The development of biology instructional media based on macromedia flash from the invertebrate’s inventory output at “Pulau Tikus”

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Abstract. The Purpose of this research is: 1) to know and inventories the types of invertebrates which live in Tikus Island; 2) to develop the biology instructional media of animal course based on the macromedia flash for the 10th grade of high school students, 3) to study the quality of learning based media through the invertebrate’s macromedia, and its assessment on biology teachers. The object of this study utilizes the invertebrate inventory at Tikus island, in which practical survey, interview and explorative descriptive on another types of biota was conducted at Tikus island. The development of product learning was based on macromedia flash research (Research and Development), by implementing the ADDIE Model (Analysis, Design, Development and Production, Implementation, Evaluation). According to the obtained results, there were 18 Species taken from 6 phylum invertebrates. These are Porifera, Coelenterate, Mollusca, Vermes, Echinoderms and Arthropods. The survey showed that based on the validation of linguistic expert (86,4%), validation subject matter experts (83,9 %), validation of media expert (87,8%) the validator eligibility by teachers (84,5%) and the test of the students (86,04%) are all in very good criteria. As seen at the percentage range, it can be inferred that biology media based on macromedia flash of the invertebrate inventory at Tikus island is deemed as very appropriately used by the teachers and students.

1. Introduction

Teachers is an environmental factor that can to exert an influence the process of the students learning. Teachers of role is as facilitators, should be maximized because it could have had a substantial impact on the ability of learning. The utilization of learning teachers has a responsibility to help students learning is easy, well and directed [1].

Therefore, a requiring teacher to has some special ability relating to the utilization of learning, teaching materials and learning of media. All of them are instrumental in the process of learning. Specially for media, the teachers reluctant to use media in process of learning [2]. The causes include using media it is sophisticated, the expensive, need to using method of teachers and lack appreciation with to creative teachers. While, teachers always have to follow of technological development in
learning and to always update the KTSP to optimize potential is existing local around in the school. The learning of media to learning process can be arousing desire and interest, new raise motivation and learning simulation [3,4].

The potential of local, also have yet to be optimally by school in learning biology activities, While the utilization of the potential of school is one of KTSP characteristic. Bengkulu, Having many available potential in school, near or outside. That could actually be used as a source of studied the biology in the High school implementation. One of those with potential marine tourism is “Tikus island” [5].

In addition to inventory rare invertebrates’ diversity on the Tikus Island, the study of the biological basis based macromedia flash with matter have not done. According to interviews carried by a high school teacher in urban area Bengkulu, obtained data that teaching materials used in learning is still in biology textbooks and LKS. No material high school biology particularly on the diversity of animalia based on the city Bengkulu own potential. On the biology classroom, class X high school one of competence to be achieved were students able to describe the phylum in the kingdom animalia and roles in the life of. The needs analysis, get information was obtained that the use of teaching based macromedia flash on the potential of the region needed students for helping achieve biology competence. primary and the purpose of learning.

At the time however learning the teacher had not yet uses the media in flash, but the teacher uses the media in textbooks and a picture to better understand the subject matter which lasted. Some students bored because once studied biology only teachers active while students want to learn that calm down and students active in order to work together.

This too is supported by previous studies that conclude that using professional 8, macromedia flash students are very active in learning and the student learning 75 KKM reached percent [6]. This research aims to:

- Knows and inventory the types of invertebrates which is in the Tikus Island;
- Development of biology instructional media based on macromedia flash for student high school to matter in the second semester class X for animalia subject,
- Know the quality of learning based media invertebrate’s macromedia on the assessment of the biology teachers

2. Methods

The development of product learning based macromedia flash, is R and D research (Research and Development) with used the ADDIE Model (Analysis, Design, Development and Production, Implementation, Evaluation). Rand D research in education sector used to develop education and products validating, in this media education. Research development does not to test the theory but examine and products.

This study was conducted on the May until November 2018. Research on invertebrates diversity done on the island of mice Bengkulu As for the used to obtain information to comment on teachers and students are learning media at the SMAN 3 Bengkulu City.

The collection techniques, to be used by researchers that 1) observation or the collection of invertebrate’s specimens on the Tikus Island in a belt transect as far as 100m, and every transect having wide belt 5m (each 2,5m transect on each side). Coral direct observation was until too remote areas. was also done to do diving at the depth of 2-4 meters. 2) the interviews with students and teachers, 3) other of any economic indicators that was used to evaluate for the feasibility of from the media of learning developed.

An instrument that used in research is to instrument observation, interview guidelines, and an instrument consisting of the language aspect, the content, material view and graphical aspect.
3. Results and discussion

3.1. Inventory invertebrates on the island
From the result, got 18 species of 6 phylum invertebrates. The invertebrate’s type is found on the island, shown in table 1.

| No | Phylum       | Species                                      |
|----|--------------|----------------------------------------------|
| 1  | Porifera     | Halichondria panicea                         |
|    |              | Oscarella lobularis                          |
|    |              | Haliclona cinerea                            |
| 2  | Coelenterata | Acropora Cervicornis                         |
|    |              | Acropora tenuis                              |
|    |              | Stichodactyla gigantea                       |
| 3  | Annelida     | Nereis sp.                                   |
| 4  | Mollusca     | Turbo castanea                               |
|    |              | Conus betulinus                              |
|    |              | Ruditapes decussatus                         |
|    |              | Anadara granosa                              |
| 5  | Echinodermata| Holothuria edulis                            |
|    |              | Ophiocomina nigra                            |
|    |              | Echinus sp.                                  |
|    |              | Deadema Setosum                              |
| 6  | Arthropoda   | Coenobita sp                                 |
|    |              | Scylla sp                                    |
|    |              | Paguroidea                                   |

3.2. Feasibility assessment by the linguistic, the material and media expert
The results from analysis data with the survey, based on the validation of linguistic expert (86.4%), with “Sangat Valid” criteria and validation subject matter experts (83.9 %) with “Sangat Valid” criteria too. It was because the material around the learning of media, possessing conformity with competence of association as well as material also designed by pulling. It’s so as to give attraction for students to understand better an easily and raised in a long time. The media of learning has very strategic function because can clarify, facilitate, accelerate the delivery of a message or material to students, so the students get it over matter being conveyed [7].

Based on the validation of media expert (86.4%) with “Sangat Valid” criteria. It was because the media that developed having the appearance of that draws that would give the understanding of material. The media also provides evaluation exercise, the feedback on the results of students and find its outcome students will be motivated to trying to understand the material. With knowing the outcome, students motivated to study harder this, when these results are making progress in order to get the results better [8].

3.3. Feasibility assessment by biology teacher
Based on the validation of teacher expert (86.4%) with “Valid” criteria. Suitable to the media in learning, that have conformity to the purpose of learning, the, strategy learning and available time [9].

3.4. Feasibility assessment by student
The students for measuring feasibility media education have been developed. For research is bounded on a small scale, trial so in the analysis until the 10 students. If the results of research conducted
having or were assessed, as suitable by experts and acceptors, then the tray large scale will be continued.

Based on the validation of teacher expert (86.04%) with “sangat layak” criteria. Media developed this is easy to use and thus can help students in understanding material. The media have the meaning of sufficient importance, because these activities obscurity teaching materials delivered allow us to make media as an intermediary and by the presence of the media, he could avoid boredom and fatigue of students in learning [8].

Based on the validation of linguistic expert, validation subject matter experts, validation of media expert, the validator eligibility by teachers, and the test of the students, It can be seen the feasibility of percentage in diagram.

Based on the Research, there are 18 Species from 6 phylum invertebrates. This is Porifera, Coelenterata, Mollusca, Vermes, Echinoderms and Arthropods. The results from analysis data with the survey, based on the validation of linguistic expert (86.4%), validation subject matter experts (83.9 %), validation of media expert (87.8%) the validator eligibility by teachers (84.5%) and the test of the students (86.04%) the result is very good criteria. Based on this percentage, it can be concluded that media biology media based on macromedia flash from the invertebrate’s inventory on the island of mice it is very appropriate used by teachers and students.

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References
[1] Sugiyono 2008 Metode Penelitian Pendidikan, Pendekatan Kuantitatif dan R&D (Bandung: Alfabeta)
[2] Stujino and Thomas W A 2005 Pendayagunaan Media Pembelajaran Jurnal Pendidikan Penabur (4)
[3] Hamalik O 1986 Media Pendidikan (Bandung: Alumni)
[4] Arsyad A 2011 Media Pembelajaran (Jakarta: Raja Grafindo)
[5] Suratsih M S and Suhandoyo Y W 2010 Pengembangan Modul Pembelajaran Biologi Berbasis Potensi Lokal Dalam Kerangka Implementasi KTSP SMA Di Yogyakarta Laporan Hasil
Penelitian Unggulan UNY

[6] Mustikasari I, Nur R U and Supriyanto 2012 Efektivitas Pemetaatan Macromedia Flash dengan Pendekatan Savi Materi Sistem Gerak di SMAN 1 Kajen Jurnal Biology Education 1(2) 8-13

[7] Rusman 2012 Belajar dan Pembelajaran Berbasis Komputer (Bandung: Alfabeta)

[8] Djamarah S B dan Zain A 2006 Strategi Belajar Mengajar (Jakarta: Rineka Cipta)

[9] Susilana R dan Riyana C 2009 Media Pembelajaran (Bandung: CV Wacana Prima)