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EDUPARK TEXTBOOK ON PHYSICS OF HOT WATER SEMURUP IN KERINCI JAMBI, INDONESIA IN TERMS OF THE DEPTH OF THE MATERIAL AND THE APPLICATION OF THE SCIENTIFIC APPROACH

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ABSTRACT

The depth of the material is how detailed the concepts that exist in learning material. Learning with a scientific approach is learning that is designed in such a way with the steps of observing, asking questions, gathering information, associating, and communicating. The research objective was to determine the level of application of a scientific approach and material depth based on the 2013 curriculum for SMA / MA with this type of research, namely descriptive research with a qualitative approach. The population in this study was the Edupark Physics book, a master's thesis development research. For standard books, namely Physics textbooks used in West Sumatra, Indonesia. The samples of this study were Physics textbooks Edupark Semurup Kerinci Hot Water and standard books, namely physics book class XI SMA / MA by Muhammad Farchani Rosyid, et al. The data were taken using research instruments and data analysis techniques in the form of analysis sheets The results showed that the depth of material in the Edupark book was higher, namely 79.87% compared to the MFR book which was 66.30% and both of them had the appropriate category. Meanwhile, the results of the application of the scientific approach to the Edupark textbook were 34.84% lower than the MFR book, which was 39.07%, but they had the same category, which was not suitable. Can show that the Edupark Hot Water Semurup Kerinci textbook material depth is higher than the standard book. And for the application of the scientific approach, Edupark's book is still a lot of subject matter that has not applied the steps of the scientific approach.

Keywords : Edupark, depth of the material, scientific approach

I. INTRODUCTION

Currently, we have entered the 21st century, which is a century with very high and rapidly developing advances in science and technology known as the era of the Industrial Revolution 4.0. In the 21st century, students who will be faced are students from the millennial generation. What is needed in improving the learning competence of the 21st century is the ability of students to think critically, be able to connect knowledge with the real world, master information technology, communicate and collaborate. One of the qualities of human resources depends on the quality of education and the role of education to create a smart, peaceful, society. open and democratic.

To realize a national education system that develops the potential of students, it must be under educational goals. Educational goals must be planned through the educational curriculum. Based on Law Number 20 of 2003 concerning the Indonesian National Education System, it is stated that the curriculum is a set of plans and arrangements regarding the objectives, content, and learning materials as well as the methods used as guidelines for implementing learning activities to achieve educational goals.

Currently, a new curriculum has been developed, namely the revised 2013 curriculum. The 2013 curriculum is under the Competency Standards for Graduates and Content Standards described in Permendikbud Indonesia No. 22 of 2016 concerning Basic and Secondary Education Process Standards, the learning principles used are

those that initially use a textual approach then change to a process as a strengthening of the use of a scientific approach or a scientific approach.

According to [1] learning through a scientific approach is learning designed in such a way that students actively construct concepts, laws, or principles with steps to observe, formulate problems, submit or formulate hypotheses, collect data, analyze data, draw conclusions and communicate. found the concept, law, or principle. Based on a copy of the attachment to Permendikbud Indonesia No. 103 of 2014 the scientific approach includes scientific steps in science, namely 1) Observing, 2) Asking, 3) Gathering Information, 4) Associating, 5) Communicating.

Textbooks are very important for students because they are used as one of the main learning resources in the learning process. Textbooks needed in the 21st century are textbooks that can guide students to integrate their knowledge with the realities that exist in nature. Indonesia is a country that has abundant natural wealth, both natural and artificial. One of the man-made natural resources is the Semurup Kerinci Hot Spring in Jambi Province. This tourist attraction can be used as an Edupark (educational park).

Currently, there has been a lot of research on the development of Edupark-based textbooks by utilizing the natural resources that exist as an Edupark (educational park) including: [2] has conducted a preliminary analysis of Edupark Physics learning tools for temperature and heat in Semurup Kerinci Hot Water. [3] has conducted an initial analysis of the Edupark fluid learning tool at the Mifan Padang Panjang Waterpark. [4] developed a textbook about Ngarai Sianok as Edupark for Physics Education. [5] analyzed Edupark-based teaching materials to study natural science methods of travel work in Janjang Seribu and the Troubled Red and White Mountains. The results show that it is necessary to develop a learning device that is following the characteristics of students and regional potentials that are integrated with nature as a learning medium for Physics [6].

After the preliminary analysis was carried out, Anggara (2019) has made developed teaching materials for the Edupark Physics of Semurup Kerinci Hot Water as stated. However, the developed textbook has not yet carried out a material depth analysis and the application of a scientific approach that is under the 2013 curriculum. So it is necessary to analyze the Edupark textbook. The main reason for choosing the Edupark Semurup Kerinci Hot Water textbook is that this textbook has just been made and no one has yet conducted a deeper analysis of the textbook so that a deeper analysis of the Semurup Kerinci Hot Water Physics Edupark Textbook is necessary. And most importantly this book is based on local wisdom which is very important for students to acquire knowledge and values contained in their area. In this study, the Edupark Physics Textbook on Semurup Kerinci Hot Water will be compared with the standard book, namely the Physics book for class XI SMA / MA written by Muhammad Farchani Rosyid, et al. The reason for choosing Muhammad Farchani Rosyid et al's book (abbreviated as MFR) is that this book describes more detailed material and application of concepts. Besides, this book is a book that has higher Science Process Skills than the other books in [7]. The Edupark Physics Teaching Book of Semurup Kerinci Hot Springs in general discusses the physics concepts contained in the Semurup Kerinci Hot Spring tourist attraction. The material discussed in this book consists of 2 KD, namely KD 3.3 Temperature and heat, and KD 3.3 Static Fluid. The material is compared to a standard book which includes temperature and heat and static fluid.

To see whether the textbook is under the curriculum or not, the researcher will conduct a depth analysis test of the material and the suitability of the application of the scientific approach in the Edupark Physics textbook Semurup Kerinci Hot Water. The material depth indicator to be analyzed is adjusted to the 2014 National Education Standards Agency and for indicators of suitability for the application of the scientific approach to be analyzed according to Permendikbud Number 103 of 2014. So that the material depth level and suitability of the application of the scientific approach in the Edupark Physics of Hot Water textbook will be obtained Semurup Kerinci according to the 2013 curriculum.

II. METHOD

This type of research is a descriptive study with a qualitative approach. Research that serves to describe systematically the facts of the object under study is called descriptive research [8]. Research that produces descriptive data in the form of written or spoken words from people and observed behavior is called a qualitative approach [9].

The population of this study was the Edupark Physics Book, a master's thesis research development. As a standard book, it can be seen from several high school physics textbooks used in West Sumatera. The samples used in this study were the Edupark Physics Textbook on Semurup Kerinci Hot Water and the Physics Book for SMA / MA class XI written by Muhammad Farchani Rosyid et al. This research uses nonprobability sampling technique which is purposive sampling type. According to [10] Purposive Sampling is a sampling technique with certain considerations that are considered the most useful and representative.

The instruments used are in the form of a depth analysis sheet of Physics material under the 2013 curriculum and an analysis sheet of the application of the scientific approach in the Edupark Physics Textbook of

Semurup Kerinci Hot Springs and the Physics Book for SMA / MA class XI written by Muhammad Farchani Rosyid et al, published by the Three Serangkai which is used as a standard book. [11] states that the research instrument is a test that has the characteristics of measuring information with several questions and statements in the study, which can be done by outlining the research objectives. The instruments used are prepared based on indicators of the scientific approach under Permendikbud Number 103 of 2014. The indicators contained in the scientific approach are observing, questioning, gathering information / trying, associating / reasoning, trying, and communicating.

The instruments that have been made, namely the material depth analysis instrument and the suitability analysis instrument for the application of the scientific approach, are then validated to the experts using the instrument validation sheet. The validation study was conducted by three experts and one practitioner. The assessment of the validity of the material depth instrument and the application of the scientific approach in the Semurup Kerinci Hot Water Physics Edupark Textbook and this MFR book is in the form of a checklist or check-list with a scale of 1 to 4. The highest score for each indicator is 4 and the lowest score is 1.Aiken's formula V in finding the total mean validity value for all criteria:

$$V = \frac{\sum s}{[n\ (c-1)]}$$

Information:
S = r - l0
l0 = the lowest number of validity assessments (in this case = 1)
c = the highest number of validity assessments (in this case = 4)
r = number given by the validator
Furthermore, the validity value for all criteria will be categorized based on Table 1.

Table 1. Instrument Validity Level

No	Value	Category
1	≥ 0,6	Valid
2	< 0,6	Not valid

(Reference: [12])

The data analysis technique used in this study is a content analysis technique, which is to analyze the content of written data. The data analysis technique is carried out on the material analysis of the depth of physics and the suitability of the application of the scientific approach by:

1. Adding the appearance of "There" on each item of the material depth indicator or scientific approach
2. Calculating the proportion of each material depth indicator or scientific approach by adding the appearance of "There" that has been obtained divided by the total number of items for each material depth indicator or scientific approach multiplied by 100% with the formula:

   $$P = \frac{\sum q}{\sum r} \times 100\%$$

   Information:
   P = percentage of each indicator of material depth and scientific approach
   ∑q = the number of occurrences in each indicator item
   ∑r = total number of each indicator item [13]
3. To see the average proportion of each indicator, adding up the proportion of each material depth indicator or applying the scientific approach divided by the number of material depth indicators or scientific approach.
4. Furthermore, to see the average proportion of each basic competency, it is done by adding up the proportion of material depth or scientific approach for each basic competency divided by the number of basic competencies
5. So, to see the proportion of the suitability of the material depth or scientific approach, it is done by adding the average of each indicator that has been obtained divided by the number of indicators.
6. Meanwhile, to see the proportion of the suitability of the material depth or scientific approach is done by adding the average basic competencies divided by the number of basic competencies.
7. Then determine the criteria for the suitability of the Physics material and the suitability of the application of the scientific approach in the Semurup Kerinci Hot Water Physics Edupark Textbook and the MFR book. Used to see the percentage of the depth of the material for the application of the scientific approach in the Edupark Physics Textbook of Semurup Kerinci Hot Springs and the MFR book.
8. Interesting based on the results of material analysis and the suitability of the application of the scientific approach to each indicator analyzed.

To determine the criteria for the suitability of the Physics material and the suitability of the application of the scientific approach in the Edupark Physics Textbook on Semurup Kerinci Hot Water and the MFR book based on Table 2 below.

Table 2. Criteria for Conformity for Application of the Scientific Approach

Interval Percentage	Criteria
81-100	Perfect Fit
61-80	Corresponds
41-60	Sufficiently Appropriate
21-40	Not quite Suitable
0-20	Doesn't match

(Reference: [14])

III. RESULTS AND DISCUSSION

1. *Research Results*

a. *The results of the material depth analysis*

The results of the material depth analysis under the basic competencies in the two books analyzed are shown in Figure 1.

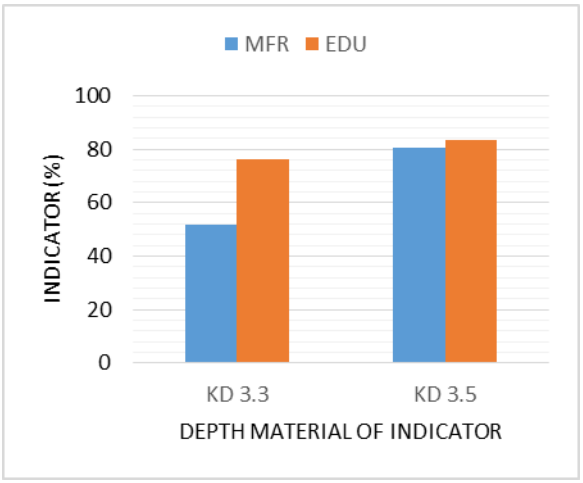

Fig.1. The level of material depth for each of the basic competencies

Based on the results of the analysis in Figure 1, it is found that the Teaching Book of Edupark Hot Water Semurup Kerinci is a book that has a higher level of material depth than the MFR Book with a proportion of 79.87% in the "Appropriate" category. For book standards, MFR books have a proportion of 66.30% with the category "Appropriate". To see the results of the material analysis on each indicator can be seen in Figure 2.

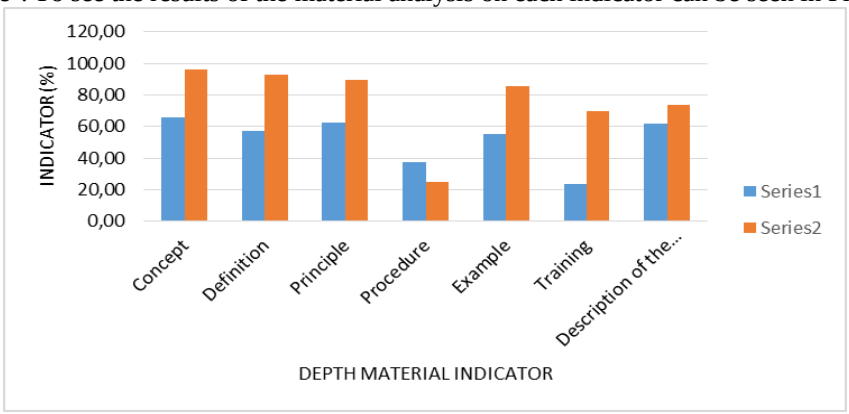

Fig. 2. The depth level of the material for each indicator

Based on the results of the analysis in the figure, information is obtained that the lowest proportion of the material is in the concept section and the lowest proportion of the material is in training. For indicators, the procedure section of the Edupark book is lower than the MFR book, namely 57.82%, while the MFR book is 60.94%, with the MFR book having the Appropriate category and the Edupark book having the Fairly Appropriate category.

b. The results of the analysis of the application of the scientific approach

The level of suitability of the application of the scientific approach to each of the basic competencies is shown in Figure 3.

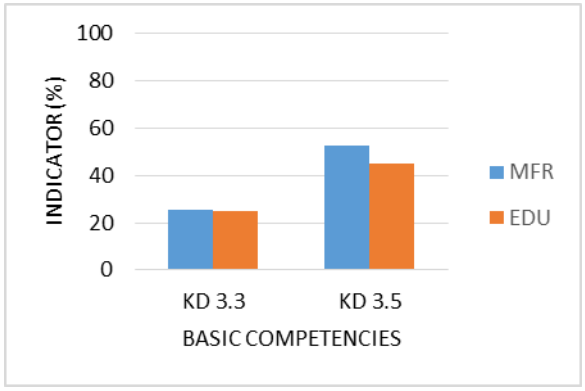

Fig. 3. The level of suitability of the application of the scientific approach to each of the basic competencies

Based on the results of the analysis in Figure 3, information is obtained that the Edupark Physics Textbook of Semurup Kerinci Hot Water is a book that has a lower level of scientific approach than the MFR book with a proportion of 34.84% with the category "Not Appropriate". For standard books, MFR books have a proportion of 39.07% in the category of “Not Suitable”. To see the results of the suitability analysis of the application of the scientific approach to each indicator can be seen in Figure 4.

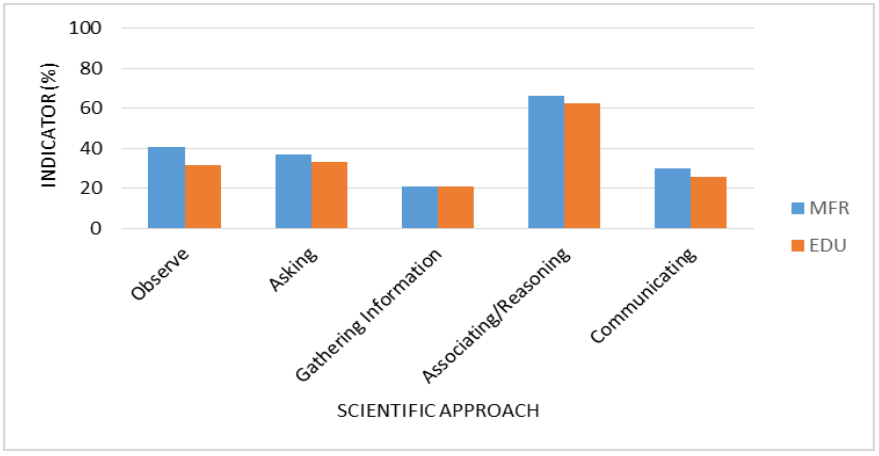

Fig. 4. The level of suitability of the application of the scientific approach to each indicator

The results of the analysis in Figure 4 show that the proportion of suitability for the application of the scientific approach is different. The percentage of the scientific approach is in the aspect of associating / reasoning and for the lowest proportion of the scientific approach is in the aspect of gathering information. Edupark books are seen from the aspect of peering, asking questions, associating / reasoning, and communicating with indicators the average scientific approach is lower than MFR books, while for the aspect of gathering information, Edupark books and MFR books have the same proportion of application of the scientific approach, but all aspects of the application of the scientific approach are equally unsuitable.

2. Discussion

a. In-dept Analysis Discussion of the material

1) Concept

Based on the results of the depth material analysis which contains explanations related to the concepts in the Edupark Physics Textbook, Semurup Kerinci Hot Springs can be categorized as very suitable. When compared to MFR books, Edupark textbooks have explanations related to higher concepts than MFR books and have a very suitable category. This is because overall in Edupark textbooks there are material indicators that contain explanations related to concepts. According to the large Indonesian dictionary, concepts are ideas or meanings that are abstracted from concrete events. So it can be concluded that concepts are abstract ideas related to events, ideas, and objects..

2) Definition

Based on the results of the material analysis which contains explanations related to the definitions in the Edupark Textbook, Semurup Kerinci Hot Water can be categorized as very suitable. When compared with MFR books, Edupark textbooks have explanations related to a higher definition in fluid static material, and lower in temperature and heat material compared to MFR books, but have a very suitable category for Edupark textbooks and a suitable category for MFR book. This is because in total there is an indicator of the depth of material in Edupark textbooks which contains explanations related to definitions. In the large Indonesian dictionary, the definition is a formulation of the scope and characteristics of a concept that is the subject of discussion or learning. The definition can also be interpreted as a limitation or meaning, it can also be interpreted as a word, phrase, or sentence that expresses the meaning, description, or main characteristic of a person, object, process, or activity.

3) Principles

Based on the results of the material analysis which contains explanations related to the principles in the Edupark Textbook, Semurup Kerinci Hot Water can be categorized as very suitable. The highest explanation is in the material of static fluid and material of temperature and heat. When compared to MFR books, Edupark textbooks have explanations related to higher principles than MFR books and have a very suitable category. This is because in total there is an indicator of the depth of material in Edupark textbooks which contains explanations related to principles. In the large Indonesian dictionary, the principle is the truth on which to think, act, and so on. Principles can be implemented as a condition that must exist. Principles also mean the general rules that are used as guides. Principles serve as a (new) basis for action, can serve as a reference for processes as well as target recommendations. Principles are also defined as experimental statements for a certain group of symptoms that can explain an event.

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4) Procedure

Based on the results of the depth material analysis which contains explanations related to the procedures in the Edupark Physics Textbook, Semurup Kerinci Hot Water can be categorized as quite appropriate. The explanation for the highest control is found in the material on hydrostatic pressure and Archimedes law. When compared to MFR, Edupark textbooks have explanations related to procedures that are lower than MFR books, Edupark books have a fairly appropriate category, while MFR is in the appropriate category. This is because, overall, there are material indicators in Edupark textbooks that contain explanations related to procedures. According to [15] the procedure is a series of activities or activities that are repeated in the same way.

5) Example

Based on the results of the depth material analysis which contains explanations related to the examples in the Edupark Physics Textbook, Semurup Kerinci Hot Springs can be categorized as very suitable. The highest example explanations are in the type and pressure material. When compared to MFR books, Edupark textbooks have explanations related to higher samples than MFR books, Edupark books have a very suitable category, while MFR books have the appropriate category. This is because overall there are material indicators in Edupark textbooks that contain explanations related to examples. In the large Indonesian dictionary, an example is something that will be provided or provided to be imitated and followed.

6) Training

Based on the results of the material analysis which contains explanations related to the training in the Edupark Physics Textbook, Semurup Kerinci Hot Water can be categorized as quite appropriate. The highest explanation of training is in a static fluid material. When compared to MFR books, Edupark textbooks have less explanation related to higher training than MFR books, Edupark books have a fairly appropriate category, while MFR books have an inappropriate category. This is because, overall, there are material indicators in Edupark textbooks that contain explanations related to training. Process exercises carried out by students is an activity or a job so that these activities can run according to the expected learning objectives.

7) Description of the material

Based on the results of the material analysis which contains explanations related to the description material in the Edupark Semurup Kerinci Hot Water Textbook, it can be categorized as very suitable. The description of the material is the cognitive, affective, and psychomotor domains demanded by KI and KD, and the level of difficulty and complexity of the material for the whole chapter has been adjusted to the level of cognitive development of students. Edupark textbooks have a higher category which is very suitable while MFR books have the appropriate category. This is because in total there are indicators of material description in Edupark textbooks. For example, for the basic competencies of static fluids, on the subject matter of types and pressure, and hydrostatic pressure, there are no textbook indicator items that invite students to read information. For example, for the basic competencies of static fluids, on the subject matter of density and pressure, and hydrostatic pressure, there are no textbook indicator items that invite students to read information. In the material of capillary and viscosity symptoms, there are no indicator items in textbooks for students to read information, hear various natural phenomena. In the material of temperature and expansion and heat and its changes, there are no indicator items about textbooks that instruct students to use the sense of hearing to hear various natural phenomena.

Based on the two books analyzed, the description of the material in the affective domain has the same record between KI and KD. Core competencies are the level of ability to achieve graduate standards that a student must have through learning. Meanwhile, basic competence is the ability to achieve core competencies that students must acquire through learning.

b. Discussion on the analysis of the application of the scientific approach

1) Observe

Based on the results of the analysis of the application of the scientific approach which has a peering indicator component in the Edupark Physics textbook, Semurup Kerinci Hot Water can be categorized as inappropriate. When compared to MFR books, Edupark textbooks have indicators that are considered lower than MFR books, Edupark textbooks have an inappropriate category, while MFR books have quite appropriate categories. This is because the warning indicators have not yet been realized in Edupark textbooks, there are still several indicators that have not been fulfilled. For example, for the basic competencies of static fluids, on the subject matter of types and pressure, and hydrostatic pressure, there are no textbook indicator items that invite students to read information.

2) Asking

Based on the results of the analysis of the application of the scientific approach which has a questioning indicator component in the Edupark Physics Textbook of Semurup Kerinci Hot Water, it can be categorized as inappropriate. The questioning indicator component is in the static fluid material. When compared to MFR books, Edupark textbooks have an indicator component that questions are lower than MFR books but they both have less appropriate categories. This is because there are still some indicators that have not been fulfilled in the Edupark textbook. For example, for the basic competence of static fluids, in Pascal's legal material the total questioning indicator items are not in the material.

3) Gathering Information

Based on the results of the analysis of the application of the scientific approach which has an indicator component of gathering information in the Edupark Physics Textbook of Semurup Kerinci Hot Water, it can be categorized as inappropriate. When compared to MFR books, Edupark textbooks have the same information

collection indicators as MFR books with inappropriate categories. This is because the indicators for collecting information in Edupark textbooks have not yet been realized, there are still some indicators that have not been fulfilled. For example, for basic competence 3.3, on the subject matter of density and pressure, hydrostatic pressure, Pascal's law, Archimedes law, and surface tension, there are several indicators measuring information that are not present in that material.

4) Associating / Reasoning

Based on the results of the analysis of the application of the scientific approach which has an indicator component of associating / reasoning in the Edupark Physics Textbook of Semurup Kerinci Hot Water, it can be categorized accordingly. When compared to MFR books, Edupark textbooks have an indicator component that associates/reasoning is lower than MFR books but they both have the appropriate categories. This is because not yet meeting the indicators of associating / reasoning contained in Edupark textbooks, there are still several indicators that have not been fulfilled. For example, the subject matter of Pascal's law as a whole does not explain the explanation of the indicator points related to association/reasoning.

5) Communicating

Based on the results of the analysis of the application of the scientific approach which has an indicator component of communicating in the Edupark Physics Textbook, Semurup Kerinci Hot Water can be categorized as inappropriate. When compared to MFR books, Edupark textbooks have an indicator component that communicates less than MFR books but they both have less suitable categories. This is because not fulfilling the communicating indicators contained in the Edupark textbooks, there are still several indicators that have not been fulfilled. One example of communicating activities on type and pressure material is "make a report on the presentation results that have been done as interesting as possible," in Edupark textbook page 90.

IV. CONCLUSION

The depth level of the material in the Edupark Physics Textbook of Semurup Kerinci Hot Water is by the 2013 curriculum with a percentage of 81.2%. Whereas for the level of suitability of the application of the scientific approach there are still many main subjects that have not implemented the steps in the scientific approach, so the percentage results are 39.6%. The depth of this material and scientific approach is equivalent to the standard book used, namely the SMA / MA class XI Physics book, published by Tiga Serangkai with the author Muhammad Farchani Rosyid, et al, which is adjusted based on the basic competencies in Edupark textbooks. This shows that for the depth of material in the Semurup Kerinci Hot Water Physics Edupark Textbook already has a very suitable category, but for the application of the scientific approach, it is necessary to conduct a review, so that the scientific skills of students can increase even more. Thus, if both indicators are met, Edupark textbooks can be applied in schools.

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