

Development of echinoderm comic as learning media in Junior High School

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Abstract: Comic media development is essential for junior high school students. Because in learning the echinoderm material, students' motivation is shallow. This research aims to 1) develop echinoderms comics, 2) find out how to develop comic learning media, 3) find out whether comic learning media was suitable for scientific learning. This research and development used the Hannafin and Peck model with three stages they were 1) needs analysis, 2) design stage and 3) development and implementation. The methods of collecting data were used observation and questionnaires. Comic media validation consisted of material experts, media experts, and educators. The subjects in this research were students of class VII Junior High School Islam Integral Luqman Al-Hakim 02 Batam. The quality of comic media is based on material expert validation, a suitable category (85.14%). The result of media expert validation was an excellent category (92.00%). Students who responded at the small group test stage were an excellent category (93.61%). Finally, students answered a suitable category at the big group test (88.25%). Echinoderm comics have been ideal for science learning based on the explanation above.

Keywords: Learning media; comics; echinoderms; classification of living things.

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1. Introduction

Learning media can be understood as an intermediary of information. The information is either educational, political, technological or news. Media is everything that can be used to send messages and can stimulate our mind, arouse enthusiasm, attention, and willingness of students so that it can encourage the learning process in students (Hayes et al., 2017; Mahnun, 2012; Putra et al., 2013). It can be concluded that the learning media created or used are in accordance with: 1) learning theory; 2) learning objectives; 3) Stimulate students' thoughts, feelings, and attention.

In a learning activity, media is needed as a tool during the learning process, as one of the solutions that can be contributed through this research, researcher innovate by developing learning media in the form of comics designed with pictures, storylines and learning materials. Comic is a book that contain cartoons that reveal characters and apply a story in a sequence that is closely related to the image and designed to provide entertainment to the reader. Comics also have their own advantages that they can be used for several things, such as: 1) Motivating students; 2) Develop reading skills; 3) Students get educational achievements; and 4) Students are introduced to new words (Ambaryani & Airlanda, 2017; Kanti et al., 2018; Saputro, 2015). This was caused by comics provided visual aspects which were picture and text. The combination of picture and text in the comics could motivate the students by making text easier to understand. The pictures of the comics gave additional information to the students besides the text. Using picture in teaching and learning activities could have students to learn better (Prasetyadi, 2015). By using pictures, teacher helped students to comperhand verbal words whose teacher used in explanation. In this case, pictures played role as nonverbal language that could minimize misunderstanding on teacher's explanation. When the students did not understand

some term used in the text, they could guess them by interpreting the pictures that illustrate the term.

Observations that have been made to science teachers, information was obtained that the use of environment-based learning media is still little used, the learning media found in schools are torsos, books related to Natural Science materials, and Charta, and there was still no learning media in the form of comics on echinoderm material. Because there are still few environmental-based media in the form of comics, therefore researchers innovate at Luqman al-hakim Integral Islamic Junior High School by developing a learning comic media with the concept of Echinoderms (Frisca et al., 2020). In developing this comic media, researcher used PowerPoint media. Power Point media could help an idea become more interesting and its purpose clear when presented, because power point media displays dynamic slides including interesting clip art where everything was easily displayed on the screen (Isnayanti, 2016). In addition to using Microsoft Power Point, the editing of character images in the development of this comic used Cap Cut application. Cap Cut was an editor application that could be used for editing, with various filters that turn images into comic characters. The app also offered essential editing features, creative effects, filters, stickers, and fonts, as well as templates that can produce a video.

2. Materials and Methods

This type of research was Research and Development (R&D). The product to be developed was an educational comic book on the classification of living things, especially the phylum Echinoderms in Rempang Island, Batam City, in science class VII Junior High School. The development in this study used the Hannafin and Peck development model. The Hannafin and Peck model was a model through teaching design which consists of three phases, namely the requirements analysis phase, the design phase, and the development and implementation phase. Development consists of three main processes, namely: 1) Needs research stage; 2) Design stage; and 3) The development and implementation phase which involves an evaluation and revision process. The development of learning media was limited to the development stage and does not take learning outcomes from students. Hannafin and Peck's design model is a simple but elegant model because of the evaluation and revision process in its stages (Boangmanalu et al., 2018; Rahmatin et al., 2021).

According to Fadillah, (2018) that the sample in this study was class VII students of the Luqman Al-Hakim 02 Integral Islamic Junior High School Batam, Which sampling was using simple random sampling. The trial technique in this study was divided into two scales, namely the small-scale and large-scale trials. Tests on a small scale were carried out to find errors to be revised. It was done so that the products made are right on target and according to human needs. The subject of the small group trial was carried out on 4-14 respondents and the large group trial was between 15-50 respondents. In this study, a small-scale product trial was conducted with 12 students.

Data collection instruments include observation, and questionnaires. Questionnaires are used to collect data on the feasibility of materials and media. The validity of the material is very important so as not to create misconceptions in students. This was also conveyed in previous research related to the classification of living things explaining that the suitability of the material is very important in the development of media (Churri & Agung, 2013). In the questionnaire filled out by students using a Likert scale as shown in the Table 1.

Table 1. Student response questionnaire assessment criteria

Criteria	Score
Strongly Disagree	1
Disagree	2
Doubtful	3
Agree	4
Strongly agree	5

Source: [Arywiantari et al., \(2015\)](#)

The results of the average scores were presented in each table using the [Formula 1](#). Information: X is Average score, $\sum X$ is total score, and N is maximum score.

$$X = \frac{\sum X}{N} \times 100\% \tag{1}$$

Calculation results from the scores obtained to determine the validity in accordance with the criteria for the average score can be seen in [Table 2](#).

Table 2. Qualification score average

Achievement level (%)	Qualification	Description
90 - 100	Very good	No need to revise
75 - 89	Well	Revised as necessary
65 - 74	Enough	Quite a lot revised
55 - 64	Not enough	Lots of revisions
0 - 54	Very less	Totally revised

Source: [Arywiantari et al., \(2015\)](#)

3. Results

This study used the Hannafin and Peck development model which consists of three stages, namely the needs analysis stage, the design stage, and the development and implementation stage. In a needs analysis based on the Science Curriculum, this media referred to providing information related to the identification of the characteristics of living things in the surrounding environment, especially in Batam City which is surrounded by beaches. While the analysis of student needs, students want illustrated media, attractive appearance and with information that was easy to understand.

The next step was to prepare an instrument in the form of a questionnaire that's provided by the researcher to test whether this comic learning media was feasible or not to be used in the learning process. The feasibility of learning media could be seen according to the Likert scale. Questionnaires with a Likert scale were given to media experts, material experts, and respondents (students).

Aspects assessed from the trial of echinoderm comic media included interest, material, and language. From these several aspects, there were data on the results of assessments from material experts ([Table 3](#)) and media experts ([Table 4](#) and [Table 5](#)).

Table 3. Data analysis of expert validator material draft 2

Assessment aspect	$\sum X$ Aspect	Max Score	Score (%)	Category of assessment results
Content Eligibility	70	80	87.50	Well
Language Eligibility	77	90	85.56	Well
Contextual	35	40	87.50	Well
Presentation	32	40	80.00	Well
Amount	214	250	340.56	Well
Average percentage			85.13	Well (Revised as necessary)

The results of the data in draft 1 obtained 72.77% where the researcher had to revise a lot of material that was corrected by material experts in the echinoderm comic media. After the researcher revised the material, namely in draft 2, it was obtained an assessment of 85.13% where the researcher was good at explaining the material on the echinoderm comic media.

The results of the media display correction data on draft 1 obtained 81.06%. This shows that it was enough for researchers to make necessary revisions which are corrected by media experts on echinoderm comics. After the researchers revised the media display, namely in draft 2, it was obtained an assessment of 92.00% where the researchers did not need to revise the appearance of the echinoderm comic media.

Table 4. Data analysis result of media expert validator draft 1

Assessment Aspect	Indicator	ΣX Aspect	Max Score	Score (%)	Category of Assessment Results
Graphic Eligibility	Echinoderms Comic	23	30	76.67	Well
	Media Size				
	Front view design	83	105	79.04	Well
Language Eligibility	Media content design	108	135	80.00	Well
	Language	37	45	82.22	Well
	Practicality	50	60	83.33	Well
Average Percentage				81.06	Well (Revised as necessary)

Table 5. Data analysis result of media expert validator draft 2

Assessment Aspect	Indicator	ΣX Aspect	Max Score	Score (%)	Category of Assessment Results
Graphic Eligibility	Echinoderms Comic	28	30	93.33	Very good
	Media Size				
	Front view design	96	105	91.42	Very good
Language Eligibility	Media content design	125	135	92.59	Very good
	Language	40	45	88.89	Very good
	Practicality	56	60	93.33	Very good
Average Percentage				92.00	Very good(No need to revise)

The results of the comic media trial to small-scale and large-scale respondents (students) could be seen in [Table 6](#) and [Table 7](#).

Table 6. Small group trial analysis results data

No	Assessment Aspect	ΣX Aspect	Max Score	Score (%)	Achievement Level Category
1	Interest	333	360	92.50	Very well
2	Material	163	180	90.56	Very well
3	Language	176	180	97.78	Very well
Average Percentage				93.33	Very well (No need to revise)

Table 7. Large group trial analysis results data

No	Assessment Aspect	ΣX Aspect	Max Score	Score (%)	Achievement Level Category
1	Interest	732	840	87.14	Well
2	Material	360	420	85.71	Well
3	Language	386	420	91.90	Very well
Average Percentage				88.25	Well (Revised as necessary)

The results of the trial of echinoderm comics on small-scale respondents (students) were 93.33%. This showed that this echinoderm comic could be accepted by small groups. While the large group trial obtained 88.25% which indicates this comic can be used in large groups.

4. Discussion

The results of the development of the Echinoderm comic media carried out by the researchers found that the researchers had to improve the material, especially in the anatomy and physiology section. In the comic media display, there were several changes such as story panels, conversation balloons, as well as changes in color and background

images that must be more attractive with firm colors. Regarding media display, previous research, "Development of Android-Based Learning Comic Media on Archaeacteria and Eubacteria Materials" explained that the drawing of sketches and drawings of each character/character as well as story panels by drawing menus on HVS paper using a pencil and adding color sketches to the comic background very necessary to made the interest of the reader (Aprilia, 2018).

The responses of respondents (students) on the echinoderm comic media explained that comic echinoderm must look neat. From the results of large-scale trials on respondents (students), researchers did not need to change the total comic media because the category had reached 88.25 (good/revised if necessary). Because after being interviewed, the students stated that: 1) This was their first experience reading science material packaged in comic media; 2) Feel happy and want to have this comic media; 3) Still confused about the order of reading because it first time reading comics, so there was a delivery of neatness. Previous research explained that several criteria that need to be considered in developing comics products were that comics must be developed properly, and the characteristics of comics must adapt to the needs of students (Mahnun, 2012). This research was also strengthened by previous research which stated that the development of comic media should have to look at the learning conditions of students so that it could be fun. The popularity of comics, which were widely read by children, even adults, made comics very potential to be used as learning media (Supriyanta, 2015).

The development of this comic media has several benefits: (1) Learning media can be interesting and students must pay attention to what teaching material has been presented by the educator; (2) learning media must overcome differences in students' learning experiences based on socio-economic backgrounds; (3) A teaching media that will assist students in provide a learning experience that is difficult to obtain in other ways; (4) Learning media that can help the development of students' thinking in teaching and learning activities, such as watching a film about an event or events. An incident from the film they can see in the screening of the film, which they can study regularly and continuously; (5) Learning media will lead to an ability of students to try to learn based on true stories and experiences; (6) Learning media will be able to reduce the presence of verbalism that will process in the form of written or spoken words.

5. Conclusions

The conclusions from the results of this study were: 1) Calculation of the questionnaire instrument from validators (material experts and media experts) to determine the quality of the comic products developed, the percentage of final average score assessment from material experts is 85.14% (good category) , and the final average score of the media experts obtained a value of 92.00% (very good category) where this Echinoderm comic deserves to be tested on students; 2) Assessment of the results of the average score of small-scale respondents with a total of 12 students obtained a percentage with a score of 93.61% (very good category) and large-scale trials of 88.25% (good category) where this Echinoderm comic deserved to be a learning medium for students.

Suggestions for further product development and use were, 1) the material presented in this comic media must pay close attention to the material, could be developed more deeply and broadly, and add other basic competencies to the material, 2) the media display was presented well according to the needs of students, 3) Development of learning media for Echinoderms comics still used the PowerPoint and Cap Cut applications for other researchers should be able to develop comics with other applications that were more practice and easy.

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