

BILINGUAL OFFLINE GAME-BASED TEACHING MEDIA FOR SCIENCE SUBJECT

Siti Lestari¹⁾ Sri Wahyuni²⁾

¹⁾University of PGRI Semarang, Indonesia

¹⁾[email:lestarist1912@gmail.com](mailto:lestarist1912@gmail.com)

²⁾University of PGRI Semarang, Indonesia

²⁾sriwahyuni.said@gmail.com

Abstract

This qualitative research is aimed to design teaching media for science subject at junior high schools in Semarang (both private and state schools). It is designed in bilingual language (Indonesian and English) and based on offline-game. The science subject focuses on Porifera and Coelenterata. This experiment research is done for the junior high school students at the seventh level and the choice of the class was based on the material or subject in SMP (junior high school) syllabus. It is about the living things. Questionnaire and interview, as the instruments, were given to science teachers in SMP. Before distributed to the SMP teachers, the three main elements (content of the subject, appearance design, and bilingual use) were evaluated by the experts. It showed that this offline-game media can be applied in that school and developed into different subjects.

Keywords: *teaching media, offline game, bilingual use*

1. INTRODUCTION

The rapid advancement of technology affects the use of teaching media at schools. An alternative to develop teaching media is that by integrating IT, science and language (either Indonesian or a foreign language). This situation demands teachers to be creative in order to design that kind of learning integration model. Creativity comes from in an integration of pieces information, received by students as a form of knowledge that achieved in a whole understanding. The integration knowledge possessed by students is that they should be able to operate computer (as the most important basic competence in IT for Junior High School students) and the use of basic English, and English –Indonesian mastery. The ability to classify animals demands students to gain complete information from understanding to identifying. That is why, skills to make students be able to identify and summarize in their learning activities need to get used to it in the application since the skills to understand and identify animals scientific names must be achieved by junior high school students. By doing so, a suitable learning media is needed to reach the aim.

Offline game is an alternative teaching media that can be developed and integrated with bilingual learning. The game is emphasized in learning so that students can be more interested and make them easier to classify animals based on the characteristics. Not only they can get used to listen but also pronounce the English in the daily life.

2. RESEARCH METHOD

This research employs a research and development method. The developed product in this research is a teaching media, manifested in an offline game. The development model employed in this research is an adaptation and development of steps served by (Brog & Gall, 1983) that involve needs analysis, learning design, product development and evaluation, consisting of formative and summative evaluations. Formative evaluation consists of one to one, small group and field evaluations with a standard used by the developer. The model is occupied because of the simplicity, accuracy and feasibility. Based on the development model, there are five steps to be covered in order to conduct the research, as the following chart presents.

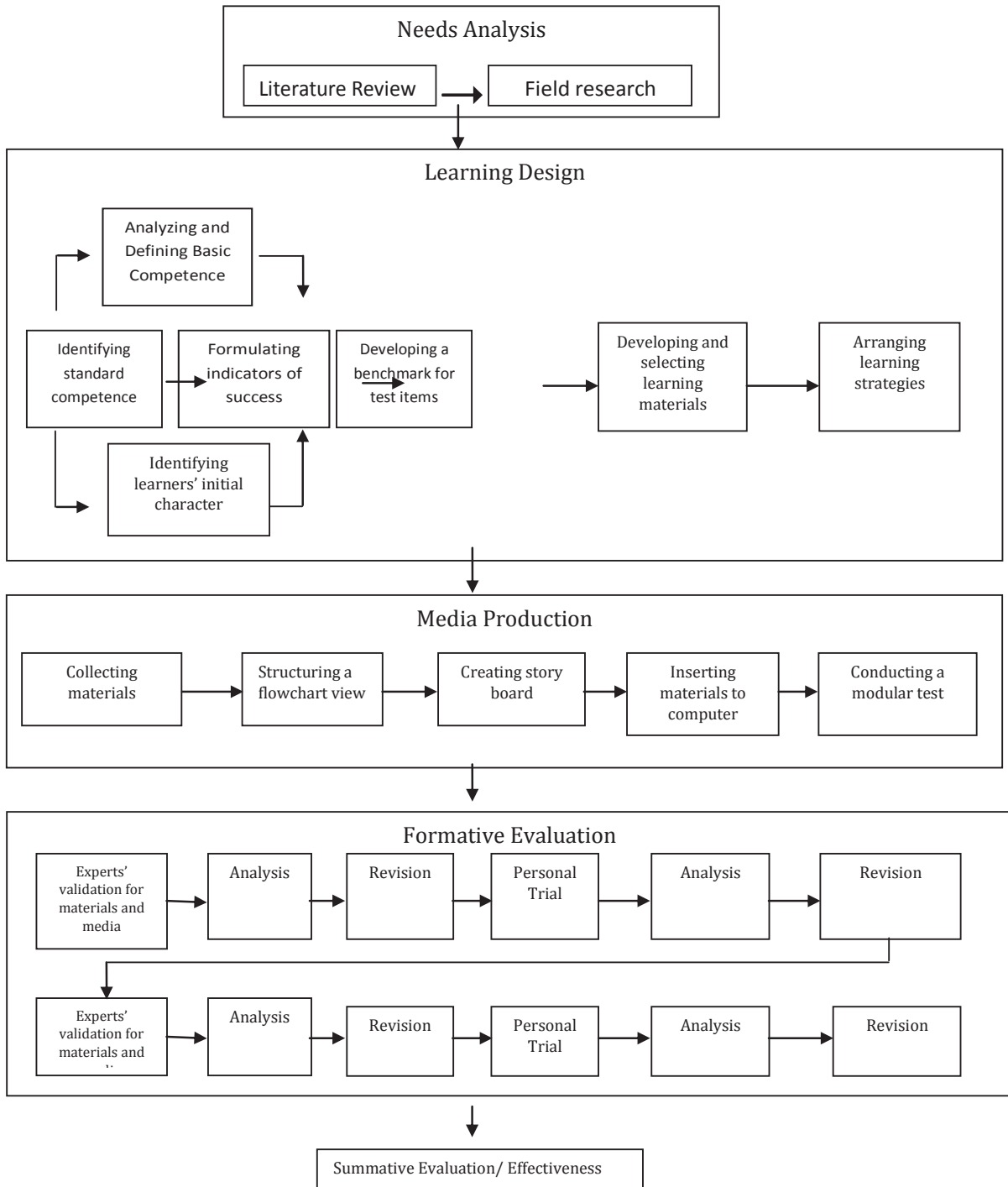


Chart 1. Learning Media Development Procedure (Brog & Gall, 1983)

Parties as the subject that involved testing this media development are experts in English materials and media. Validation is given by the competent experts in order to provide inputs and

suggestions to enhance the media for betterment and one of them is an expert in media. The rubric to score the media include: design, material contents, quality of the offline game and the use of English.

How to analysis the data is that by adopting mix-method triangulation design by (Creswell, 2008) done by running simultaneous analysis from a combination of quantitative and qualitative data. The result of analysis is used to understand the research problems. The rationale from this data analysis design is lack of one kind of data that will be completed by another kind of data. In this case, the quantitative data serves a way to generalize, while the qualitative data serves information about context and setting.

A quantitative test is statistically conducted in order to investigate the gain character that is developed from each treatment at the field of validation stage. Meanwhile, at the stage of previous study, a descriptive qualitative analysis is done using questionnaires, interview and observation sheets and learning transcript and it is also done in the implementation of using the media. During the validation field, Chart 3 clearly identifies data analysis technique that leads to research problems. The next triangulation process is separately conducted by analyzing quantitative and qualitative data and comparing the results. The next step is done by making an interpretation whether the data has a mutual support or go against. Technique and data analysis results are shown as follow in Chart 1.

Chart 1
Technique and Analysis Results

NO	Research Problems	Data Technique Analysis	Analysis Results
1	The appropriateness between Science learning media Offline game-based and materials concept assignment	Descriptive qualitative data analysis include questionnaires, interview, observation sheets and learning transcript Quantitative analysis data, analyzed with Anova toward students' learning motivation	Feedback from experts in media and teachers toward the development of learning media in offline game-based
2	Language Use	Qualitative and quantitative triangulation data is analyzed during the implementation of offline game media for field validation at the stage of revising the model	Responses to the use of English toward teaching media

The data gained in the validation sheets which the scores provided by the experts are analyzed in descriptive quantitative manner using categorization and percentage techniques.

3. FINDINGS

The trial is conducted and limited to Junior High School teachers. It is done to test the appropriateness of the offline game media that was designed and developed through validation, revision and simulation processes. The trial at this stage can be preceded to wider users applied in the next year. The analysis of materials development and graphic design, media development and the English use are presented in chart 2.

Chart 2
An Expert Response toward Materials

No	Indicator	Mean	Criteria
1	The relevance toward the aim of learning adjusted with the Main Competence and Basic Competence	5	Very Good
2	The use of cartoon animations help to understand the concept of invertebrates	4	Very Good
3	The animation of cartoon pictures does not raise misconceptions about invertebrates	4	Very Good
4	The materials are appropriate with the Basic Competence in the level of Junior High School	5	Very Good
5	The material illustrations are performed in a systematic way and the logic flow is clearly captured in a whole	4	Good
6	The program provides evaluation to learners	5	Very Good
7	There are stimulus responses given to learners	5	Very Good
8	Materials provided in the program represent the whole classes about invertebrates	4	Good
9	The program serves materials that can be easily understood by learners	4	Good
10	The program uses standard language	4	Good
11	The use of hyperlink can widen and enrich the concept of invertebrates lesson	4	Good
12	References taken from the materials are provided	4	Good
Mean		4,333	
<i>Invertebrates materials Quality</i>		<i>Good</i>	

Chart 3
The Data Result of Graphic Design

No	Indicator	Mean	Criteria
1	Pictures are simple, relevant with the concept of invertebrates and the size	5	Very Good
2	Carton pictures' size are proportional	4	Good
3	Texts in the storyboards are readable	4	Good
4	Symbols are used consistently	5	Very Good
5	Animation cartoons are suitable with the concept of Invertebrates	4	Good
6	Animation cartoon and pictures help learning about the concept of invertebrates become meaningful	4	Good
7	Information provided in each picture scheme is available in storyboards	4	Good
8	The game interfaces have different characteristic from other offline games	5	Very Good
9	The interface and layout present invertebrates' profile	5	Good
Mean		4,55556	
<i>Graphic Design Quality</i>		<i>Very Good</i>	

Tabel 4
The Data Result of the Offline Game Media

No	Indicator	Mean	Criteria
A. Software			
1	Maintainable (easily maintained)	3	Very Feasible
2	Usability (Easy to use and simple in the operation)	3	Very Feasible
3	Compability (learning media can be installed/ can be ran in other available hardware and software)	2	Feasible
4	Reusable (Parts or all of the learning media programs can be reused to develop another learning media)	3	Very Feasible
B. Audio Visual Communication			
1	Communicative (according to a message and acceptable/ in line with the target)	3	Very Feasible
2.	Creative in ideas and in the delivery	3	Very Feasible
3.	Simple and interesting	3	Very Feasible
4.	Audio (narration, backsound)	2	Feasible
5.	Visual (layout design, typography and color)	3	Very Feasible
Mean		2,777788	
Offline Game Quality			Very Feasible

Chart 5

The result of Using English toward the Offline Game Media

No	Indicator	Mean	Criterion
1	<i>Meaningfull</i>	3,5	Easily understood
2	<i>Pronuciation</i>	3	Easily understood
3	<i>Fluency</i>	3,5	Easily understood
4	<i>Vocabulary</i>	3,5	Easily understood
5	<i>Sentence Construction</i>	2,5	Less can be understood
6	<i>Punctuation</i>	3,5	Easily understood
7	<i>Appropriateness in translation</i>	3,5	Easily understood
Mean		3,28572	
The use of English in the quality			Easily understood

4. DISCUSSION

After conducting tests analysis toward the offline game-base in science served in bilingual, it can be stated that this media can be used as a means for learning. The statement is proposed based on the following analysis elaboration data, gained from experts in the following fields:

1. Materials expert

The response from the materials experts toward the quality has a score 4.333, meaning good. So, Invertebrates materials that classified in Phylum Porifera and Coelenterates are feasible as a learning media that is created in the offline game. The decent material indicators in the development of the offline game learning media are materials presentation that covers appropriateness with the learning materials, Main Competence, Basic Competence and Indicators. Cartoon animations are used for symbols or icons only. Then, when it comes to the lesson, real species pictures are presented. It is applied in order to prevent misconception about

the concept itself. Materials description is systematic and the logic flow is clear and comprehensive. The program that is created to make evaluation for learners is responded. The proposed materials have represented the whole classes of invertebrates and easily understood, so the use of standard language is also needed. The materials are suggested to provide hyperlinks that can widen and enrich the concept of Invertebrates mastery.

The appropriateness of criteria and indicator in this research are in line with Walker & Hess (Azhar Arsyad, 2010: 175-176) state that quality in learning should have: preciseness, importance, completeness, balance, appeal, normality and appropriate with students' situation to provide chances to learn, the instruction is flexible, relations between other teaching programs and evaluation.

2. Graphic Design

The response from the expert that states about Graphic Design quality shows a score 4.55556, meaning very good. So the offline game is very feasible to be used as a learning media.

From the result of validity, the criterion is achieved because this research fulfills the following indicators: The pictures of the game are simple, relevant with the concept of Invertebrates and the size is proportional, texts that are available in the storyboard are clearly readable. Symbols are used consistently, the use of animation cartoons are suitable with the concept of Invertebrates and give more meaningful learning. Besides that, there is information that is used in the storyboard and has different characteristics compared to other offline games.

3. Media Expert

The result from three media experts and three Junior High School Science teachers can be summed up that from the software has a mean score 2.75, meaning feasible. Another aspect that is Audio Visual Communication has a score 2.8, meaning very feasible.

The very feasible criteria can be reached because it can achieve several indicators as follow:

- a. The software is maintainable, usable, compatible and reusable (Parts or all of the teaching media programs can be reused to develop another teaching media)
- b. The aspect of Audio Visual Communication involves: communicative (according to a message and acceptable/ in line with the target), Creative in ideas and delivering ideas, also interesting, audio (narration and back sound),

The criteria or decent indicator for the graphic design and media employs Walker and Hees (Axhar Arsyad, 2010 : 175-176) states that technical quality includes: readability, easiness to use, interface quality, handling students' response, the quality for program maintenance, the quality for documentation and other technical quality that is more specific.

4. Expert in English

The appropriateness about use of English described in Chart 5 shows a mean score 3.28572, meaning easy to understand. The result is obtained from two experts in English and concluded that the English is easy to understand by the seventh grade of Junior High school Students.

Based on the criteria, the use of English that is gained from the validity result shows that it completes the following indicators: Meaningful, Pronunciation, Fluency, Vocabulary, Sentence Construction, Punctuation, and Appropriateness in translation.

The criteria of English are adopted from The Practice of English Language Teaching by Jeremy Hermer 2002, Pearson Education limited, Malaysia. The book explains that the use of English applied in language learning and teaching media should be taught in formal, clear and accepted pronunciation, fluent in the pronunciation, the word choices are suitable for the learners' level and the sentences are suitable with the grammar.

The result of the study that we investigated in the first year is in line with Azhar Arsyad, 2002 that teaching media can assist students to increase understanding, provide an interesting and reliable data, and make data can be easily understood and firm in the information. In short, the use of this offline game can explain messages and information well so that it can enhance the process and the learning results.

5. CONCLUSION

The teaching media of this offline game becomes one of alternatives for a learning media that can be developed based on the competence for junior high school students. The result shown is based on an analysis that employs research and development method and informs that this offline game teaching media can be used as an interesting bilingual teaching media. So by using this media students can easily understand and be able to master the language learning. It is expected that by using this offline game, students can be able to use English in the daily life and make them assume that using English is not taboo and difficult to apply in academic or non-academic learning activities. From the result of the properness test toward the offline game-based bilingual teaching media that is assessed from the following indicators: meaningful, pronunciation, fluency, vocabulary, sentence construction, punctuation, and appropriateness in translation, this offline game teaching media is not only suitable in the learning process, but also in delivering science materials to junior high school students. Bilingual Offline Game-Based teaching media is a teaching media innovation product which has a feasibility test from several aspects. By applying this learning activity using this product, it is expected that active, innovative, creative, educative and fun learning can be manifested. It is also expected that after using this product, students can be smart and competitive and also have global knowledge with Information and technology mastery.

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