

Development of supplementary material using Wordwall for 12th-grade students in learning relative clauses

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ABSTRACT

The study aimed to develop supplementary material using Wordwall-based learning media for learning relative clauses and examined the experiences of 12th-grade students in using Wordwall. The study employed Design and Development (DnD) research method which conducted design, development, and evaluation steps. This study used the topic of the relative clause as a result of pre-observation in tackling an existing problem in learning relative clauses. This research used two instruments: a blueprint of supplementary material and a User Evaluation Questionnaire (UEQ). The UEQ examined 5 dimensions of users' experiences in using a digital product: attractiveness, perspicuity, efficiency, dependability, stimulation, and novelty. The data were collected by analyzing the syllabus, preparing the Wordwall platform, distributing the questionnaire, and analyzing the questionnaire's results. The questionnaire was filled with 32 students and 1 teacher who are taking English Language and Literature (Concentration) subjects. The data collected was analyzed and explained qualitatively and quantitatively. The results of the user experiences were attractiveness gained excellent (2.1), perspicuity gained above average (1.68), the efficiency gained excellent (1.88), dependability gained excellent (2.25), stimulation gained good quality (1.55), and novelty gained excellent quality (2.13). These results indicate that the developed supplementary material brings students attractive, fun, motivating, efficient, and fresh experiences in using Wordwall for learning relative clauses. Therefore, the developed Wordwall-based supplementary material for learning relative clauses material is very good to be implemented for the learning and teaching process for 12th-grade students.

Keywords: supplementary material; relative clauses; DnD; Wordwall; UEQ

INTRODUCTION

Developing material is a crucial aspect for English language teachers especially for providing learning objectives that fulfill learners' needs (Kusuma & Apriyanto, 2018). Therefore, the teachers have the decisions to develop material by writing textbooks, advertisements, stories, and expressing opinions; these decisions should be done in principled ways related how the method and strategy used in teaching (Tomlinson, 2011). Richards and Renandya (2002) assume that a) the material should be based on theoretical learning principles, b) the material must have the motivation and control students' interest, c) materials should fulfill students' needs, d) materials should provide examples of language used, e) provide meaningful activities, f) provide chances for using authentic language use. These principles should be considerations for teachers in developing material for the teaching and learning process.

The objectives of developing materials should be concerned, teaching grammar can be a concern for developing material. Teaching grammar can be a problem to be taught. Grammar supposes to be taught using various strategies and meaningful activities in which students can realize the patterns of a target language and apply it effectively (Becker & Roos, 2016; Howatt & Smith, 2014). Meanwhile, in Indonesia teaching grammar can be a problem, especially relative clauses because Bhasa

can only relativize the subject, while in English the language can reckon subject, direct object, indirect object, oblique object, and object's possession (Novianto & Suhandano, 2019).

Relative clause or adjective clauses derives from a basic structure that consists of more than one sentence (Sulistiani, 2018). According to Yule (1999), relative clauses are divided into two types, a restrictive clause which uses *who, when, where, that etc.*, in the sentence, and non-restrictive clauses can be implemented by adding a (,) comma in a sentence. Meanwhile, the challenge is due to relative clauses being a type of complex syntactic construction which is difficult for students to learn, produce, interpret, and replicate (Abdolmanafi & Rahmani, 2012). On the other hand, in 21st-century learning, technology is involved a lot, the materials are not textbooks anymore whereas they are in learning platforms. Richards and Renandya (2002) state teachers do not have time and access to adequate technology to create authentic materials. Arguably, this statement still can be seen especially for teachers that want to conduct gamification or gamified-based learning in the teaching and learning process. Thus, digital supplementary material which utilizes technology for providing materials can be used for the teachers in the teaching and learning process.

The term "gamification" refers to the use of gaming components in contexts other than games (Deterding et al., 2011). This phrase is straightforward and well-understood by some experts. As a result, how the classroom is run utilizing game components like leaderboards, points, incentives, etc. can be used to define gamification. Numerous studies have looked at the use of game-based learning to increase students' language proficiency. These studies unmistakably demonstrated that students were becoming more enthusiastic and involved in language study. According to Santosa et al. (2022) using gamification is as same as solving real-world problems which brings the difficulties that need to be solved by the users. The gamification also allows the teachers to synchronize the material to the game elements or mechanics.

Students are drawn to the interactive learning of the Wordwall platform because it is simple to use and makes it easy to create mini-games like photo matching, quizzes, wheel of fortune, crosswords, and puzzles. (e.g., Cil, 2021; Gandasari & Pramudiani, 2021; Nissa & Renoningtyas, 2021; Safitri et al., 2022; Wafiqni & Putri, 2021). These researchers found that Wordwall is an easy-used learning platform that can be used for teaching and assessing English courses. It was proved by Azizah (2018) who did classroom action research to examine the effectiveness of vocabulary acquisition by using the Wordwall platform. Meanwhile, learning motivation and the attractiveness of Wordwall were examined by Safitri et al. (2022), who used experimental research and found that the Wordwall platform could engage students' motivation due to the attractiveness of Wordwall's interfaces.

Based on the result of pre-observations at SMA Negeri 4 Singaraja to an English teacher who taking Bahasa dan Sastra Inggris (Peminatan) for 12th-grade students, found that the students experienced difficulty in learning relative clauses. Meanwhile, this problem is also followed by inadequate media for teaching relative clauses. The teacher has difficulty selecting an appropriate media for teaching relative clauses attractively and efficiently. These problems are the impact of online learning during the pandemic Covid-19 which makes the students feel more comfortable learning with online media. This particular problem needs an effective solution and game-based learning media is a good solution for tackling the problem that existed in SMA Negeri 4 Singaraja. To tackle the problem, the developed supplementary material Wordwall-based for learning relative clauses is needed to be distributed for students to create an effective learning environment for both teacher and students, especially in learning relative clauses.

From the numerous problems above, this study aims to develop supplementary material which supports teachers to teach grammar, especially relative clauses material. As a root of supplementary material which is the support of academic material that supports regular materials (Cahyaningrum et al., 2015). This study develops supplementary Wordwall-based material for learning relative clauses. Accordingly, this research intended to examine the procedures for developing supplementary material based on the Wordwall web-based application. Meanwhile, this study also examined the users' experiences in using the developed supplementary material using the Wordwall platform.

METHODS

This study uses the design and development research method (DnD). Design and development research is a systematic investigation of the products, tools, processes, and models which provides reliable and usable information (Richey & Klein, 2005). This study incorporated three steps, design, development, and evaluation. The researcher developed a digital supplementary material as a teaching medium for teachers in teaching relative clauses topics in the Bahasa dan Sastra Inggris (Peminatan). The subject focuses on designing and developing items on the Wordwall web-based application for educational media. Therefore, the first focus was product and toll research which was based on the pre-observation. Second, the focus was on the evaluation of how users' experiences using the developed supplementary material. There are three stages used in this study (see Figure 1).

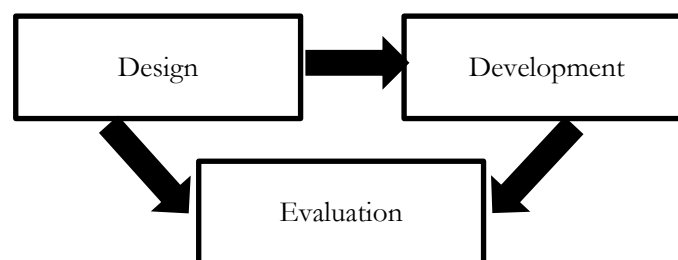


Figure 1. Research Procedures

Based on Figure 1. research steps, the first step is the design phase. The design phase is the stage when the researcher designs the product after studying related literature based on the existing problems. Also, the researcher analyzed the Bahasa dan Sastra Inggris (Peminatan) syllabus which was as guidance on creating blueprints for the product. The second phase of development meant creating supplemental content to be used in the instruction of relative clauses to students in the 12th grade. Wordwall will be used to start developing the phase. The researcher will create several resources in this phase under the Bahasa dan Sastra Inggris (Peminatan) syllabus. Further materials for students to understand more about relative clauses will also be added by the researcher. The created materials will take the form of evaluation and justification. The User Experience Questionnaire (UEQ) from (Schrepp et al., 2017a) was adopted to utilize for gathering user feedback throughout the evaluation phase, which was the final stage.

The use of digital supplemental relative clause material will be evaluated by Wordwall program users. As a result, 32 students and one teacher participated in filling out the user evaluation. The participants were asked to fulfill a questionnaire (see Appendix 1) that based on (Schrepp et al., 2017b). The UEQ assessed 6 dimensions of the product such as effectiveness, perspicuity, efficiency, dependability, stimulation, and novelty. The questionnaire namely the User Experience Questionnaire can be accessed at www.ueq-online.org. The website provides a questionnaire and a tool kit for analyzing the data.

The data are input into excel that was calculated to gain the results. The calculation of the data will be based on the following formulas.

- 1) Attractiveness: Based on questions 1 (*annoying/enjoyable*), 12 (*good/bad*), 14 (*unlikeable/pleasing*), 16 (*unpleasant/pleasant*), 24 (*attractive/unattractive*), and 25 (*friendly/unfriendly*).
- 2) Perspicuity: Based on questions 2 (*not understandable/understandable*), 4 (*easy to learn / difficult to learn*), 13 (*complicated/easy*), and 21 (*clear/confusing*).
- 3) Efficiency: Based on questions 9 (*fast/slow*), 20 (*inefficient/efficient*), 22 (*impractical/practical*), and 23 (*organized/chattered*).
- 4) Dependability: Based on questions 8 (*unpredictable/predictable*), 11 (*obstructive/supportive*), 17 (*secure / not secure*), and 19 (*meets expectations/does not meet expectations*).

- 5) Stimulation: Based on questions 5 (*valuable/inferior*), 6 (*boring/exciting*), 7 (*not interesting/interesting*), and 18 (*motivating/demotivating*).
- 6) Novelty: Based on questions 3 (*creative/dull*), 10 (*intentional/conventional*), 15 (*usual/leading edge*), and 26 (*conservative/innovative*).

Each question will be marked with the Likert scale, which will be marked for each scale from 1 to 7. The scale from 1 to 7 will be converted into transformed data by calculation of -3, -2, -1, 0, +1, +2, +3. The -3 means fully agreeing with the negative terms, the +3 means fully agreeing with the positive terms. The results of each aspect will be analyzed based on the level of accomplishment of UEQ. To decide whether the results are good or bad will be based on Table 1. The degrees of accomplishment were adopted from Schrepp et al., (2017a).

Table 1. UEQ's Degrees of Accomplishment

Degrees of Accomplishment	Att.	Eff.	Per.	Dep.	Sti.	Nov.
Excellent	≥ 1.75	≥ 1.78	≥ 1.9	≥ 1.65	≥ 1.55	≥ 1.4
Good	≥ 1.52	≥ 1.47	≥ 1.56	≥ 1.48	≥ 1.31	≥ 1.05
	< 1.75	< 1.78	< 1.9	< 1.65	< 1.55	< 1.4
Above average	≥ 1.17	≥ 0.98	≥ 1.08	≥ 1.14	≥ 0.99	≥ 0.71
	< 1.52	< 1.47	< 1.56	< 1.48	< 1.31	< 1.05
Below average	≥ 0.7	≥ 0.54	≥ 0.64	≥ 0.78	≥ 0.5	≥ 0.3
	< 1.17	< 0.98	< 1.08	< 1.14	< 0.99	< 0.71
Bad	< 0.7	< 0.54	< 0.64	< 0.78	< 0.5	< 0.3

Values between -0.8 and 0.8, which represent a neural appraisal of the dimensions, can be used to evaluate good UEQ. Values more than 0.8 and less than -0.8 represent negative evaluation, hence values between 1.5 and 2 can be described as very good quality Santoso et al. (2016). Simply, according to Table 1. if the product was fit to below average and bad, the product will need a revision. Meanwhile, if the product was fit with excellent, good, and above-average degrees, the product does not need a revision.

RESULTS AND DISCUSSION

The procedures of developing supplementary material for learning relative clauses were conducted by adopting the method from Richey and Klein (2005). Within Design and Development (DnD) research method, 9 steps were gathered to develop supplementary material. The steps started by analyzing the existing problem of students in learning grammar, especially relative clauses material, analyzing the Bahasa dan Sastra Inggris syllabus, and designing a blueprint. Then, development stage, there were several steps needed, they are preparing the Wordwall platform, inserting the supplementary relative clauses material on the Wordwall platform, embedding all the Wordwall links, and checking the final content.

The researcher makes sure all links are playable at the very end of producing relative clause supplemental content for the Wordwall platform. Since all the links on linktr.ee could be clicked, they could all be played. The main link sent to the students when it is desired to be played by the students is linktr.ee. Additionally, the primary link's YouTube link might be specified as being available. As a result, the availability of all links can be exploited to facilitate learning and teaching. After all, all games link are playable, the researcher makes sure that there are no broken links or interrupted links. So, every supplementary material for learning relative clauses is ready to be played. The link can be accessed at <https://linktr.ee/wordwallgames>.

Table 2. The Results of UEQ

Scale	Mean	Comparison to benchmark
Attractiveness	2.10	Excellent
Perspiciuity	1.68	Above Average
Efficiency	1.88	Excellent
Dependability	2.25	Excellent
Stimulation	1.55	Good
Novelty	2.13	Excellent

Furthermore, as shown in Table 2. the developed supplementary material for learning relative clauses was distributed to 32 students and 1 instructor at SMA Negeri 4 Singaraja which taking Bahasa dan Sastra Inggris course. The distribution of a developed supplementary material which followed by UEQ from Schrepp et al. (2017a) as a questionnaire for the evaluation of the supplementary material. The attractiveness was scored 2.1 (Excellent), perspicuity was scored 1.68 (Above average), efficiency was scored 1.88 (Excellent), dependability was scored 2.25 (Excellent), stimulation scored 1.55 (Good), and novelty was scored 2.13 (Excellent), those are six aspects that evaluated in UEQ. The result showed by UEQ means that a developed supplementary material for learning relative clauses does not need revision. (see Table 1. Degrees of accomplishment for UEQ.)

To discuss the results, several items have been completed throughout the design process. Analyze first the current issues students are having studying grammar, particularly the material related to relative clauses. This is consistent with the assertion made by Abdolmanafi and Rahmani (2012) that relative clauses are a type of intricate syntactic construction that is difficult for students to understand. Based on the issue, a syllabus analysis was done to identify pertinent curriculum-based content for teaching relative clauses. The games also should be able to engage students and motivate them in learning, the use of mechanics, elements, and audio-visual features should be able to engage them in learning, which is the core to apply of gamification (Deterding et al., 2011; Wiggins, 2016). Essentially, Tomlinson's (2011) premise of good materials that collaborated with game-based learning dictates that all design decisions should be based on gamification theory.

In discussing the result of UEQ which is based on Schrepp et al. (2017a), attractiveness is the overall appearance. This means that generated supplementary materials for learning relative clauses using Wordwall have a good overall appearance that is attractive and interactive. As a result, it satisfies Tomlinson's (2011) criteria for good materials, which stipulate that the content should be able to hold students' attention. As a result, the developed supplementary material received a grade of 2.1 (Excellent), indicating that it is appealing to students. Meanwhile, the main reason attractiveness gained excellent scores, is due to the themes that are used in the Wordwall application. The themes selected for all games in the developed supplementary material were customized by using template themes provided by the Wordwall application. The researcher adjusted the themes according to 12th-grade students' preferences, which are teenagers' preferences.

The developed supplementary material scored outstanding on the perspicuity scale, which rates product usability from easy to hard Schrepp et al. (2017a), indicating that it was simple for users to utilize. The Wordwall games are user-friendly in terms of mechanics because they are simple to access and control. The effectiveness of a product is then measured by how quickly and effectively people complete tasks within it (Santoso et al., 2016). The UEQ's efficiency score for the generated supplemental material for learning relative clauses was 1.88, which is outstanding. This indicates that the content was effective when utilized to teach relative clauses. This concurs with research by Azizah (2018) that found Wordwall to be a useful teaching tool.

Meanwhile, dependability is the sensation that the user is protected and safe when using the product and that they have complete control over it. The Wordwall-created supplemental material received a 2.25 which is an excellent rating for dependability, indicating that users feel secure and in complete control of the result. Following UEQ's stimulation, which serves to drive users of the

product, Tomlinson (2011) asserts that effective learning materials should be able to make the students feel at ease while learning. The full hands-on control from the user interface of the Wordwall platform might be the reason why dependability gained an excellent score. The Wordwall platform allows students to move, swipe, enter, and exit the application at any time. There are no limitations in user access for the Wordwall's user interface while the users in playing the games.

The developed supplemental material for learning relative clauses received a stimulation score of 1.55 which is a good rating, indicating that the students were well-motivated to use it. Due to Wordwall's gaming interface, the motivational stimulation of students was greatly increased (Safitri et al., 2022). Richards and Renandya (2002) state that material should hold students' interest, therefore, the developed supplementary material using Wordwall also can be stated as a good teaching media because it stimulates students in learning. Although, for stimulation, the aspect gained a good rating which means the developed supplementary material using Wordwall has a good stimulus for engaging students in learning.

The novelty as the last dimension assessed in UEQ, received a score of 2.13 which is an excellent rating, indicating both its ingenuity and how it piqued customers' interest in using the product. This is in line with the result of the pre-observation that was conducted. The students were never using the Wordwall platform in learning any materials during the learning process. So, the new sensation of using Wordwall with the developed product in this study might bring students to new experiences of learning. The results of the UEQ test indicate that the Wordwall-based supplemental material created for teaching relative clauses is a quality educational tool. The created output should be adaptable to the instructor's teaching style as supplemental content. The produced supplemental material can be used in the classroom by the instructors to teach relative clauses.

CONCLUSION

This study aims to develop supplementary material for learning relative clauses by using Wordwall for 12th-grade students which taking Bahasa dan Sastra Inggris course. This study uses Design and Development Research (DnD) which was proposed (Richey & Klein, 2005). Applying four steps of DnD which are analysis, design, development, and evaluation. Therefore, the instruments in each stage that are used also different, there are several instruments are used to collect data; researcher's notes, and the blueprint of digital supplementary relative clause material. The data collected are explained quantitatively and qualitatively. The data from the researcher's note and blueprint of digital supplementary material are explained quantitatively. On the other hand, the users' experiences were gained by using UEQ from Schrepp et al. (2017b). The result shows that the digital supplementary material for learning relative clauses which was developed by using the Wordwall platform is very good as a learning media for learning relative clauses, especially for 12th-grade students who taking Bahasa dan Sastra Inggris course. The attractiveness was scored excellent (2.1), perspicuity scored above average (1.68), efficiency was scored excellent (1.88), dependability was scored excellent (2.25), stimulation scored good (1.55), and novelty was scored excellent (2.13). The development of digital supplementary material is developed without any revisions. Meanwhile, from the UEQ results, the developed supplementary material has brought attractive, fun, efficient, motivating, and fresh experiences for students in learning relative clauses. It means the developed supplementary material for learning relative clauses is ready to be distributed to the teachers and students. For the teachers, the developed supplementary material can be used as a teaching medium with a collaborative teaching strategy. Meanwhile, students can utilize the developed supplementary material for learning relative clauses independently by accessing the link of the developed supplementary material.

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CONFLICT OF INTEREST STATEMENT: The authors declare that the research was conducted in the absence of any commercial or financial relationships that could be construed as a potential conflict of interest.

APPENDIX

Appendix 1. Questionnaire of UEQ

	1	2	3	4	5	6	7		
Annoying	o	o	o	o	o	o	o	Enjoyable	1
Not understandable	o	o	o	o	o	o	o	Understandable	2
Creative	o	o	o	o	o	o	o	Dull	3
Easy to learn	o	o	o	o	o	o	o	Difficult to learn	4
Valuable	o	o	o	o	o	o	o	Inferior	5
Boring	o	o	o	o	o	o	o	Exciting	6
Not interesting	o	o	o	o	o	o	o	Interesting	7
Unpredictable	o	o	o	o	o	o	o	Predictable	8
Fast	o	o	o	o	o	o	o	Slow	9
Inventive	o	o	o	o	o	o	o	Conventional	10
Obstructive	o	o	o	o	o	o	o	Supportive	11
Good	o	o	o	o	o	o	o	Bad	12
Complicated	o	o	o	o	o	o	o	Easy	13
Unlikeable	o	o	o	o	o	o	o	Pleasing	14
Usual	o	o	o	o	o	o	o	Leading edge	15
Unpleasant	o	o	o	o	o	o	o	Pleasant	16
Secure	o	o	o	o	o	o	o	Not secure	17
Motivating	o	o	o	o	o	o	o	Demotivating	18
Meets expectations	o	o	o	o	o	o	o	Does not meet expectations	19
Inefficient	o	o	o	o	o	o	o	Efficient	20
Clear	o	o	o	o	o	o	o	Confusing	21
Impractical	o	o	o	o	o	o	o	Practical	22
Organized	o	o	o	o	o	o	o	Cluttered	23
Attractive	o	o	o	o	o	o	o	Unattractive	24
Friendly	o	o	o	o	o	o	o	Unfriendly	25
Conservative	o	o	o	o	o	o	o	Innovative	26