Development of Instructional Media Environmental-based Child Blood Type Detector Cardboard (KAPODA) Formal and Informal Education

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Abstract. KAPODA (Blood Type Detector Cardboard) is a Learning media made of waste materials are still feasible in recycling. The purpose of this research is to develop Learning media from garbage that can still be used as learning media material. The method used is Research and Development (R & D). Validation this Kapoda, using 26 samples divided into several validator 6 teachers Biology, 5 Ordinary people and 15 students in the class. The statement items used as many as 20 items with 10 items of positive statements and 10 items of negative statements. The result of this research is that the Kapoda media can be used as a learning media material with 94%. The negative statement that reads "I do not like this media, because it is difficult to use" with a value of 23.08%. Item 13 of the positive statement that reads "This media is easy to apply in the learning process with 75% value". The 14 item of the negative statement that reads the medium is not easy in the applicant in the learning process with a value of 66.35%. Based on the analysis of the data stated that the media can be used as a medium of learning for the community and learners.

1. Introduction

1.1. Biology and the problems

The thinking ability of people differs. This is what makes each person has a difference in their reasoning towards an object. Discussing about the thinking process would of course mentions the media expert Dale [1, 2] Basically, learning is a synergy results from three main components of learning, which are learners, competence of teachers, and learning facilities. According to Cagne and Biggs, learning is a series of events/occasions which affects learners in such a way that the learning process can take place easily [3, 4].

Biology as one of the field of natural sciences provides various learning experience to understand the concept and process of science. This process skill includes the skills of observation, hypothesis

proposition, proper instrument and material usage while always considering work security and safety, question proposition, categorizing and interpreting data, and communicating findings orally or by writing, mining and choosing relevant factual information to verify ideas or solving daily problems [5, 6]. Facing said matters as teachers would need extraordinary skills in analyzing, designing media and strategy for the learning process that the learning process does not become monotone and the goal and hopes which are the target above achieved. One of the skills of teachers is creating instructional media. Suarjana explained that the media can improve learning outcomes and student activities [7].

Instructional media is a component to achieve the targets of learning and education, where the theoretical message is designed in such a way that it can give learners a hypnolearning effect. Visual media is media which involves the sense of sight, or media of object and events which can be visualized realistically to resemble the actual circumstances [8, 9]. The role of visual media in the learning process is manipulative, which help learners to understand hard-to-observe objects because they are too small, such as molecules, cells, atoms, etc., by utilizing pictures, films, and various other things.

Based on the description above, the writer designed a visual aid media to achieve the target of learning and education, after analyzing the condition of the environment and learners at school, making a simple media which is still able to give the learners a hypnolearning effect.

1.2. Blood type detector cardboard
Blood Type Detector Cardboard is a learning medium created to support the learning process, this media including visual media motion. Where the game leads the moving lights, and cable mocks as the basis for reading the blood type of the child. This media is very easy to use in the classroom or outside the classroom. Public and student responses have been positive, and quickly understand the application process and blood type.

1.3. Tools and materials
Materials and tools in making KAPODA are as follows Scissors, Ruler, Solder, Pen, Paper Glue, Lead Lamp and Used Cable, batteries, cardboard, Cat acrylic.

1.4. Media Creation Process
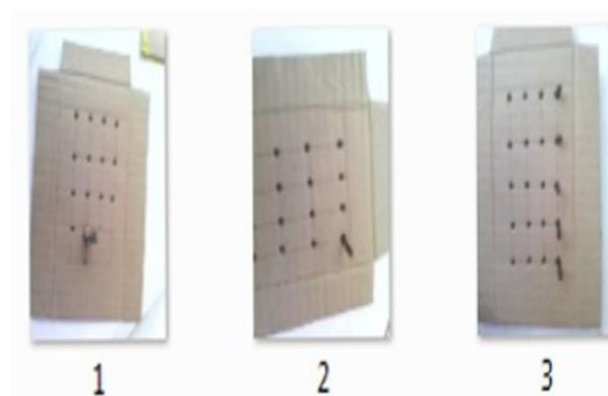In making kapoda, you can see on the following pictures

Figure 1. The picture of media creation process.
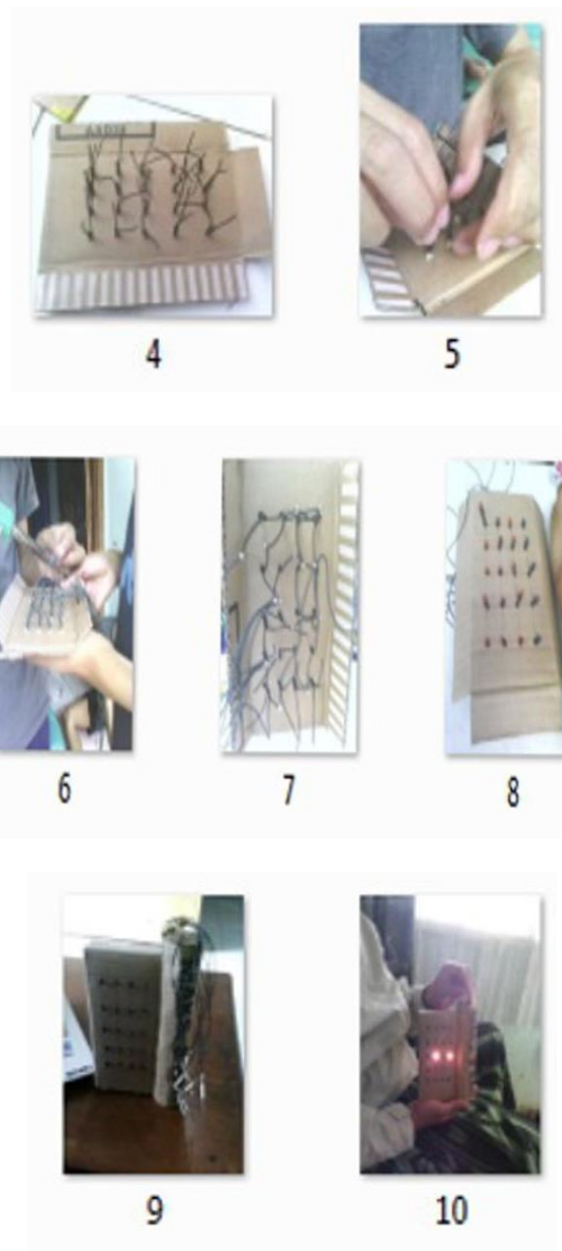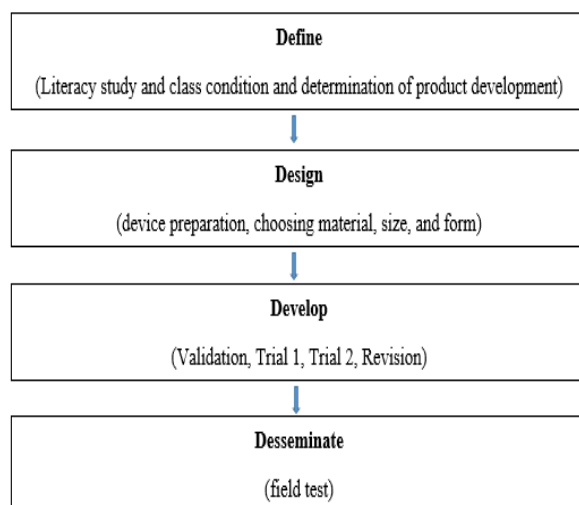
Figure 1. Cont.

2. Methodology

This research is a research and development process with the following stages: (1) define, (2) design, (3) develop, (4) desseminate. The stages can be seen in the following diagram:

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┌─────────────────────────────────────────────────────────────────┐
│                              Define                               │
│ (Literacy study and class condition and determination of product │
│                           development)                            │
└─────────────────────────────────────────────────────────────────┘
                                  ↓
┌─────────────────────────────────────────────────────────────────┐
│                              Design                               │
│        (device preparation, choosing material, size, and form)    │
└─────────────────────────────────────────────────────────────────┘
                                  ↓
┌─────────────────────────────────────────────────────────────────┐
│                             Develop                               │
│            (Validation, Trial 1, Trial 2, Revision)               │
└─────────────────────────────────────────────────────────────────┘
                                  ↓
┌─────────────────────────────────────────────────────────────────┐
│                           Desseminate                            │
│                           (field test)                            │
└─────────────────────────────────────────────────────────────────┘
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Figure 2. Research design.

2.1. Research subject

The research subject of the instructional media development is the community of the villages Parigi and Cibodas, along with the students of grade 11 of Madrasah Aliyah (Islamic High School) of Pondok Modern Assalam Sukabumi.

2.2. Time and place of research

The research had been conducted from October to January 2016 in the Community in Parigi Village, Parungkuda Sub-district, and Cibodas Village, Bojonggenteng Sub-district, along with the students of Grade 11 Madrasah Aliyah (Islamic High School) of Pondok Modern Assalam Sukabumi.

2.3. Research instrument

The instrument used in this study is a questionnaire with 20 items and has been validated by several Biology teachers. 10 items of positive statements and 10 items of negative statements. All of these statements are used to assess the feasibility of the media in the understanding of society (packet C school) in blood type literacy and media feasibility in the learning process in the classroom.
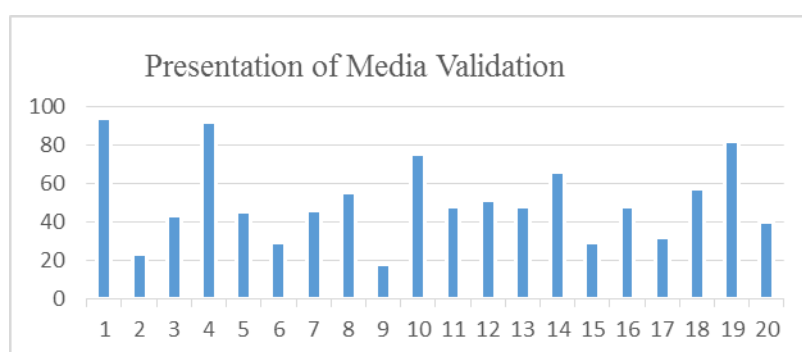
3. Data analysis results

In the validation KAPODA, the used 26 samples in this Research, with divided into several validators. With details of 6 teachers of Biology, 5 Ordinary people and 15 students in the class. The item is used as 20 items with 10 items of positive statement and 10 items of negative statement. As for the data of this study as follows.

Table 1. The precentage of KAPODA criteria .

Item Test	Percentase	Criteria
1	94	High
2	23	Low
3	43	Medium
4	92	High
5	45	Medium
6	29	Low
7	46	Medium
8	55	Medium
9	18	Low
10	75	High

Table 1. Cont.

Item Test	Percentase	Criteria
11	48	Medium
12	51	Medium
13	48	Medium
14	66	Medium
15	29	Low
16	48	Medium
17	32	Low
18	57	Medium
19	82	High
20	40	Medium

Figure 3. The presentage of media validation.

From the results of existing data analysis, it appears that the positive statements, most of which are represented by statement 1 with the statement "Media is very easy to use", reaching 94%. This shows that this medium is really very easy and usefull, by educator bor the informal school (Package C School). The results of this study in accordance with research Sanjaya stating that the media can increase student interest and achievement [10]

A fairly low revelation is represented by the statement 9 with the sound "This medium is easy to make, because of the affordable material (cardboard)" with a value of 18%. The results of this calculation shows that this media is less easy to be made, either by educators or learners or the parties concerned. Because the negative statement, meaning the opposite where in the process of making the media easy to make (please compaing with other results).

Another negative statement, in the 4 item statement with "Not easy", because it is difficult to operate, with a value of 92%. This negative statement states the opposite, so this shows that the media is very easy to operate, and increases the alliteration of the community in understanding blood type in formal school (packet C) by both educators and learners and the parties concerned. This is in accordance with research Nurwahyuningsih which states that the media can provide a real visual message so that students are more interested to learn [11].

The lowest statement is represented by statement 2 with the sound "I do not like KAPODA because it is difficult to operate" with a value of 23%. This result shows that the media can be used in the learning process in the classroom.

4. Conclusions

KAPODA is a media that can be used as a media to achieve goals, material in the blood groups, formal and non formal education. KAPODA type of learning media in its use has been designed in accordance with GBPP. The elements contained in KAPODA media are (1) learning messages or core materials (2) cardboard tools for learning aids.

KAPODA helps facilitators to convey information, as it attracts the interest and attractiveness of learners in formal and informal learning activities.

KAPODA is a modification and simplification of goods that can be used as a learning medium of blood circulation, easy to use by the learners, and can improve the effectiveness and efficiency of learning goals.

The implications of learning about peralingarah with KAPODA media are:

- Able to improve morale, motivation, attractiveness and alliteration of society and learners.
- Learners who have a strong mental and positive about the class, Pusdiklat live pure, and also can ensure that they can be varied through this media
- Learners both in formal education and non-formal education institutions can help disseminate or re-socialize information about the important role of blood type. Based on the results of the above research, for educators / facilitators / resource person is: Convey information, awareness and confidence in learners (at school and out of school) Information about the use of KAPODA media in participating can be used for instructional media in schools, as well as to increase community literacy in education with various off-the-shelf education programs, e.g. equality education, homeschooling, youth or community organizations such as Scout Movement, Indonesian Red Cross, PKK events and *majelis taklim* organizations and other activities as learning media.

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