
Development of A Poster As A Teaching Media in The Concept of Fish Breeding Cycle

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Abstract

This study aims to develop and obtain expert validation of posters as a teaching media on fish breeding cycles in aquaculture studies. The expert validation and students' perceptions towards the developed poster's eligibility are also available in this study. Research and Development methods using the ADDIE model were used with six experts who are lecturers at the Faculty of Vocational and Technical Education and lecturers at Faculty of Human Development, Universiti Pendidikan Sultan Idris (UPSI). The use of posters developed was carried out on 32 fourth semester students in agricultural science who took aquaculture courses and responded to the poster. The instruments used were the expert validation rubric and questionnaires to get students' feedback. The results showed that the developed poster had been certified by experts for use in learning. Experts' average poster eligibility was 92.7%, while 79.7% of students strongly agreed that the poster met the learning poster criteria. The study's findings showed that the poster developed is handy in explaining the topic of the fish breeding cycle. The study's implications showed that the poster developed can be used by lecturers or teachers as teaching media more effectively.

Keywords: Poster, Teaching media, ADDIE model.

Received: 11 November 2020. Accepted: 09 December 2020.

Introduction

The Fourth Industrial Revolution had a profound influence on world education, including Malaysia. In the Malaysian Higher Education Education Development Plan 2015-2025, one of the Ministry of Education Malaysia's important

agendas is to produce quality Technical and Vocational Education and Training (TVET) graduates (Ministry of Education Malaysia, 2015). Colleges and Vocational Colleges need to change the learning curriculum to suit the demands of the 21st century to create quality graduates.



Students must have thinking skills in 21st-century learning, including communication skills, collaboration, critical thinking, problem-solving, creativity, and innovation. (Susilawati, Anriani, & Hendrayana, 2018). Therefore, educators in vocational fields need to develop students' thinking skills by changing the appropriate learning methods or strategies. One of them is by using teaching media that can improve students' thinking skills.

Teaching media is defined as tools that can help learners fulfill their learning goals (Rizawayani, Adelila Sari & Safitri, 2017). Zulkifli has studied the effectiveness of using the teaching media, Abidin, Zurina, Mohd Hafiz, & Zulkifli (2018), where the finding showed that using the teaching media could improve students' ability to answer written exam questions involving thinking skills.

Based on the interview conducted with lecturers in Aquaculture, the lack of equipment in the aquaculture laboratory is one of the problems in achieving learning objectives. For the topic of induction fish breeding, the availability of the number of tanks and mature mates is still deficient compared to the number of students. Another problem is the limited student time because students learn one course, but there are other courses, so they cannot fully observe induction's breeding reproduction. Therefore, lecturers use PowerPoint and video as teaching aids, especially in explaining the fish breeding cycle. The lecturer stated that so far, the use of video

has not been fully able to explain the fish breeding cycle concept.

The fish breeding cycle is a sub-topic of genetic breeding and selection in the learning plan. The concept of fish breeding cycle explains starting from selecting the appropriate parent, breeding process, spawning process, eggs into larvae, larvae into seeds, young fish, fish consumption to the maintenance of the parent candidate back. Basically, in the aquaculture course, students will do practical fish breeding work in the laboratory, as stated in the aquaculture course learning plan. For the fish breeding cycle concept, practical work requires equipment such as a sophisticated microscope that can be connected to a computer, but due to the lack of such tools, teaching media is needed that can display images clearly and entirely with simple text.

A study conducted by Jani (2003) in (Hanif, Azman, Pratama, Nazirah, & Imam, 2016) showed that teachers often use the demonstration method to teach in the laboratory with many repetitions because students can not master every important step related. Repetition of demonstration measures causes allotted teaching and learning time to be extended. Therefore, to support the practical work of fish breeding, the presentation of the fish breeding cycle concept should use appropriate teaching media such as a poster.

A poster is a medium that can be used to convey information, ideas, or suggestions (Dian Yusandika, Istihana, &



Susilawati, 2018). The finding of a study conducted by Niska & Gregorius (2016) on posters in the classroom can increase teacher's and students' activities. Maiyena (2013), in her study, revealed that poster media could motivate and stimulate students because poster media is an easy media to use, which can instill right and real basic concepts.

In conclusion, there are some problems in learning the topic of fish breeding. The first problem is the lack of tanks so that students can not do the fish breeding process independently. Students only observe the lecturer, demonstrating how fish breeding takes place. The second problem is that mature fish are only available in small quantities than many students. The third problem is the lack of a sophisticated microscope that can be directly connected to a computer to see how to change eggs into larvae on the fish breeding cycle topic. According to Azizi and Jesmin (2008) in (Mariani Johari, Othman, Nizam Ismail, & Isa, 2013), If a skills center does not have complete physical facilities, this also affects the effectiveness of the programs carried out. The last problem is that the students' learning hours in learning the topic of fish breeding are only seven hours, while to see fish breeding takes more than two days. All these problems hinder the process of learning the concept of the fish breeding cycle in practice.

For the above reasons, the study tried to develop a poster as a teaching medium on the fish breeding cycle concept.

The poster's selection is based on problems and needs in learning, while the poster can be used anywhere and anytime, either in the classroom or in the laboratory. Also, fish breeding cycle posters will help lecturers explain the concept of the fish breeding cycle.

One example of the use of posters to explain the life cycle concept is studied by Grand Rapids (1992) on the concept of the life cycle of frogs (Osa & Musser, 2004). In Malaysia, studies on the Development or use of poster media in learning are still rarely conducted, especially on the fish breeding cycle concept. According to Kelsch and Werremeyer (2011) (Rizawayani et al., 2017), posters can develop knowledge and improve students' communication skills. Knowledge and communication are essential elements of 21st-century learning. Therefore, fish breeding cycle posters need to be developed to help students improve thinking skills in the fish breeding cycle concept. Posters can also help lecturers explain the concept of the fish breeding cycle quickly, not only in the classroom but also in the laboratory or farm.

Thus, this study aims to develop posters, obtain expert confirmation of the poster as the teaching media in the concept of the fish breeding cycle, and know the results of the expert assessment and the feedback from students on the qualifications of the poster developed.



Method

Since the study's objective is to develop a poster as the teaching media, Research and Development study was implied. Research and Development is a form of research that seeks to develop and produce products in the form of materials, media, tools, and or learning strategies used to address learning in the classroom/laboratory and not to test the theory. Some popular development models according to Ghazali & Sufean (2016) are; Dick and Carey model (1990); Marisson Model (2007); Richey, RC., Client, J.D and

Nelson, W.A model (2007); Juran model (2009); and the Hannafin-Peck Model (2011). While in this study, the model used is the ADDIE model because this model is the basis of other models.

Raiser and Mollenda introduced the ADDIE model in the 1990s. The acronyms of the ADDIE model are Analysis, Design, Development, Implementation, and Evaluation. (Mazlina Che Mustafa & Omar, 2016) stated that the effect of using the ADDIE model is more complete and systematic.

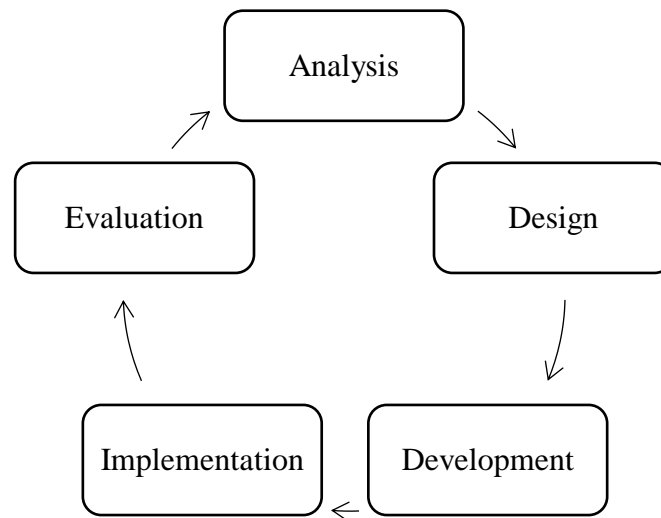


Figure 1. *ADDIE Model*

The ADDIE model is a form of Instructional System Design consisting of five stages, as shown in Figure 1 above; the explanation of the ADDIE model is as follows:

1. Analysis

The phase of analysis is the basis for all stages in instructional design which

is aimed to identify objectives, content, the suitability of targets, and access to learning and teaching models (Gustafson & Branch, 2007; Marisson, Ross & Kemp, 2007; McKenney & Reeves, 2012; Larson & Lockee, 2014; and Juppri et al., 2016). Therefore, researchers need to review the

curriculum documents that have been conducted to identify the general objectives of learning.

2. Design

The learning materials and activities provided must be appropriate to the student's ability, learning objectives, environment, and equipment used. Among the aspects that need to be achieved in this stage is to build learning objectives, determine the method and determine the type of the media to be used (Gustafson & Branch, 2007; Marisson, Ross & Kemp, 2007; McKenney & Reeves, 2012; Larson & Lockee, 2014; and Juppri et al., 2016). Therefore, after reviewing the document, researchers needed to determine the type of media and the appropriate learning method.

3. Development

In this phase, researchers determined how to develop the teaching media based on the design phase's ideas. The built-in teaching media needed to be certified by the appropriate experts.

Based on the results of the confirmation, the researchers reviewed the teaching media that have been developed.

4. Implementation

The development phase results in the form of the teaching media are used in learning to know its influence on the quality of learning. The teacher conducts testing on the students to find out the teaching media qualifications.

5. Evaluation

The end of the ADDIE development model is evaluation. Researchers determine how to evaluate the built-in teaching media to achieve the objectives and have good quality.

Development Procedures

The Development of posters as a teaching media on the breeding cycle concept was implemented at Universiti Pendidikan Sultan Idris Malaysia. The poster development procedure used only three phases of the ADDIE model, as shown in Figure 2 below:

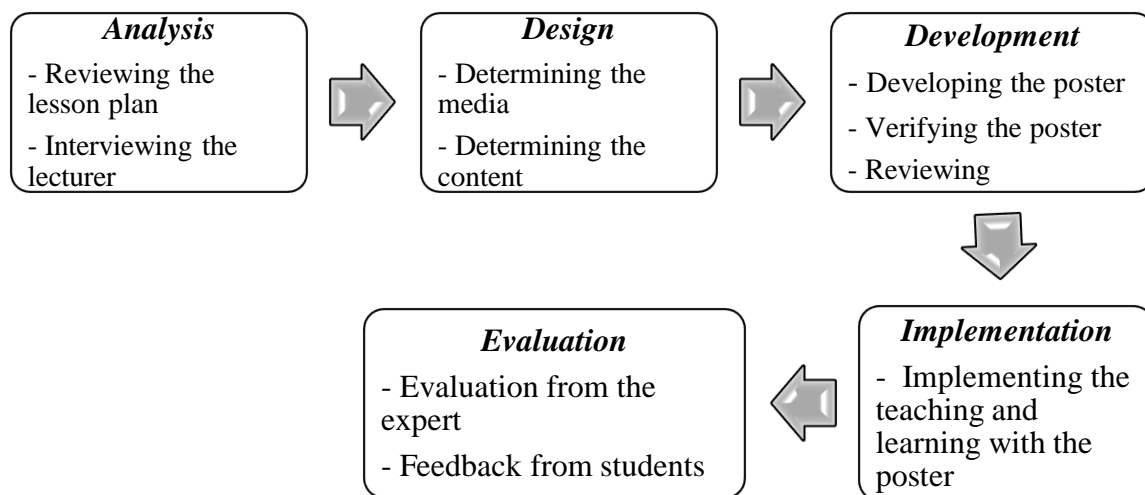


Figure 2. The Poster Development Procedure in this Study

Based on Figure 2, the explanation of each stage of the implementation of the study using this ADDIE model is:

1. Analysis

To identify the general goals, the researchers reviewed the learning plans used in Aquaculture courses and interviewed the lecturer who teaches the aquaculture curriculum to obtain information on aquaculture teaching.

2. Design

After reviewing the learning Plans used in aquaculture courses, the researcher identified specific goals for the reproductive cycle concept, which is a sub-topic of reproduction and genetics, further determined the appropriate teaching media. In this stage, the media's content is determined, and the media measurements and the selection of appropriate pictures. The poster was developed using

Microsoft PowerPoint. Instructions from (Jennings, 2012) are also used in building posters, such as determining the size, writing, color, and more. The selection of the poster content was determined in the analysis phase, namely, the analysis of lesson plans and the results of interviews with lecturers.

3. Development

Based on the design phase, the researcher will produce a teaching aid for the fish breeding cycle concept. Researchers made posters using the Microsoft PowerPoint application. Another tool used is the Snipping Tool. The initial steps in poster design are as shown in Figure 3 below:

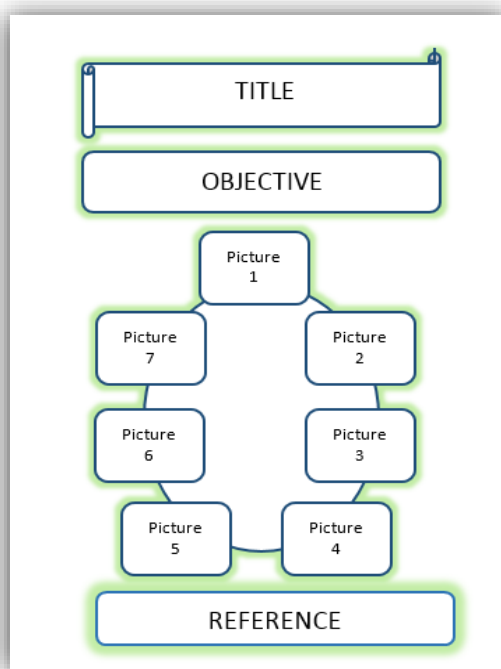


Figure 3. Poster design

The poster developed contains the title, picture, content, name of the researcher & supervisor, and reference. The printed poster was certified by experts consisting of two curriculum experts, three vocational experts, and one media expert. The Expert is the lecturer from UPSI. There are four categories of expert evaluation, namely, attractiveness, content, arrangement, and mechanical.

4. Implementation

Lecturers tested the poster for learning generated from the previous phase in aquaculture. The lecturer was given some exposure

to the appropriate method for learning using the poster that has been developed. Implementation is done among the Faculty of Technical and Vocational program of Agricultural science Semester 4 the Academic year 2018/2019. The revision was carried out before the media is officially used.

5. Evaluation

The evaluation of the posters developed is done through verification by six experts using the confirmation rubric and the feedback of 32 aquaculture course students of semester 4. The evaluation results were changed into percentages to assess the level of qualification or validity of the

poster developed. Eligible or ineligible criteria were measured

based on the qualification scale table (Sugiyono, 2016) as followed:

Table 1. Eligibility Scale (Sugiyono, 2016)

Eligibility Score (%)	Criteria
0-2	Not eligible
21-40	Less eligible
41-60	Eligible enough
61-80	Eligible
81-100	Very Eligible

Research Instrument

The instrument used to produce the poster for learning according to the ADDIE model is the Aquaculture Learning Plan used as a guide for the implementation of aquaculture courses at UPSI and interview questions for aquaculture lecturers. The evaluation instrument in the form of a poster confirmation rubric has four categories: attractiveness, content, arrangement, and mechanical, modified from Paulina (2014). The poster evaluation was done by six experts consisting of content experts and media experts. To find out students' perceptions of learning poster developed as the teaching media, the instrument used is a modified questionnaire from Hess & Brooks (1998), which was distributed to students joining aquaculture course students of semester four the year 2018/2019. The data obtained using various instruments were analyzed with qualitative descriptive analysis techniques and quantitative descriptive statistical analysis.

Discussion

The teaching media in the form of posters developed in this study are expected to contribute to certain parties involved in education, especially in the field of aquaculture. This study can give consumers confidence that the poster developed has obtained validation from experts. The Development of the poster can answer one of the issues and challenges related to the provision of resources, materials, and equipment in vocational education, as Mariani Johari et al. (2013) stated. Therefore, lecturers or teachers of vocational schools in aquaculture can use the poster to explain the puyu fish breeding cycle more effectively to improve the quality of teaching and learning.

The use of the poster in learning can increase creativity, student independence, research, communication skills, and an understanding of concepts. Kondal & Durga Prasad (2019) stated that students could use posters to present projects and display a concept visually. Students created this in semester 4 of agricultural science in the academic year 2018/2019. Through the



use of the poster developed by researchers, it is hoped that students have useful skills in their lives, especially facing the 21st century.

Further research needs to be carried out to produce teaching media in the form of a learning poster to help lecturers explain concepts effectively to achieve learning objectives. There are various development research models that can be used in producing various teaching media.

- a. The poster developed is a poster on the Development of puyu fish embryos on the fish breeding cycle concept validated by six experts. The suggestion is to develop a poster on the Development of embryos with different types of aquaculture fish, and it would also be better if the number of specialists used were more.
- b. Data were obtained from validation by experts using validation rubrics and student feedback using questionnaires. Data analysis was performed using a percentage eligibility scale. However, such instruments and scales do not entirely give a definitive answer to the poster developed. Therefore, the proposal for further research is to use various instruments and methods of data analysis to obtain more accurate information and high reliability of the study.

Conclusion

The use of posters developed was carried out on 32 fourth semester students in agricultural science who took aquaculture courses and responded to the poster. The instruments used were the expert validation rubric and questionnaires to get students' feedback. The results showed that the developed poster had been certified by experts for use in learning. Experts' average poster eligibility was 92.7%, while 79.7% of students strongly agreed that the poster met the learning poster criteria. The study's findings showed that the poster developed is handy in explaining the topic of the fish breeding cycle. The implications of the study showed that the poster developed can be used by lecturers or teachers as teaching media more effectively.

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