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# Problem Based Prezi Multimedia: Elementary School Students' Thinking Skill

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**Abstract**    The aim of this study was to examine the feasibility of problem-based visual Prezi media. The development stages used were Borg and Gall. The participants of the study were fourth grade students of SDN Sukun 03 Malang. The data collection was carried out through observation, questionnaire and interview and it also included need analysis, media design, and media validation test. The validation test result showed that the media is valid and feasible. It was based on the input from material, medium and language experts and teachers. The reliability test confirmed that the media is practical and applicable for science learning process at elementary school level. Interesting and contextual problem-based media can improve students' thinking skill and motivation.

**Keywords**    Prezi, Elementary School, Animal Topic

## 1. Introduction

Development of thinking skills is one of the main goals in the development of learning. Thinking skills refer to the ability to think deeply to enable someone to make the environment more effective [1]. Thinking skills consist of low-order thinking skills and high-order thinking skills. High-order thinking skills are skills such as critical thinking and creative thinking skills.

Thinking skills help someone understand how to know himself, how to know the world, and how to relate to others. It also helps someone analyze his own thoughts to find the right choices and conclusions[1]. Thinking skills are important for child because they can develop children's understanding[2] and academic performance [3].

Thinking skill can be taught to students through academic activities [4][5], using appropriate methods [6]

and curriculum to develop critical thinking skills [7][8]. One learning model that can develop thinking skills is problem-based learning [9][10][11]. This model can affect the ability of students at the level of knowledge, understanding and even further[12][13], increase students' interests and activities [14], improve learning outcomes [15][16][17]; not only at the cognitive level but also on instrumental and transversal levels [18]. This model can also be integrated into learning media such as mobile[19], W[14][20] and application software.

Prezi is a presentation software that allows its users to develop ideas and generate mind maps [21], by allowing presentations that can be zoomed in and out and is different from conventional presentation slides. Prezi is effectively used to increase knowledge acquisition compared to traditional old-style teaching [22]; It is interesting and useful [21], and facilitates the learning process and increases learning outcomes[23] and information literacy[24].

Prezi has been developed with various features such as videos [24], along with text adventure games [25], and features that can be enlarged and moved [22].

Prezi is developed at all levels such as in electricity topic , Physics [26], and higher education level[27] [28]. Prezi is also developed for elementary school education. The elementary school concept can be developed with Prezi like the concept of animal distribution. Prezi media makes it easy for students to study animal locations and animal characteristics based on distribution in Indonesia, so it makes student more interactive and motivated in science learning.

## 2. Objectives

This study attempts to develop learning media Prezi by integrating problem-based learning models in elementary school learning to improve students' thinking skills.

# 3. Methods

This study tried to develop problem-based Prezi media using Borg and Gall step to fourth grade teachers and fourth grade students of Sukun 3 Elementary School in Malang as far five month. The development phase is shown in figure 1. Figure 1 consists of:
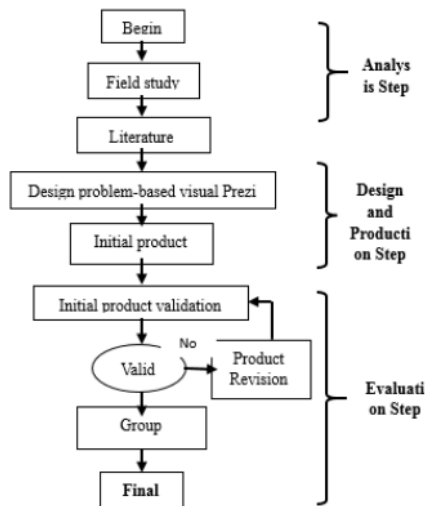


**Figure 1.** Development Procedure Chart

## 3.1. Analysis Step

Analysis step consits of: 1). Field Study Analysis was done to find out learning problems, and student characteristics seen from their learning styles, learning interests, and values. In this phase, questionnaires and observation sheet were used, 2). Literature study was used to examine the theme, basic competence, learning indicators and learning objectives.

Literature studies are taken from the development of experts on animal encyclopedias. The scope of the animal encyclopedia is animals that live in Indonesia. The concept is adapted to the material in grade 5 elementary school.

## 3.2. Problem-based Visual Prezi Learning Media Design and Production Steps

This step consits of: 1). Developing a concept of problem-based visual Prezi media by reviewing the science material of a variety of endangered and non-endangered animals, making a flowchart and developing a draft of the concept of learning according to curriculum, the constructed indicators to become learning material, worksheets by integrating problem-based learning steps; 2). Prezi visual media preparation. At this stage the selection of images, selection of fonts and sizes of letters will be carried out. The preparation of

problem-based visual Prezi media uses the desktop Prezi application, the creation and editing of images using the CorelDraw X7 application, and 3). The process of creating media in problem-based visual Prezi is presented in figure 2
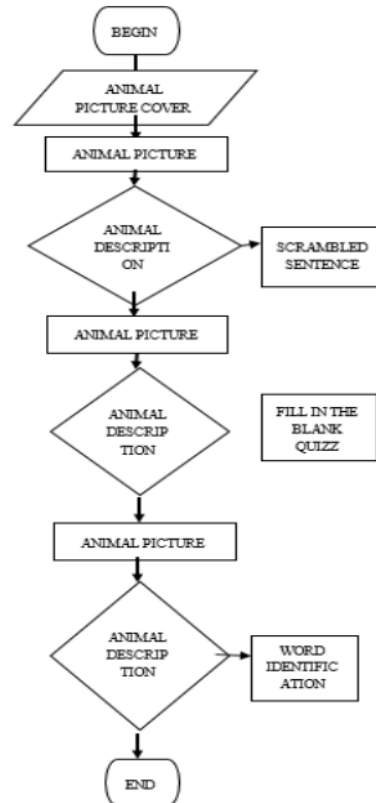


**Figure 2.** Problem-based visual Prezi learning media flowchart

## 3.3. Evaluation Step

Evaluation step consists of: 1). Validation and the try-out test: (a) Validation of material experts, instructional media experts and language experts, (b) teacher test, (c) small group test, and (d) field test. The validation and try-out test used questionnaires, 2). The revision phase, there are two types: (a) changes to learning material in the presentation of learning media. (b) the revised results based on input from the trial that will be obtained by the final product, and 3). Final Product. The final product produces problem-based visual Prezi learning media that is applicable and feasible. The data was then quantitatively analysed using the following equation (1):

**Equation (1).**

$$Presentase : \frac{Score\ obtained\ X100\%}{Ideal\ Score}$$

The conclusion can be drawn and the resultt can be interpreted using guideline in table 1. [29]:

**Table 1.** The Conversion of Learning Achievement and Qualification

| Level of Achievement | Qualification | Description |
|---|---|---|
| 90% - 100% | Highly Feasible | Revision is not required |
| 75% - 89% | Feasible | Revision is not required |
| 65% - 74% | Moderate | Revision is required |
| 55% - 64% | Less Feasible | Revision is required |
| 0% - 54% | Not feasible | Revision is required |

The revised product results were then tested for their effectiveness in thinking skills of students using the cognitive taxonomy of bloom C1 – C6 according to animal distribution material. The test results of thinking skills analysis are tested using one sample t test and SPSS 25 for windows.

# 4. Result

### 4.1. Analysis Step

#### 4.1.1 Problem Analysis

The results from the observations found that teachers did not use the facilities and infrastructure that have been provided by schools such as textbooks and learning did not use digital media. The results of the analysis of the characteristics of grade 4A students found that students were more interested in showing 91% of students are more directed to the visual learning style. The results of students' cognitive abilities are still too low to solve problem-based questions, which is about 30% of students.

#### 4.1.2. Literature Study

The results of the literature study analysis is to examine the theme of Animal Diversity in Indonesia and integrate animal concept about the characteristic of animal as shown in table 2.

**Table 2.** Basic Competence Analysis

| Basic Competence | Indicators | Objectives |
|---|---|---|
| Describing natural resources, environment, technology and society. | Distinguishing endangered and not endangered animals in Indonesia. | Students distinguish endangered from not endangered animals in Indonesia classification accurately. |
| | Describing the endangered and not endangered animals in Indonesia | Students are able to distinguish endangered and not endangered animals in Indonesia classification accurately. |
| | Making report on endangered animals through animal clasification table. | Students are able to classify and describe endangered and not endangered animals in Indonesia accurately. |

### 4.2. Design and Production Step
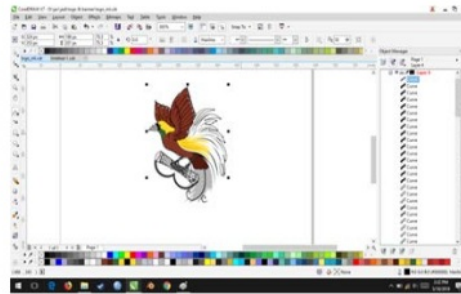
The product draft result is presented in figure 3.



**Figure 3A.** Making pictures of animals using the CorelDRAW X7 application



**Figure 3B.** The layout of Prezi product



**Figure 3C.** Sumatra Zoom in Effect Display



**Figure 3D.** Tiger Zoom in Display

Each picture of endangered animals contains material and questions that lead to a problem-based learning model. Figure 4 and 5 are the questions on the animal picture.

**Figure 4.** The problem-based questions



Kelinci adalah hewan mamalia yang mudah ditemukan di seluruh wilayah Indonesia, tetapi paling banyak ditemukan di wilayah Sumatera dan Jawa. Kelinci menjadi hewan peliharaan dan juga menjadi hewan pedaging. Makanannya berupa wortel, sawi, dan tumbuhan hijau lainnya. Hewan ini mudah untuk diternakkan, sehingga populasinya sangat banyak.
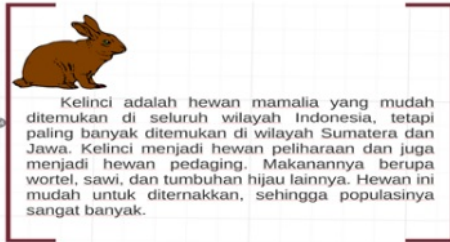
**Figure 5.** Learning Material description sample

The next feature is quiz used to test students' understanding. The quizzes are classified into three types of quizzes: scrambled sentence, fill in the blank quiz and word identification quiz and constructing simple sentences. The scrambled quiz can be seen in figure 6.
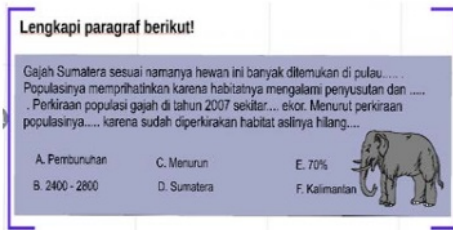


**Figure 6A.** Fill in the Blank Quizz



**Figure 6B.** Word Identification Quizz

## 4.3. Evaluation

The results of the evaluation activities were distributed to experts, teachers and students as shown in table 4

**Table 3.** Validation Result

| No. | Expert | Result | Criterion | Recommendation |
|---|---|---|---|---|
| 1. | Content | 83, 91% | Valid | Animal picture is made more colorful and interesting. The description of animal is brief and clear |
| 2. | Media | 84,5% | Valid | Prezi visual Background is made colorful Sound and music effects are added |
| 3. | Language | 100% | Highly Valid | Language content is effective and efficient |
| 4 | Teachers | 100% | Highly Practical | The questions are understandable |
| 5. | Students | 89,58% | Highly Practical | |

The results of the thinking skills test show students' thinking skills are increasing as follows:

**Table 4.** Table of students' thinking skills

| Aspect | Without prezi | Using prezi |
|---|---|---|
| C1 | 75.6 | 82.6 |
| C2 | 77.6 | 83.5 |
| C3 | 43.4 | 48.5 |
| C4 | 45.4 | 50.2 |
| C5 | 36.3 | 42.5 |
| C6 | 25.2 | 36.5 |

Based on table 4, it can be seen that the results of students' thinking skills in all cognitive aspects starting from C1-C6 have increased. It is supported by the t test value, as table 5 shows.

Besides table 5, the results of paired sample test, t test, is known that the results before and after using the Prezi multimedia. This is indicated by a significance value of 0.01 <0.05. From the t test value, it is known that t count> t table, namely t count of 6.914> 1.94 and it indicate the null hypothesis is rejected and the alternative hypothesis is accepted which means that there is a difference before and after treatment.

**Table 5.** Paired Sample Test

| | Paired Differences | | | | | t | df | Sig (2tailed) |
|---|---|---|---|---|---|---|---|---|
| | Mean | Std.Deviation | Std Error Mean | Lower | Upper | | | |
| Pair 1 | -67167 | 2,3794 | ,9714 | -9,2137 | -4,2196 | -6,914 | 5 | 0,01 |

## 5. Discussion

Problem-based visual Prezi learning media displays images and text by presenting them using zooming effects, interactive media helps facilitate students in understanding the material [30][31] that a good medium has a motivating function and creates interactions that stimulate students[32] to learn and are able to develop more effective learning [22], attract and stimulate students [21] [33].

The results of the assessment show that the expert assessment score is valid and highly valid. Good learning media is not only seen from the attractive media appearance but also seen in the material in the media and the language used in the media. Media display is the result of visualization of investigations, simulations, and predictions that exist in the material [34].

The results of problem-based media implementation given to the class have fulfilled the aspects of attractiveness, effectiveness, activeness and practicality in learning and from the learning test results students are able to develop thinking skills especially when getting quizzes that lead to daily problems. This is due to the concept of media Prezi that integrates problem-based learning models. Problem-based learning is a learning that can make students active, responsible, able to overcome real-world problem ([35][36]), developing students' critical thinking skills [19], effective and efficient learning [20].

## 6. Conclusions

The development of Prezi media that integrates problem-based learning is carried out through several stages, namely needs analysis, development of problem-based Prezi design, validation and testing of development products. The results of problem-based Prezi development are claimed valid and practically applicable to be used in learning. Students' thinking skill can be drilled through media that can attract students' attention in learning.

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