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Articles

Development of an Integrated Ethnoscience Educative Magazine in the Theme of Madura Bamboo Shells Paste

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ABSTRACT

Science learning that integrates with local wisdom will make learning run well and meaningfull. This can be realized by developing teaching materials in the form of an educative magazine integrated with ethnoscience on the theme of Madura bamboo shells paste. The purpose of this study was to produce educative magazines and to determine the level of validity, readability of students, and students' responses to the teaching materials developed. This type of research is development using the ADDIE model. The instruments used were media expert validation sheets, material experts, science teachers, readability questionnaires and student responses. The trials carried out were individual trials, small group trials and large group trials. 1) The results showed that the validity of the media aspect was 88.33% and the material aspect was 98.61% with a very valid category. 2) The readability of the students obtained a score in the large group trial, namely 82.32% in the very good category. 3) Student responses obtained a percentage value in the large group trial, namely 85.70% in the very good category. This data shows that flipbook-based educative magazines integrated with ethnoscience on the theme of Madura bamboo shells paste are appropriate for science learning.

INTRODUCTION

Science learning is learning that emphasizes direct experience aimed at making students understand more deeply about nature and its surroundings (Intika & Jumiati, 2020). Learning will run well if students can associate science learning material with daily activities (Azalia et al., 2020). The process of associating science learning materials with activities in daily life will make the learning process more meaningful (Nuralita, 2020; Ahied et al., 2020). Furthermore, students will get the meaning of learning that leads to a deeper understanding of science material (Fikriyah & Ahied, 2022). The current science learning is not as expected, due to the many gaps encountered in the learning process. The science materials studied tend to only focus on pure knowledge. Students are only required to increase cognitive knowledge without trying to integrate science learning into everyday life. Safitri et al. (2018) also stated

that the integration of local wisdom in everyday life is almost never linked or linked to science learning.

The solution to this problem is to introduce local wisdom to students through education by developing it through the learning process (Purnamasari et al., 2021). This can be done using an ethnoscientic approach. This approach aims to introduce students that phenomena or facts that occur in society can be related to scientific knowledge (Gusmarti et al., 2021). Intika & Jumiati (2020) stated that an ethno-science approach can present material that is contextual in nature, so that it is easier for students to make connections between real-life local wisdom and scientific knowledge learned at school. One area that has ethnoscience studies and can be integrated into learning is on the island of Madura. This island has a fairly high potential for biodiversity which includes fish, marine plant and mineral and mining resources (Zakiyah & Mulyanto, 2021). The diversity of biota that exists on this island, one of which can be found in Pamekasan Regency, namely Talang Siring Beach. The regional mainstay fishery commodity is bamboo shells. One of the processed bamboo shells that has ethnoscientific studies and can be integrated into science learning is bamboo shells paste. one of which can be found in Pamekasan Regency, namely Talang Siring Beach (Nadifah et al., 2023).

Processing of bamboo shells paste can be related to integrated science learning, namely on the matter and its changes, temperature, heat and expansion, and classification of living things. In this material there are many obstacles in learning, namely related to abstract learning material and participants having difficulty understanding the material provided. The solution that can be given to the problems above is to develop teaching materials that can concretize, simplify, present material in an applicative manner and apply local elements found in daily activities in learning science. In this case, namely by developing teaching materials in the form of educative magazines which contain features in the form of pictures with sentences that are more attractive to students. Educative magazines can increase students motivation, interest, and understanding of science learning (Zakia et al., 2021). Educative magazine also can create a creative learning (Ningsih et al., 2018), what is presented is in the form of text, images, video or audio (Fuad et al., 2020). This educative magazine is presented using the Flip PDF Professional application which is used to read teaching materials in the form of books with a three-dimensional ebook display, which is a combination of text, audio and video animation so that it can provide stimulation in the form of audio and visual which will enhance students' memory abilities. Based on these problems, the purpose of this study was to describe the feasibility of teaching materials, readability and students' responses to the educative magazines to the educative integrated with ethnoscience on the theme of Madura bamboo shells paste.

METHODS

The type of research used is development research. The research was focused to describe the feasibility of teaching materials, readability and students' responses to the educative integrated with ethnoscience on the theme of Madura bamboo shells paste. The development model used is ADDIE. The ADDIE model is an approach that places more emphasis on the instructional process which includes the Analysis, Design, Development, Implementation, and Evaluation stages. The time for development research was carried out in the 2022 – 2023 academic year in the even semester in March. The research was conducted on class VII students at SMPN 1 Kamal which is located on Jl. Banyu Ajuh No. 05, Kamal District, Bangkalan Regency.

Data analysis techniques to calculate validation are carried out using the following formula:

$$\text{Va} = \frac{\text{Tse}}{\text{Tsh}} \times 100\% \ldots\ldots\ldots\ldots\ldots\ldots\ldots\ldots\ldots\ldots (3.1)$$

Modification (Sugianto et al., 2018)

Note:
Tsh = maximum expected total score
tse = total empirical score (validation results)

As for the criteria used in the validation of media and material aspects, they are as follows:

Table 1. Teaching Materials Validity Criteria

No	Score (%)	Validity Criteria
1.	$85{,}00 \leq \text{Va} \leq 100$	Very Valid
2.	$70{,}00 \leq \text{Va} < 85{,}00$	Valid
3.	$50{,}00 \leq \text{Va} < 70{,}00$	Invalid
4.	$00{,}00 \leq \text{Va} < 50{,}00$	Invalid

Modified from (Akbar, 2017)

RESULTS AND DISCUSSION

The material published in this educative magazine consists of science material in an integrated manner in the class VII independent curriculum. In addition, there are also several links between science material and other materials, namely Social Sciences, English, Economics and PAI. This is because the development of this teaching material uses the webbed integration model. Analysis of the data used in the development of an educative magazine based on flipbooks integrated with ethnoscience is the feasibility test, reliability test, readability questionnaire and student responses. The material contained in educative magazines contains material in an integrated manner consisting of the concept of matter and its changes (substance forms, particle models, changes in substance forms, physical and chemical changes, density of substances and additives), temperature, heat and expansion (due to changes in temperature, heat transfer), and classification of living things.

The science material is integrated with ethnoscience on the theme of Madura bamboo shells paste. Bamboo shells paste is one of the local advantages in Madura, which utilizes fishery products in the form of bamboo shells or bamboo shells to be used as a cooking spice, namely paste. The manufacturing process is still carried out in a simple way using traditional stages. It is this community knowledge that can be linked to science concepts in secondary school to be used as material in the educative magazine that is being developed. This stage of development starts from the analysis of curriculum, students, concepts and availability of learning media. After that, it was followed by the planning and development stage in the form of individual and small group trials. At the implementation stage, a large group trial was carried out and ended with an analysis phase which was carried out in a formative and summative manner. The research data were obtained after conducting research at SMPN 1 Kamal class VII-A for individual trials of 3 students and small group trials of 10 students. Meanwhile, class VII-B for large group trials consisted of 32 students. This research was conducted on April 11-13, 2023. Prior to the implementation or implementation phase of the educative magazine, a validation process was carried out by media experts, material experts and junior high school science teachers. Here's an example of general recommendations of educative magazines that have been developed and have gone through the validation stage:

Figure 1. Educative Magazine Background

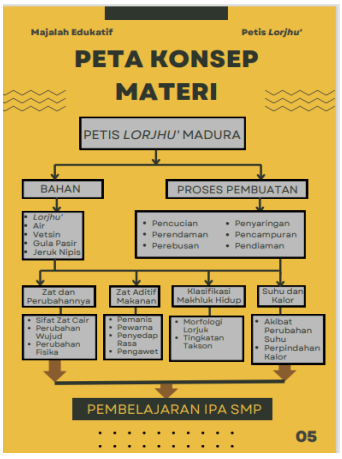

Figure 2. Educative Magazine Concept Map

Figure 3. Contents of the Educative Magazine

Figure 4. Student Activities

Media feasibility data analysis aimed to determine the feasibility of flipbook-based educative magazines integrated with ethnoscience on the theme of Madura bamboo shells paste. The feasibility of educative magazines is reviewed from two aspects, namely the media aspect and the material aspect.

Feasibility of Magazine in Media Aspect

This feasibility measurement is carried out at the development stage, namely before the implementation stage for students. The assessment of the media aspect is to show the feasibility of the media in learning. The results of the assessment of the media aspect in the flipbook-based educative magazine integrated with ethnoscience can be seen in table 2 below:

Table 2. Results of Feasibility Test of Flipbook-Based Educative Magazines Integrated with Ethnoscience in Media Aspects

No.	Assessment criteria	Validity		Reliability	
		Average Validity (%)	Criteria	Average Reliability (%)	Criteria
1.	Simplicity	87.50	Very Valid	85.71	Very Reliable
2.	Iintegration	87.50	Very Valid	85.71	Very Reliable
3.	Balance	91.66	Very Valid	90.47	Very Reliable
4.	Form	87.50	Very Valid	83,33	Very Reliable
5.	Color	87.50	Very Valid	85.71	Very Reliable
Average Score		**88.33%**	**Very Valid**	**86.18%**	**Very Reliable**

Based on the feasibility test of flipbook-based educative magazines integrated with ethno-science on the theme of Madura bamboo shells paste in the media aspect, the overall average validity value was 88.33% with a very valid category. This finding indicates that educative magazines are very appropriate for use in science learning. The average reliability

value obtained as a whole is equal to 86.18% with a very reliable category. The educative magazine feasibility test consists of five criterias, namely simplicity, cohesiveness, balance, shape and color. The results of the first recapitulation of media aspects, namely simplicity, obtained an average validity of 87.50% with a very valid category and a reliability value of 85.71% with a very reliable category. This shows that educative magazines based on flipbooks are integrated with ethnoscience on the criteria of simplicity and have uncomplicated and easy-to-understand sentence structures. In the simplicity criterion, there are three statement indicators that are discussed, namely the first, pictures in educative magazines are simple and easy to understand. In the first indicator, get advice from the media expert validator to explain the images included and given a clear source. The second indicator is that sentences used in educative magazines are easy to understand. In this second indicator it is recommended to use the correct language spelling. An example of improvement is from the word "rather than" to "than".

The results of the recapitulation of the second aspect of the media are the integration criteria in flipbook-based educative magazines integrated with ethnoscience by obtaining an average validity value of 87.50% with a very valid category and a reliability value of 85.71% with a very reliable category. The cohesiveness criteria include two statement indicators. The first statement discusses the order between pages in accordance with the order of science concepts. This indicator is very good without any revisions. This is in accordance with what was conveyed by Winatha et al. (2018) that the display design in the form of the layout of pictures, pages and sentences must be considered to increase students' learning motivation. Retnosari & Hakim (2021) also stated that a consistent layout of page numbers can make it easier to read the materials. The second indicator is the instructions used in educative magazine are appropriate. This indicator gets suggestions for adding supporting images to each material. Winatha et al. (2018) states that instructions in educative magazines must visualize a description of the material. Material descriptions can be in the form of text accompanied by pictures to help concretize understanding. Apart from that instructions in educative magazines must visualize a description of the material. Material descriptions can be in the form of text accompanied by pictures to help concretize student understanding.

The third criterion is balance by obtaining an overall average validity value of 91.66% with a very valid category and an overall average reliability value of 90.47% with a very reliable category. The balance criteria include 3 statement indicators. The first statement discusses the suitability of the size of the writing in educative magazines. The second indicator is the suitability of the size of the images in educative magazines. The third indicator is that the writing layout for each page is balanced. The results of the three statement indicators above are in accordance with what was conveyed by Retnosari & Hakim (2021) that the balance of writing, pictures and layout must be proportional. This can make it easier for students to understand the material.

The fourth criterion is form by obtaining an overall average validity value of 87.50% with a very valid category and a reliability value of 83.33% with a very reliable category. The indicators on this criterion consist of 2 statements. The first indicator is the image used is interesting. In this indicator, suggestions are given to provide more interesting pictures so that students become motivated to read educative magazines. The attractiveness of the pictures included in teaching materials affects the ease of students understanding the material and attracts students to learn (Pratama et al., 2023). Pictures that full of color can develope a science literacy of student (Ningsih & Suhardi, 2021). The second indicator is the type of font used is easy to read. At this point there is no improvement, because the selection of the font at the initial stage is appropriate where it can be read clearly.

The fifth criterion is color by obtaining an overall average validity value of 87.50% with a very valid category. And the overall average reliability value is 85.71% with a very

reliable category. This criterion consists of 2 statements. The first indicator is the combination of writing and the corresponding back screen. There is no improvement in this indicator, because the combination of text and background both in terms of color and the font used is appropriate. The second indicator is the suitability of the color used. In this indicator there is also no improvement, because the colors used both between pages and between sentences are appropriate. Choosing the right color can arouse the enthusiasm of students to read teaching materials by stimulating their thoughts, attention (Pratama et al., 2023).

Based on the results of the analysis above, it can be seen that of the 5 criteria for all statements that are assessed on the media aspect, the lowest validity value obtained is found in the criterion form statement number 8 related to the attractiveness of the image used with the validity value obtained, namely 75.00% with the valid category. This is because the images presented are only in one theme, namely images related to bamboo shells or bamboo shells. While the highest validity value is the balance criterion for statement number 5, namely the suitability of the size of the writing in educative magazines with a validity value of 100.00% with a very valid category. This criterion has the highest score because the composition between writing and pictures in educative magazines is balanced, this makes them no more prominent than one over the other. According to Winatha (2018) a good layout of pictures and writing can help students understand the material presented.

Feasibility of Magazine in Concept Aspect

The validity of the concept aspect was carried out to determine the feasibility of the content in an educative magazine based on flipbooks integrated with ethnoscience on the theme of Madura bamboo shells paste. The results of the assessment of the concept aspects of an educative magazine based on flipbooks integrated with ethnoscience on the theme of Madura bamboo shells paste can be seen in table 3 below:

Table 3. Results of Feasibility Test of Flipbook-Based Educative Magazines Integrated with Ethnoscience in Concept Aspects

No.	Assessment criteria	Validity		Reliability	
		Average Validity (%)	Criteria	Average Reliability (%)	Criteria
1.	Content	95.83	Very Valid	95.23	Very Reliable
2.	Language	100.00	Very Valid	100.00	Very Reliable
3.	Visualization	100.00	Very Valid	100.00	Very Reliable
Average Score		**98.61%**	**Very Valid**	**98.41%**	**Very Reliable**

Based on the feasibility test of flipbook-based educative magazine, the concept aspect obtained an overall average validity value of 98.61% with a very valid category. This indicates that educative magazine concept is very appropriate for use in science learning. The average reliability value obtained as a whole is equal to 98.41% with a very reliable category. The feasibility test for educative magazines on the concept aspect consists of 3 criteria, namely content, language, and visualization. The first criterion is content, the overall average validity value is 95.83% with a very valid category and the overall average reliability value is 95.23% with a very reliable category. The content criteria consists of 6 statement indicators. The first indicator is the suitability of the content of educative magazines with learning outcomes and objectives. The second indicator is the correctness of the concept in terms of scientific aspects. The third indicator is the content which is contextual. The fourth indicator is the cognitive aspect of the concept presented. The four indicators each have a validity value of 100.00% each in a very valid category and a reliability value of 100.00% each in a very reliable category. The fifth indicator is the load of psychomotor aspects of the concept presented. The sixth indicator is the affective aspect of the concept presented. Each of these two indicators obtained a validity value of 87.50% with a very valid category and a reliability value of 85.71% with a very reliable category. The improvement of this concept aspect is the result of the reconstruction of the community's original knowledge into more detailed

scientific knowledge. In line with what was conveyed by Kinasih & Sinaga (2020) that meaningful learning (cognitive, psychomotor and affective) can be done by integrating students' previous knowledge with new knowledge through daily events.

The second criterion is language with an overall average validity value of 100.00% with a very valid category and a reliability value of 100.00% with a very reliable category. The results obtained for each indicator are the same, namely 100.00% for validity and reliability. There is no improvement in this criterion, because the language used in the concept is easy to understand. The terms contained in educative magazines can also be understood by students correctly. As stated by Nana (2022) that the use of terms in teaching concepts should be able to adapt to the maturity of students. Because terms that are too complicated can make it difficult for students to understand the concept in teaching concepts. The flow of concept is also very clear so students are not confused when reading educative magazines. The third criterion is presentation with an overall average validity value of 100.00% with a very valid category and a reliability value of 100.00% with a very reliable category. The results obtained for each indicator are the same, namely 100.00% for validity and reliability.

Based on the results of the analysis above, it can be seen that of the 3 assessment criteria, the concept aspect has the lowest score, namely the content criteria with a value of 95.83%. The results obtained are not categorized as low scores, but when compared to other criteria they are lower. This is caused by the content in the magazine there are some things that are not conveyed to some students both in cognitive, psychomotor or affective aspects. Each student has a different level of understanding of the concept and preferences. Based on the validation results obtained, the concept was quite difficult for some students to understand, namely related to the concepts of temperature and heat.

Learners' Readability

Analysis of students' readability data was carried out with the aim of knowing the level of students' readability of the flipbook-based educative magazine integrated with ethnoscience that had been developed. The student readability questionnaire has been validated. The validation results obtained for the questionnaire were 100%, which included instructions, readibility and languange criteria. The student readability questionnaire consists of 3 assessment criteria, namely concept, language and presentation. Each assessment criterion is developed into several statements consisting of positive and negative statements. The student readability questionnaire consists of 9 statements consisting of 4 positive statements and 5 negative statements. Positive statements are found in numbers 1, 4, 5, 8, while negative statements are found in numbers 2, 3, 6, 7, 9. In the students' readability questionnaire of educative magazines there are several assessment criteria. first criterion, the second and third are displayed with 3 statement items each on each of the criteria. The results of the student readability questionnaire after being tested at three stages are as follows:

Table 4. Student Readability Recapitulation Results

No.	Trials	Average Yield	Category
1.	Individual	87.04%	Very good
2.	Small Group	85.00%	Very good
3.	Large Group	90.00%	Very good

These results indicate the level of readability of students towards flipbook-based educative magazines integrated with ethnoscience in each test has a different value. But the main point is that in all the tests carried out they still get a very good category, even with different values. The result of the first criterion recapitulation is concept. The results obtained are in very good category. This is because the contents of the concept in educative magazines can be well understood by students. Teaching concepts should be able to contain concept that fits their needs and is easy to understand so that it can stimulate students to be motivated to learn (Magdalena et al., 2020). Sugianto et al. (2018) said that the terms contained in teaching

concepts must be understood by students well, so as not to hinder the understanding of other concept. Sahil et al. (2022) also stated that teaching concepts based on ethnoscience should have a link between the concept of science and local cultural potential in society, one of which is Madura bamboo shells paste. The value of each statement given in each test has a different value, this irregularity is caused by each student having different knowledge from the terms used in educative magazines and previous knowledge related to making Madura bamboo shells paste. Based on the pre-conducted research, there were 32 out of 45 students who knew how to make bamboo shells paste beforehand.

The result of the second criterion recapitulation is language, this criterion consists of 3 statement indicators. The first statement is a positive statement, namely the language used in educative magazines is communicative. Nana (2022) said that the use of appropriate and communicative language in teaching concepts can help accelerate the delivery and mastery of students towards the concept provided. The results in this statement have a fairly low value, namely 75.00% in individual trials and 78.13% in small group trials. This is because the language contained in educative magazines uses standard language that is in accordance with language in Indonesian, so that some students who rarely or even never use standard grammar consider the language used to be uncommunicative. The second statement is a positive statement, namely the punctuation used in educative magazines is in accordance with the correct grammar rules. The correct use of punctuation marks can help students understand the meaning or flow of concept in teaching concepts (Abdullah et al., 2021). The third statement is a negative statement, namely students have difficulty understanding the flow of concept through the use of language. In accordance with what was conveyed by Abdullah et al. (2021) that the proper use of language can influence how students' minds go about understanding the concept. The results of the second criterion in each test decreased. This is because the more samples used in each test can affect the readability value obtained.

The results of the third criterion recapitulation, namely presentation, this criterion consists of 3 statement indicators. The first statement is a negative statement, namely the presentation of educative magazines disturbs students while reading. According to Prihatiningtyas & Sholihah (2020) teaching concepts based on flipbooks can bring together various interactive learning activities such as reading, listening, writing and also games. The second statement is a positive statement, namely the presentation in the form of pictures or illustrations can make it easier to understand the concept. Aryan et al. (2018) said that every image presented in teaching concepts can provide conceptual understanding and make abstract concept concrete. The third statement is a negative statement, namely the concept is presented from complex to simple. The concept presented in teaching concepts should be delivered from simple to complex. This is in accordance with behavioristic theory where the teaching concepts to be used are arranged hierarchically from simple to complex, with the aim of producing certain skills (Shahbana et al., 2020). The results of the third criterion in each test experienced irregular increases and decreases. This is because each student has their own level of understanding and preferences. The characteristics possessed by students vary, namely that there are students who understand the concept better if it is presented in the form of pictures, tables or other illustrations. Students can like concept that is straight to the point or that is presented sequentially from complex to simple.

The readability of students towards educative magazines based on flipbooks integrated with ethnoscience with the lowest percentage was found in individual trials and large group trials, namely in the first statement of the language indicator, namely "the language used in educative magazines is communicative" with a percentage of 75.00% and 78.13% with very good category. This statement has a questionnaire with a value of 2 as many as 3 of 32 respondents. The improvements made by the students were "language is difficult to understand because most of it is natural science". According to Nana (2022) the use of

language is adjusted to the cognitive development of students. Because not all cognitive students are the same, therefore there are some students who have difficulty understanding the language used.

Students' Responses

Analysis of student response data was carried out with the aim of knowing student responses to flipbook-based educative magazines integrated with ethnoscience that had been developed. The student respons questionnaire has been validated. The validation results obtained for the questionnaire were 83,33%, which included instructions, readibility and languange criteria. The student response questionnaire consists of five assessment criteria, namely the attractiveness of the media, the suitability of the concept, the structure of the concept, spelling & language style and the effectiveness of the media. The first, second, third, fourth and fifth criteria are displayed with 2 statement items for each criterion. Each assessment criterion is developed into several statements consisting of positive and negative statements. The student response questionnaire consisted of 10 statements consisting of 5 positive statements and 5 negative statements. Positive statements are found in numbers 1, 3, 6, 7, 9, while negative statements are found in numbers 2, 4, 5, 8, 10.

Table 5. Student Response Recapitulation Results

No.	Trials	Average Yield	Category
1.	Individual	90.00%	Sangat Fine
2.	Small Group	84.25%	Very good
3.	Large Group	85.70%	Very good

These results indicate the level of student response to flipbook-based educative magazines integrated with ethnoscience in each test has a different value. The value of students' responses to flipbook-based educative magazines integrated with ethnoscience was assessed by 5 assessment criteria, namely the attractiveness of the media, the appropriateness of the concept, the structure of the concept, spelling and language style and the effectiveness of the media. The first criterion is media attractiveness, which consists of 2 statements. The first statement is a positive statement, namely the design of the magazine is attractive and comfortable to look at. The magazine developed is based on a flipbook where the display is presented like a three-dimensional book, which can provide stimulation in the form of audio and visuals which will improve students' memory skills (Prihatiningtyas & Sholihah, 2020). Presentation of teaching concepts in electronic form can make the learning process more attractive to students because of the display presented (Susanti & Sholihah, 2021). The second statement is a negative statement, namely the appearance of the magazine and the colors used do not match. Choosing the right color can arouse students' enthusiasm for reading teaching concepts by stimulating students' thoughts, concerns, feelings and desires (Pratama et al., 2023).

The second criterion is the suitability of the concept which consists of 2 statement indicators. The first statement is a positive statement, namely the concept is in accordance with what is being studied. The second statement is a negative statement, namely the concept published in educative magazines is not in accordance with the learning outcomes and objectives. In line with what was stated by Magdalena et al. (2020) that the concept contained in teaching concepts must be in accordance with learning outcomes, and it is hoped that teaching concepts can direct the activities of students and educators to achieve the competencies to be achieved. The results obtained for this second criterion get some fairly low scores in the first statement, namely 75.00% in the good category. This is because the concept in educative magazines is not studied in depth at school. Therefore, some students consider that the concept is sufficient or not in accordance with what is being learned. So the results obtained are quite low.

The third criterion is the concept structure which consists of 2 statement indicators. The first statement is a negative statement, namely the structure of the concept contained is not

clear and not easy to understand. The second statement is a positive statement that the concept can improve the competence of students. This is in line with what was stated by Magdalena et al. (2020) that one of the teaching concepts has the principle of adequacy, where the concept presented should be sufficient enough and help students master the competencies they want to achieve. In addition, the concept presented must be clear, which does not contain ambiguity for students to understand the concept.

The fourth criterion is spelling and language style, which consists of 2 statement indicators. The first statement is a positive statement, namely the language used in educative magazines is easy to understand. As stated by Nana (2022) that the use of appropriate and communicative language in teaching concepts can help speed up the delivery and mastery of students towards the concept provided. The second statement is a negative statement, namely the spelling used does not match the EYD.

The last criterion is the effectiveness of the media which consists of 2 statement indicators. The first statement is a positive statement, namely educative magazines can be used in the learning process. The second statement is a negative statement, namely educative magazines do not make it easier for students in the learning process. The teaching concepts developed are in the form of educative magazines based on flipbooks integrated with ethnoscience. The use of these teaching concepts is considered to be more effective and practical because students are not limited in space and time in accessing them, thus making it easier for students to engage in learning activities (Prihatiningtyas & Sholihah, 2020).

The results obtained in the student's response are having irregular values for each test. Where from individual trials to small group trials experienced a decrease. Meanwhile, from small to large group trials, there was a slight increase. This irregularity is caused by differences in the characteristics of students in each test. Students' understanding of the use of webbed themes also influences how students respond to the educative magazines that have been developed. Some students think that learning by using themes or cohesion is easier because they can relate one context to another. But there are also those who think that by using a theme, learning can be more difficult to understand because one concept is difficult to distinguish from another.

Student responses to flipbook-based educative magazines integrated with ethnoscience with the lowest percentage were found in individual trials and small group trials, namely in the first statement of the concept suitability indicator, namely "the concept according to what is learned" with a percentage of 75.00% in the good category. The improvements made by the students were "the concept is learned but not too deep". According to interviews with science teachers at SMPN 1 Kamal, there were some concepts that were learned only on the basis because it was a transition from the 2013 curriculum to the independent curriculum. Student responses to flipbook-based educative magazines integrated with ethnoscience with the lowest percentage in the large group trial, namely in the second statement of the media attractiveness indicator, in the second statement of the concept indicator and in the second statement of the spelling and style indicator. The lowest score obtained was a score of 3. So that the students' responses were still said to be good after reading an educative magazine based on flipbooks integrated with ethnoscience on the theme of Madura bamboo shells paste.

The existence of a combination of text, images and videos can add to the attractiveness of students to read information that has been presented in two formats, namely verbal and visual. In this case it is interpreted that the combination of verbal and visual can provide motivation for learning students. However, from the research results obtained, a research gap was found with the results of previous studies. In this study, the teaching concepts developed consisted of many combinations of text, images and videos, but the results obtained were not good enough to get a score of 2 from the validator. The images displayed are only within the

scope of one theme even though the images are different, this is what makes the media less attractive even though there are many combinations of images presented. Mufidah et al. (2023) states that one of the media learning can be used is animation videos, which can delivery of information, element of images and sound can be conveyed directly.

The results of the research are expected to be able to answer the formulation of the problem, so that the research can be stated to be quite successful even though there are several obstacles or obstacles in the research process being carried out. Some of the obstacles that exist are in the trial phase, where it is quite difficult to condition students to open the link provided without opening other applications that are not needed. In addition, some students had problems opening educative magazines due to unstable network problems, especially when watching videos in educative magazines. So it takes some additional time for students who have difficulty with these problems. Educative magazines are not only based on flipbooks but can be collaborated with other teaching media such as comics, animated videos or puzzle games so that the supporting media can be more varied.

CONCLUSION

This study aimed at describing the feasibility of educative magazine, readability and students' responses to the educative magazines The results of the average validity of the sequential media and concept aspects were 88.33% and 98.61% with the very valid category and the reliability values were 86.18% and 98.41% with the very reliable category. These results indicate that an educative magazine based on flipbook integrated with ethnoscience on the theme of Madura bamboo shells paste is very appropriate for use in science learning. The overall average results of students' readability and responses to educative magazines also get very good results. In this development process, accessing educative magazines requires a stable internet network, especially for watching videos or animations that are presented, so it is necessary to have an offline published file which can be seen and watched without using an internet network. The discussion of ethno-science concept from community original knowledge and scientific knowledge can be reviewed in more depth, by not only focusing on one place but several places so that the community's original knowledge obtained is more varied.

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