



ESKALASI PROGRAM ALUR MERDEKA MATERI ETNOSAINS PEMBUATAN KLEPON DALAM ESKALASI LITERASI SAINS PADA MATA KULIAH PRAKTIKUM IPA PGSD FKIP UMSU

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ABSTRACT

The background of this program evaluation is the urgent of learning loss due to Covid-19 which calls for learning to be carried out online. By this Alur Merdeka Program, it is hoped that it will be an escalation/improvement of scientific literacy in natural science practicum courses for PGSD FKIP UMSU students. The evaluation method for the Merdeka flow program in scientific literacy escalation and the evaluation results of the implementation of the Merdeka flow evaluation program in scientific literacy escalation in the Science practicum course at PGSD FKIP UMSU in terms of context, input, process, and product. The results of this study are that at the content evaluation stage an analysis of the needs of students, lecturers and learning outcomes is carried out. In the input evaluation step, the validation stage was carried out which resulted in 96.7% of the material being declared valid, 89.3% of the design being declared valid, and 84% of the language being declared valid in the development of learning tools. In the process evaluation step it was stated that in the application of the independent groove there was a change in each of the students' scientific literacy indicators in using the independent groove. students' scientific literacy in channel 1 has increased compared to pre-stream. Where in explaining the phenomenon there is an increase from an average of 75.4 to 89.23. The indicators evaluating and designing scientific investigations increased from 78.6 to 90 and the indicators interpreting data increased from an average of 75 to 91. In the final stage, namely product evaluation, it was stated that the learning tools used

Kata Kunci

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ABSTRAK

Latar Belakang dari evaluasi program ini adalah munculnya *learning loss* dikarenakan covid-19 yang menghimbau pembelajaran dilakukan secara daring. Menteri Pendidikan dan Kebudayaan meluncurkan program alur merdeka. Kata “Merdeka” merupakan akronim dari Mulai dari diri, Eksplorasi, Ruang kolaborasi, Refleksi, Demostrasi, Elaborasi, Koneksi, dan Aksi nyata. Dengan adanya program alur merdeka ini diharapkan dapat menjadi eskalasi/ peningkatan terhadap literasi sains pada mata kuliah praktikum IPA pada mahasiswa PGSD FKIP UMSU. Metode evaluasi program alur Merdeka dalam eskalasi literasi sains dan hasil evaluasi pelaksanaan program evaluasi alur merdeka dalam eskalasi literasi sains pada mata kuliah praktikum IPA di PGSD FKIP UMSU ditinjau dari *context, input, process, dan product*. Hasil dari penelitian ,pada tahap content evaluation dilakukan analisis kebutuhan mahasiswa, dosen dan capaian pembelajaran. Pada langkah input evaluation dilakukan tahap validasi yang menghasilkan sebesar 96,7% materi dinyatakan valid, 89,3% desain dinyatakan valid, dan 84% bahasa dinyatakan valid dalam pengembangan perangkat pembelajaran. Pada langkah process evaluation dinyatakan bahwa pada penerapan alur merdeka terdapat perubahan tiap tiap indikator literasi sains mahasiswa dalam penggunaan Alur Merdeka. literasi sains mahasiswa pada alur 1 mengalami peningkatan dibandingkan pra alur. Pada indikator mengalami-fenomena terdapat peningkatan dari rata rata 75,4 menjadi 89,23. Pada indikator mengevaluasi dan mendesain penyelidikan secara saintifik mengalami peningkatan dari 78,6 menjadi 90 dan pada indikator menginterpretasi data mengalami peningkatan dari rata rata 75 menjadi 91. Pada tahap akhir yaitu product evaluation dinyatakan bahwa perangkat pembelajaran yang digunakan praktis 92% dari respon guru 88,66% dari hasil respon mahasiswa

Introduction

The background of this research is about education and teacher as the main human resource (HR). Teachers are required to master the use of technology, global challenges, and curriculum changes. In this situation, every educational institution must prepare new orientation and literacy in the field of education. Literacy is the ability to read, write, count and reason (3). Old literacy that relies on simply reading, writing and arithmetic but now should be strengthened in science, data, technology and human resources. By mastering these literacy skills, students are able to read, analyze and use information. They are also be able to understand mechanical systems, natural life, good interaction and have a character (1). Based on the 2018 PISA results, Indonesia experienced a decline of five to six places from the previous results in 2018.

The Minister of Education and Culture initiated various changes, especially in increasing of literacy focused on scientific. This change will seem in the implementation of Merdeka Belajar from elementary school into university level. Offline learning is considered to restore good relationships between lecturers and students as long as this time depended on the internet network (2).

The problem that will be discussed on the level of scientific literacy through indicators taken from reference (4). They are explaining phenomena scientifically, designing and evaluating investigations scientifically, and interpreting data and facts scientifically.

The Merdeka belajar is a program which manage about implementing the Teacher Activator program, Professional Teacher Program and Activator School which starts with activities Starting from, Exploration, Collaboration, Demonstration, Communication and Real Action. Merdeka belajar itself is an issue raised in several articles, but it is only limited to literature review articles and not its implementation. For this reason, in order to prove the effectiveness of its implementation in teaching, further research is needed on the Merdeka program. The specific aim of this research is to evaluate the procedure of Merdeka program in escalating scientific literacy through the development of learning tools such as student and lecturer modules, student worksheets and RPS.

Research Method

A program is a series of activities as a form of implementation of a policy. Generally, a program is defined as a "plan" that will be carried out/carried out by a person or an organization in order to achieve goals. However, if the program is linked to program evaluation, then the program is defined as a unit of activity which is the realization or implementation of a policy, takes place in a continuous process, and occurs in an organization involving a group of people (5).

The program evaluation method is an evaluation design model created by experts or evaluation experts who are usually named the same as the creator or stage of creation (6). Basically, there is no different from general research method about evaluation research methods. Nisbet in (7) states that the essential difference between evaluation research and conventional research (basic research) is more in the objectives than in the selection of subjects and methods.

In evaluating this program, the procedure used is the CIPP . There are four components in evaluating the CIPP model. They include to context, input, process, and program. This evaluation is carried out on the following steps (8):

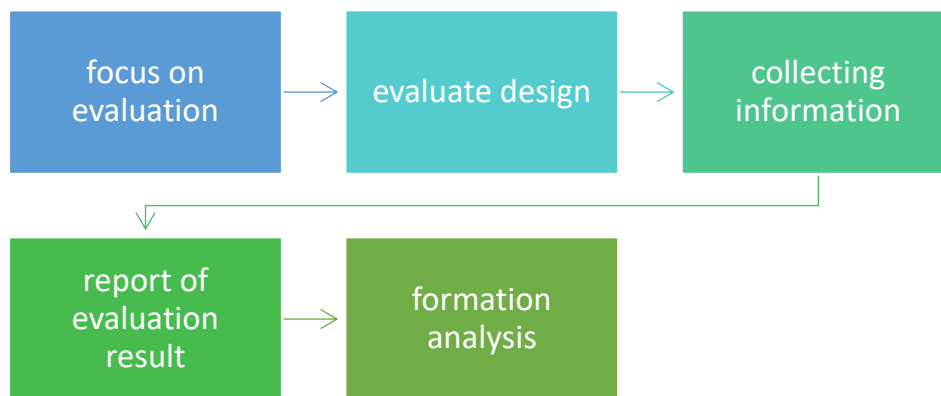


Figure 1. procedure of program CIPP Model

In each step above, the CIPP model will have various outcomes. The output can be depicted in the following scheme:

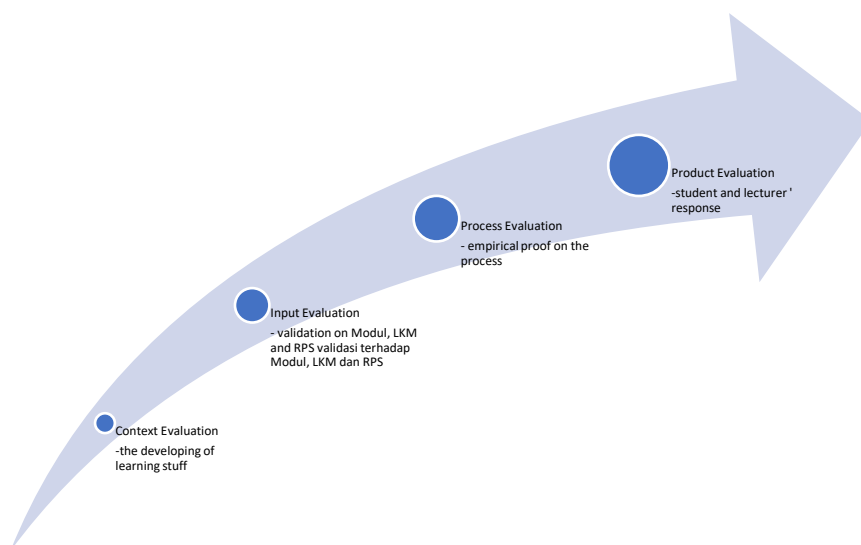


Figure 2. CIPP Scheme and its Outcomes

Result

Based on the results of the calculations, various findings that have been made can be stated. The results obtained at each stage are:

1. Content Evaluation

In this step, the development of learning tools is carried out by researchers. The development is conducting by analyzing the learning achievements of graduates. The

learning outcomes developed are PLO (Program Learning Outcome) 7, mastering the concepts and techniques for evaluating learning processes and outcomes in elementary schools. The objectives of this step is to make students are able to explain the phenomenon of klepon making using local wisdom and scientific knowledge, especially in science, design and evaluate the process during klepon making, teaching materials in the form of mixtures through making klepon which is a typical Indonesian food and interpreting data.

2. Input Evaluation

Input evaluation is carried out by validating modules, student worksheets and RPS. The validators at this stage are the teaching team in the Science Practicum course. The results obtained for each validation result can be seen in the following table:

Table 1. The result of material validation

Indikator	Score gain	Expected score	percentage
Clarity of material	15	15	100
The correctness of content procedure	9	10	90
Suitability of Learning Devices to Learning Objectives	15	15	100
Suitability of learning tools and material	14	15	93
Rate	58	60	96,7

- a. Based on table 1, the result of material validation consists of 5 indicators which show that the first indicator has 3 descriptions regarding the clarity of the material, gain score of 15 out of 15 expected scores, then the second indicator has 2 descriptions regarding the correctness of the content, obtaining a score of 9 out of 10 expected scores. then in the third indicator, there are 3 descriptions regarding the way of presentation, a score of 15 out of 15 expected scores is obtained, and in the fourth indicator there are 3 descriptions regarding the suitability of learning tools with the material, a score of 14 out of 15 expected scores is obtained, and finally the fifth indicator has 1 description regarding suitability of the learning device with the learning objectives obtained a score of 5 out of 5 scores obtained. The calculation

results show that the average score obtained is 58 out of 60 expected scores. Thus, the percentage of assessment results from material expert validators can reach to 96.7% which is categorized as very valid

Table 2. the result of design validator

indicator	Score gain	Expected score	percentage
physical condition	9	10	90
quality	10	10	100
attractiveness	9	10	90
Suitability of Cover Visual Design	13	15	87
Visual Illustration of Story Content	7	10	70
Principles of Natural Science Studies	10	10	100
Media Term	9	10	90
Total	67	75	89,3

- b. b. Based on table 2, the design expert validation results consist of 7 indicators which show that the first indicator has 2 descriptions of physical condition, obtained a score of 9 out of 10 expected scores, then the second indicator has 2 descriptions of material quality, obtained a score of 10 out of 10 expected scores. , then the third indicator has 2 descriptions regarding the attractiveness of the image, obtaining a score of 9 out of 10 expected scores, and the fourth indicator has 3 descriptions regarding the suitability of the visual design of the cover with the material, obtaining a score of 13 out of 15 expected scores, and finally the fifth indicator has 2 the description regarding the visual suitability of the illustration of the content of the story obtained a score of 7 out of 10 expected scores, then the sixth indicator had 2 descriptions regarding the principles of science studies obtained a score of 10 out of 10 expected scores, and finally the seventh indicator had 2 descriptions regarding the media requirements obtained with a score of 9 out of 10 expected scores. The calculation results show that the average score obtained is 67 out of 75 expected scores. Thus, the percentage of assessment results from material expert validators can reach 89.3% which is categorized as very valid.

Table 3. The result of Language Validator

indicator	Score gain	Expected score	percentage
Sentence Effectiveness	10	10	100
Correct Use of Terms	8	10	80
Suitability of the Language Used	7	10	70
Simplicity of Language	9	10	90
Conformity with Intellectual Development	8	10	80
total	42	50	84

- c. Based on table 3, the validation results of linguists consist of 5 indicators which show that the first indicator has 2 descriptions regarding the effectiveness of sentences, obtaining a score of 10 out of 10 expected scores, then the second indicator has 2 descriptions regarding the accuracy of using terms, obtaining a score of 8 out of 10 scores. expected, then the third indicator has 2 descriptions regarding the suitability of the language used, obtaining a score of 7 out of 10 expected scores, and the fourth indicator has 2 descriptions regarding the simplicity of the language, obtaining a score of 9 out of 10 expected scores, and finally the fifth indicator has 2 descriptions Regarding suitability for intellectual development, a score of 8 out of 10 was obtained. The calculation results show that the average score obtained is 42 out of 50 expected scores. Thus, the percentage of assessment results from material expert validators is 84% which is categorized as very valid.

Process Evaluation

The evaluation process is carried out by applying an Merdeka procedure through making klepons. The practicum is carried out by completing the tools and materials agreed upon by the lecturer and students. Each step in Merdeka procedure can be conducted through:

- a. Start yourself

This activity was carried out by showing a video about the benefits and meaning of klepon in people's lives. From the results of watching this video, students are directed to formulate questions that arise to become initial hypotheses to solve the problem.

- b. Exploration concept

Furthermore, in answering the student's questions, information was searched from various references, including reading materials, lecturer modules and scientific journals. In this case, students and lecturers also agreed on the initial hypothesis, namely that the taste of klepon is determined by the length of boiling time.

c. Collaboration Room

In this activity, students are directed to form groups and prepare the specified tools and materials. Next, determine the length of time used to complete the task. Students are also given direction regarding filling in the worksheet.

d. Contextual Demonstration

The activity was carried out by making klepon by students and their groups, starting with making a mixture of sticky rice flour, coloring, pandan flavoring and water until it could be shaped. Next, add brown sugar and then boil for different lengths of time. Starting from 3 minutes, 6 minutes, 9 minutes, 12 minutes and 15 minutes.

e. Elaboration of Understanding

This activity is carried out by filling in student worksheets based on the scientific literacy indicators.

f. The connection between material

This activity was carried out by linking the results of the work carried out in making the klepon with existing natural science. This activity is carried out by searching for various sources of information, both print and digital.

g. Real Action

This activity was carried out by making a presentation summarizing the process of making and interpreting the ethnoscience results of making klepons.

From the various Merdeka procedure that have been carried out, an evaluation was conducted out referring to 3 indicators of scientific literacy, namely explaining phenomena, designing and evaluating scientific investigations, and interpreting data. The results obtained are:

Table 4. Improving of Sains Literacy through Merdeka Procedure

No.	Indicator Sains	Literacy Pra-step		Step 2	
		Score	Note	Score	note
1.	Phenomena	75,4	High	89,23	Very High

	description				
2.	Designing and Evaluating Research Scientifically	78,6	High	90	Very high
3.	Data Interpretation	75	high	91	Very high

Students' scientific literacy in implementing of Merdeka belajar measured by the scientific literacy indicator is in the very high category. Further explanation can be seen in the following graph

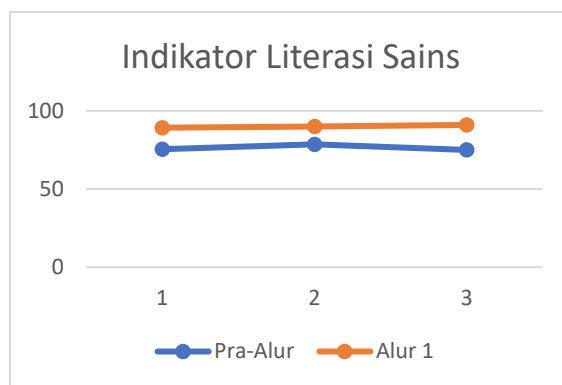


Figure 3. Improving of science Literacy through Merdeka Procedure

As a whole, the figure shows that there has been a change in each indicator of student scientific literacy in using Merdeka Procedure. The scientific literacy of students in stream 1 has increased compared to pre-stream in which explaining the phenomenon shows an increasing from an average of 75.4 to 89.23. The indicator for evaluating and designing scientific investigations has increased from 78.6 to 90 and the indicator for interpreting data has increased from an average of 75 to 91. It can be concluded that Alur Merdeka is able to increase students' scientific literacy.

4. Product Evaluation

In this step, the evaluation carried out through analyzing the results of lecturer and student responses using the learning tools. The lecturer's response questionnaire to assess the practicality of learning tools is reviewed from several indicators, namely: (1) the appearance of the learning tools, (2) the attractiveness of the learning tools, (3) the usefulness of learning tools that are adapted to the material based on CPL and lecture objectives. From the results of

calculating lecturer responses, a percentage of 92% was obtained which was categorized as very practical from the lecturer results and 88.66% from the student response results.

Based on the results of the program evaluation, Merdeka procedure is used as an effective learning model to increase students' scientific literacy through the development of ethnoscience learning tools for making telephones.

Discussion

The results of this research is suitable to the development of learning tools carried out by (5) concluding that the development of Merdeka Procedure-based LKM has very good criteria from validator assessments and development trials. The steps include (1) observing, (2) questioning and predicting, (3) planning and conducting investigations, (4) processing and analyzing data, (5) creating, (6) evaluating and reflecting, (7) communicating .

The procedure used in this research is Merdeka. The Merdeka Procedure is a program of the Ministry of Education and Culture as an effort to recover learning loss during the Covid 19 pandemic. This procedure starts with activities ranging from encouraging students to explore basic knowledge related to the material presented to real action as an implementation of the material concept. new ones that have been mastered. Through the Merdeka belajar, students are able to build knowledge related to native culture with students' native science.

Scientific literacy can improve through material linked to ethnoscience. Indigenous science is indigenous culture that has been attached to a society which they maintain and trust from one generation to the next through a process of adaptation to the environment and culture of the area where they live. Scientific knowledge is formal knowledge in the form of concepts, principles, theories and laws that have gone through scientific research.

The scientific literacy of students in procedure 1 has increased compared to pre-Procedure in which explaining the phenomenon can increase from an average of 75.4 to 89.23. The indicator for evaluating and designing scientific investigations has increased from 78.6 to 90 and the indicator for interpreting data has increased from an average of 75 to 91. Based on the results of this calculation, it can be concluded that the indicator for interpreting data is the indicator with the highest score. In the indicator of explaining phenomena, the results obtained were the lowest, for this reason further research is needed regarding development both in terms of methods and content in improving skills in explaining phenomena. In the final stage, namely product evaluation, it was stated that the learning tools used were practical for 92% of the teacher's responses and 88.66% of the student responses.

In education, original science and scientific science need to be integrated to create new scientific knowledge. By carrying out an inventory of original science, it can be the first step to later develop an ethnoscience-based science curriculum with nuances of local wisdom (9).

Currently, Ethnoscience is recommended to be implemented in Indonesia. Ethnoscience-based science includes cognitive, affective and psychomotor evaluations are suitable to the evaluation standards stated in the 2013 curriculum (10). Science learning in schools should integrate the culture that develops in society into science education. Because, when ethnoscience approach is applied in learning, students can increase their understanding of concepts by studying science contained in the culture of the surrounding community (11). Students can also preserve their culture and relate it to scientific knowledge.

Based on the results of the reconstruction of original science into scientific, it can be seen that the sap processing process is related to scientific material. The sap processing process can be linked to basic competencies in elementary school based on the 2013 curriculum so that culture in indigenous science can be integrated as a reference material for learning in schools.

First, changes in shape due to forces in the form of pulling and pushing. In making klepon, there is a change in shape from flour dough to a circle filled with brown sugar water. This proves that force affects the shape of objects.

Second, it relates to mixed materials, namely homogeneous mixtures (solutions) and heterogeneous mixtures (suspensions and colloids) in Class 5 Theme 9 Subtheme 1 Single Objects and Mixtures. The scientific concept in making klepon is related to a homogeneous mixture, namely the mixing of flour, salt and water into one inseparable unit.

Third, there is a change in the shape of the object. It can be seen from the brown sugar melting from a solid object to a liquid object, this is because the cooking process uses heat which is able to melt the brown sugar into liquid brown sugar.

Conclusion

This research was carried out through program evaluation using Merdeka Alur in the ethnoscience material for making klepons as Science Practicum course. The results of the program evaluation carried out were stated to be able to increase students' scientific literacy. At the content evaluation stage, an analysis of the needs of students, lecturers and learning outcomes is carried out. In the input evaluation step, a validation stage was carried out which

resulted in 96.7% of the material being declared valid, 89.3% of the design being declared valid, and 84% of the language being declared valid in the development of learning tools. In the process evaluation step, it was stated that there were changes in each indicator of student scientific literacy in using the Merdeka Procedure

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