



Development of Educational Game “语法戏” [*Yǔfǎ Xì*] as an Optimization of Grammar Learning

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Abstract. Mastering grammar is crucial to support language skills, including learning Chinese. Lack of mastery of Chinese grammar can hinder learning four language skills at once. One of the media that can help learn grammar is educational game media. The purpose of this research is to develop an educational game with the name “语法戏” [*yǔfǎ xì*] to optimization of Chinese grammar learning. This research is included in the type of development research. This research uses the Recursive, Reflective, Design, and Development model, or R2D2. The product in this development research is in the form of an educational game that has undergone a feasibility test carried out by material and media experts. The results of the validation of material experts and media experts show that the educational game “语法戏” [*yǔfǎ xì*] is feasible and valid to be used in learning Chinese grammar. The grammar contained in this educational game media is limited. Suggestions for further similar development researchers are that they are expected to be able to develop educational game media that contains other Chinese grammar material that is not found in this educational game.

Keywords: development · educational game · Chinese grammar

1 Introduction

Language learning should focus on students' ability to understand and use language as a communication tool in everyday life. Then the media used must support the concept of language learning [1]. Inappropriate media selection does not help students be skilled in language but vice versa. For this reason, educators are expected to be able to choose the right and efficient media so that they can help students learn things better [2].

In learning a language, the use of media plays an important role, especially in learning the second international language in the world, namely Mandarin. In learning to teach Mandarin, educators often find many difficulties in delivering it to students [3]. Lack of learning media, lack of utilization, and lack of understanding of educators on learning media are one of the main causes of the difficulties in learning the language. It makes the teaching and learning process less efficient and effective and sometimes makes students bored. Therefore, learning media is one of the tips for avoiding boredom in learning foreign languages, including when learning Mandarin.

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Learning Mandarin grammar is the most difficult thing to learn. Aditya [4] states that the many formulas or sentence structures presented in textbooks make grammar learning less interesting, for example, “把”字句 (a sentence using the word “把 bǎ”) and direction complement of Mandarin. Lack of understanding of Mandarin grammar makes students choose to avoid even not using the sentence structure in Chinese conversation. In addition, the differences in the structure of Mandarin and the structure of Indonesian are also one of the causes of students' difficulties in learning Mandarin. The two types of grammar are two Mandarin grammars that Indonesian does not own. It makes students still make mistakes in terms of grammar in a Mandarin sentence because it is affected by Indonesian grammar [4].

Meanwhile, sometimes lecturers have difficulty explaining grammatical material to students because there is no grammatical comparison in Indonesian. Based on the results of interviews with the lecturers who support Grammar at the needs analysis stage, it was found that so far, the media used in learning grammar is PowerPoint-based media with the lecture learning method. The lecturer explained the learning material using PowerPoint, and the students were asked to do the exercises. At certain times, lecturers also use class games to create a more interactive atmosphere. It aims to make students feel that doing exercises is more fun. According to him, learning media can be one of the determining factors for whether learning activities are interesting. Appropriate media can help students receive the subject matter well and can assist lecturers in delivering the material. The development of technology also affects the development of learning media.

In addition to conducting interviews with teaching lecturers, the researchers also distributed questionnaires to 25 students who had taken Grammar courses in the previous semester. From the results of the questionnaire, it was found that 83% of students stated that learning media innovation was needed in grammar courses. Students think these courses are very important in learning languages but are not balanced with the variety of learning media used during lectures. Media in the form of PowerPoint and doing the exercises afterward are still deemed insufficient to improve students' abilities. Based on the explanation presented by the research team, the research team feels that using media is one of the best ways to solve the problem. It should be endeavored to always involve the active participation of students and maximize learning outcomes. Therefore, the research team will design, compile, and develop the educational game “语法戏” [yǔfǎ xì] as optimization of grammar learning as a solution to the problems above.

Games are a means of entertainment that can hone skills and be used as learning and educational media [5]. According to Yulianto et al. [6], Games are games with learning objectives that are not only intended to entertain but are also expected to increase knowledge. According to Pratama and Surahman [7], Game is one of the entertainment media that is in great demand by the public, from early childhood to adulthood. It can be concluded that this game is a very interesting medium and is favored by various age groups, so if it can be modified and used in learning, the effectiveness of delivering material on the use of this media is also very high.

Games have several types, and in general, games are divided into 7 (seven) types, namely, RTS (Real Time Strategy), FPS (First Person Shooter), RPG (Role Playing Game), Construction and Management Simulation Games, Vehicle Simulation, Action,

Adventure and Fighting [7]. Meanwhile, according to Agustin [8], Style is a genre or combination of genres used in games. The genre is determined by design regarding what interesting experiences it wants to provide the player. According to Kurniawan [9], online games are operated using an internet connection. At the same time, offline games are games that can be operated without an internet connection.

Based on the 2020 UM Chinese Language Education program curriculum, the description of the contents of this Grammatics course is basic grammatical material, which includes mastery of the use of words and structures that most often appear in Chinese. One of the Sub CPMKs of this Grammatics course is that students can analyze the structure of simple/single (单句) and complex/complex sentences (复句) in Mandarin and can compare the structure of sentences in Indonesian. These two types of sentence structures are a classification of sentence structures at a higher level than other Chinese sentence structures [10]. Simple sentences (单句) only consist of subject-predicate-object sentences or are added with adverbs, complimentary words, and other words that only consist of one sentence/single sentence. While compound sentences (复句) consist of two or more single sentences that have a relationship of meaning. Fan et al. [11] state the following types of complex sentence structures: Adversative Relation, Coordinate Relation), Select Relation, Successive Relation, Suppositive Relation, Progressive Relation, Causative Relation, and Conditional Relation.

Research on Chinese grammatical errors has been carried out a lot. Besides that, there is also research on the causes of these errors. One is a study by Qin [12] titled “The Causes of Misuse of Chinese Words: An Overview of Chinese Language Department Students in Indonesia”. The results of this study are the causes of errors in the use of Mandarin, two of which are due to Indonesian language interference and media limitations. In addition to research on the causes of errors in using Chinese grammar, research on educational games has also been carried out. One of them is a study entitled “Development of Android-Based Educational Games to Improve Student Learning Outcomes in Elementary Schools” conducted by Windawati and Koeswanti [13]. The results of this study state that the learning media in the form of an Android-based educational game to improve learning outcomes for theme 7 for fourth-grade students can be said to be suitable for use [13, p. 1027].

Previous research on games is also available, namely Rokhman and Ahmadi [14] entitled “Development of Android-Based Educational Games for the Gellis to Improve Students’ English Vocabulary”. This study contains the development of media for elementary school student learning. This research is similar to previous research in the same type of media using game media. The difference between this research and previous research is in the method, the subject of the experiment, and the type of game. The results obtained from this study are that this educational game can improve the ability of grade 2 students in English vocabulary.

2 Method

This research uses developmental and research methods based on the purpose of this research, which is to develop educational games for learning Mandarin in grammar

courses. This research uses the Recursive, Reflective, Design, and Development development model, or R2D2 [15]. This research model is considered suitable for developing educational games. For clarity, the following is a chart of the R2D2 development model.



In this study, the research team is the main instrument, so the researcher’s presence is absolute. However, the researchers also used supporting instruments, namely, media validation and material questionnaires. The data obtained from the results of the material validation questionnaire and media validation were analyzed using the analysis technique of Miles and Huberman [16] with the stages of data reduction, data presentation, and conclusion. The questionnaire results will be used to revise the educational games produced.

3 Findings and Discussion

In this study, the research team developed a product in the form of a Chinese grammatical educational game named “语法戏” [yǔfǎ xì]. This product contains Chinese grammatical material that is adapted to the curriculum of the Mandarin Language Education Study Program, namely basic Chinese sentences and Chinese compound sentences. A material expert has validated the material presented in the game. Based on the results of the validation of the material that has been carried out, a presentation of 92.8% is obtained. Aspects that are validated include aspects of learning and material aspects. Further and more detailed explanations are described in Table 1.

Material validation was carried out on Monday, June 20, 2022. The research team used a supporting instrument in the form of a questionnaire to determine the level of eligibility given and recorded the suggestions given as a basis for revision. In material validation, this product obtained a percentage of 92.8%. There are seven indicators are assessed in the material validation questionnaire. Five of the seven indicators, material

Table 1. Material Expert Questionnaire Results

No	Statement	Score				x	Xi	(%)
		STB	TB	B	SB			
		1	2	3	4			
Learning Aspect								
1	Availability of examples of material in the form of text, images, and videos				√	4	4	100%
2	Provide opportunities for independent study				√	4	4	100%
Material Aspect								
1	Contents of the material according to the curriculum				√	4	4	100%
2	The concept of the material presented				√	4	4	100%
3	Adequacy of evaluation			√		3	4	75%
4	The material presented is easy to understand				√	4	4	100%
5	Sufficient Stimulus and Exercise provided			√		3	4	75%
	$\sum x$					26		
	$\sum xi$						28	
	P							92,8%

Information:

- 1 = very bad x = the score obtained
- 2 = not good xi = highest score
- 3 = good % = score validation percentage result
- 4 = very good

validation, gives a value of 4, namely on the indicators of the availability of examples of each material and independent learning opportunities (learning aspects), the suitability of the material with needs, the concept of the material and the ease of understanding the material. This shows that the material for the educational game “语法戏” [yǔfǎ xì] is according to the needs of students. Ilindra [17, p. 16] states that in educational game tools, there are elements of in-depth manufacturing planning by considering the characteristics of children and linking them to the development of various aspects of child development. In line with Ilindra, Yulianto et al. [6] also stated that games are games made with learning objectives that are not only intended to entertain but are also expected to increase knowledge.

The other two indicators, namely the adequacy of the evaluation and the adequacy of the stimulus, got a 3. This is because the material validation considers that the stimulus and evaluation aspects can be further maximized. Material validation suggests that evaluation (practice) should be given according to the ease of the material to a more difficult level. This is because this game is intended for student learning, so the proportion of exercise placements also needs to be considered, so students learn more easily. Likewise, with the stimulus, material experts provide suggestions to add a stimulus at

Table 2. Media Expert Questionnaire Result

No	Statements	Score				x	Xi	(%)
		STB	TB	B	SB			
		1	2	3	4			
1	The attractiveness of the game display				√	4	4	100%
2	The attractiveness of the animation used				√	4	4	100%
3	Clarity of writing and text in educational games				√	4	4	100%
4	The attractiveness and suitability of images in educational games				√	4	4	75%
5	Interesting composition and color combination			√		3	4	75%
6	Audio quality used				√	4	4	100%
7	Ease of operating educational games			√		3	4	75%
8	The suitability of the game design used with the material				√	4	4	75%
9	Overall game appeal			√		3	4	75%
10	Overall arrangement systematic			√		3	4	75%
	$\sum x$					36		
	$\sum xi$						40	
	P							90%

Information:

1 = very bad x = the score obtained

2 = not good xi = highest score

3 = good % = score validation percentage result

4 = very good

the beginning of the game. The material in this game has been adapted to the Sub CPMK of the Grammatic course; namely, students can analyze the structure of simple/single sentences (单句) and complex/compound sentences in Mandarin [18, p. 87]. These two types of sentence structures are a classification of sentence structures that are at a higher level than other Chinese sentence structures [10] (Table 2).

After going through the material validation stage, this educational game went through the media validation stage on Wednesday, June 22, 2022. The media validator assessed ten indicators of media aspects in this educational game. Based on the validation results, this product obtained a percentage of 90%. The indicators of attractiveness of appearance, animation, images, clarity of writing and text, audio quality, and suitability of game design were used to get a maximum value of 4. At the same time, the indicators of color composition and ease of operation get a value of 3. For the product developed to get maximum results, the media validator advises changing the color contrast from the dominant black to the dominant light blue. The media validator also suggests developing software that can be accessed via iOS. Based on the assessment of eight indicators, the

indicator on game playability and overall composition gets a 3. This is because even though six indicators get a maximum score, things still need to be improved so that the overall rating gets a score of 3, not the maximum value.

This educational game was developed using Unity software with the consideration that this software supports the use of Android and PC. It is intended for convenience for users. This game invites users to be able to use Chinese grammar according to the context provided. So, this game can be grouped into types of simulation games. This follows the opinion of Pratama and Surahman [7], which states that one type of game is simulation. This game also has a genre. Agustin [8] further explained that style is a genre or combination of genres used in the game. The genre is determined by design regarding what interesting experiences it wants to provide the player. The genre used in this game is online. Kurniawan [9] explains that online games are operated using an internet connection.

Research on the development of educational games has been done before. Based on the material validation questionnaire and media validation results, information can be obtained that this educational game is considered interesting, includes easy to operate, and can encourage students to learn independently. This is one of the advantages of educational games, Yulianti and Hariadi [19, p. 532] state that educational games have advantages, namely ease, interactivity, and user experience in the applications. Although it is easy to operate this game, to access this game, it is necessary to use a strong internet network so that it runs smoothly when playing.

4 Conclusions and Suggestions

Based on the explanation of the results and discussion section, it can be concluded that the product produced in this study, namely the educational game “语法戏” [yǔfǎ xì], is valid and feasible to use in learning Chinese grammar. The feasibility level is obtained from the validation process that has been carried out, which includes material validation and media validation. The validation process that has been carried out shows that the average of the two validations obtained a percentage of 90.15%. Improvements have been made based on suggestions from material and validator experts so that the product can be used more optimally. The research team provides suggestions for future researchers who will conduct similar research. Further researchers are expected to develop educational games for learning language skills. This is because this game only focuses on Chinese grammar material. In addition, future researchers can also try different types of educational games to add references to Chinese learning media.

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