after the improvement, uses the sentence 'Teruskan kalimat berikut. 妈妈做饭的时候...!'

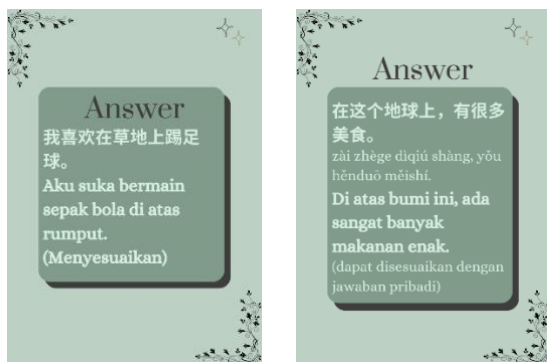


Before

After

Figure 10. Improvement to Language Style Errors 2

Based on the design, there is a noticeable difference in the use of language styles, which previously used the sentence '连家乡比大城市舒服. Bahkan kampung halaman lebih nyaman daripada perkotaan,' and after the improvement, uses the sentence '我们的地球需要每个人的保护。 wǒmen de dìqiú xūyào měi gèrén de bǎohù. Bumi kita memerlukan perlindungan setiap orang.'



Before

After

Figure 11. Improvement to Language Style Errors 3

Based on the design, there is a noticeable difference in the use of language styles, which previously used the sentence '我喜欢在草地上踢足球。 Aku suka bermain sepak bola di atas rumput. (Menyesuaikan),' and after the improvement, uses the sentence '在这个世界上，有很多美食。 zài zhège dìqiú shàng, yǒu hěnduō měishí. Di atas bumi ini, ada sangat banyak makanan enak. (dapat disesuaikan dengan jawaban pribadi)'.

CONCLUSION

The media developed in this research is the congklak game media for the Wuxing radical material. The development of this media involved several stages, including searching for materials through books and the internet, and selecting words and sentences to be used. In this stage, the researcher selected 50 questions and several sentences to be used for answers according to the radicals used. The final stage was designing the question cards, answer cards, and materials based on the analysis of students' needs, using neutral colors and a medium size of 61x87 mm.

The validation results by the material expert showed that the congklak game media received an overall average score of 87.9, which falls within the score range of 4 (86-100) and is categorized as highly suitable/very appropriate. The validation results by the media expert showed that the congklak game media received an overall average score of 87.8, which also falls within the score range of 4 (86-100) and is categorized as highly suitable/very appropriate. Suggestions and feedback from the experts included: 1) Improvement of some inappropriate vocabulary, 2) Improvement of some sentence structures that are not suitable and have not yet been taught to first-year students, 3) Improvement of EYD (spelling) and correction of writing errors.

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