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DEVELOPMENT OF TEACHING MATERIALS ON 7 OBJECTS OF THINGS, ANIMALS AND PLANTS AROUND ME WITH SUB-THEME 3 OF LIVING THINGS AT CLASS 1 ELEMENTARY STUDENTS BASED ON SCIENTIFIC

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Abstract

This study aims to find out whether there are differences in learning outcomes of grade 1 elementary school students who use learning supplement books developed in the sub-theme 1 Living Objects Around me with learning outcomes of students who do not use learning supplement books developed in the sub-themes of 1 Living Objects Around Me. use research and development methods. The research and development procedure used is a modification of the Borg and Gall development model which includes seven steps of development namely stage (1) research and information gathering; (2) planning; (3) development of preliminary product forms; (4) preliminary trials; (5) revisions to the main products; (6) the main trial based on the results of the preliminary trial; (7) revision of operational products; (8) trial. operational; (9) final product revisions; and (10) dissemination and implementation. until it becomes the final product of teaching materials that refers to the 2013 curriculum. Theme 7 Objects, Animals and Plants Around Me subtema 1 Living Objects for class 1 Elementary School. Development of teaching materials using instruments that are interviews, observations, discussions with experts, competency tests, questionnaires, likert scales that are made in the form of a checklist such as questionnaires for expert validation. The technical data analysis used in this study is qualitative and quantitative data. The results of this study are teaching materials that refer to the 2013 curriculum sub-theme 1 Living Objects for grade 1 elementary school. Before and after the supplement book can be seen from the difference in the average pre-test and post-test that is 68.6 and 87.8 Feasibility Evaluation of Thematic Learning by using Rubrics with 3 material expert Validator Tests of 96%, madia expert Validator Test 89% of education expert Validator tests were 93.3%. Evaluation of supplementary book learning with a small group trial of 89.5%, and a large group test of 93.7%.

Keywords: Development, teaching materials, scientific.

A. INTRODUCTION

This study aims to determine whether there are differences in learning outcomes of grade 1 elementary school students who use learning supplement books developed in the sub-theme 1 "Living Things Around Me" with learning outcomes of students who do not use learning supplement books developed in the sub-themes 1.

Education is a conscious and planned effort to create a learning atmosphere and learning process so that students actively develop their potential to have religious spiritual strength, self-control, personality, intelligence, noble character, and abilities needed by themselves, society, nation and the state.

Learning is an effort made to acquire the competency of knowledge, skills and attitudes needed to do a job. In order to realize the learning process and the learning atmosphere of students so that they actively develop their potential, the teacher is very important, as an effort to shape the character of the nation and develop the potential of students in order to develop education in Indonesia. Teachers are professional educators with the main task of educating, teaching, guiding, directing, training and evaluating students in early or pre-school education, formal education, basic education and secondary education. This is in line with what is hinted in chapter I of the general provisions, article 1 paragraph 1 of Law No. 14 of 2005. The background of the authors conducting development research relates to the absence of teachers who develop teaching materials in the form of books to learn and only use learning resources provided by the ministry of education and even if there are teachers who make teaching materials in the form of supplementary books to study, the book then is not yet principle.

At the beginning of the new academic year 2013/2014, The 2013 Curriculum began to be applied to the level of education of SD / MI, SMP / MTs, and SMA / SMK. The 2013

Curriculum in elementary schools began to be applied in classes I and IV. The 2013 Curriculum replaces the Learning Unit of Curriculum Level (KTSP). The 2013 Curriculum is a product of the idea of developing the latest curriculum. The 2013 curriculum is a government effort to improve the quality of education. Minister of Education and Culture (2012) explained that the objectives of the 2013 Curriculum were aimed at increasing balanced competencies between attitude, skills and knowledge. These three competencies are supported by 4 pillars, namely productive, creative, innovative, and affective.

The learning process in The 2013 Curriculum was changed by mandating a scientific approach that was applied thematically which is integrated in learning. Learning based on scientific or scientific approaches applies five scientific skills in learning, namely the skill of observing questions (questions) trying / gathering information (experimenting) associating / reasoning (associating), and communicating findings (networking) (Kemendikbud, 2013: 9)

Hosnan (2014: 34) says that the scientific approach is a learning process designed in such a way that students actively construct concepts through the stages of observing, formulating problems, formulating hypotheses, collecting data, processing data, drawing conclusions and communicating concepts that are found. Abidin (2014: 125) also expressed his opinion that scientific learning can be said as a learning process that guides students to solve problems through careful planning activities, careful data collection, and careful analysis of data to produce conclusions. Learning that students must follow, namely learning based on scientific approaches which directs students to actively observe, find out, and do cooperation in groups. Piaget (Budiman Nandang, 2006: 44) added that the skills of class I students in language began to develop but scientific approach based learning

asked students to be able to present their findings.

The above attracts researchers to examine about learning based on scientific approaches in class I.

B. STUDY OF LITERATURE.

1. Development of Teaching Materials.

Definition of Development Development is an activity of science and technology that aims to utilize the principles and theories of science that have been proven to be correct to improve the functions, benefits, and applications of existing science and technology, or produce new technologies. According to the Law of the Republic of Indonesia Number 18 of 2002 concerning National System of research, development and application of Science and Technology, Development in general means growth patterns, changes slowly (evolution) and changes gradually. 2. Definition of teaching materials Teaching materials are materials or materials arranged systematically, used by teachers and students in the learning process (Pannen, 1995). According to Andi Pratowo in his book entitled Creative Guide to Making Innovative Teaching Materials, teaching materials is all materials (both information, tools, and texts) arranged systematically, which displays a complete figure of competencies that students will master and use in the learning process with the aim of planning and reviewing learning implementation (Pratowo, 2013).

B. Education and Curriculum in Elementary Schools.

1. Primary School Education

Education is a conscious and planned effort that is contained in the goals of national education and education in primary schools, namely, to create a learning atmosphere and process of learning activities with the aim that students actively develop their potential to have religious spiritual strength, self-control,

personality, intelligence, noble character, and skills needed by him and the community, in the nation and state as stated in Law No.20 of 2003 concerning the National Education system.

2. 2013 Curriculum.

The curriculum is a set of plans and arrangements regarding the purpose, content, and learning material as well as ways that are used as guidelines for implementing learning activities to achieve certain educational goals. Based on this understanding, there are two dimensions of the curriculum, the first is the plan and arrangement of objectives, content, and learning material, while the second is the method used for learning activities. The 2013 curriculum which was implemented starting in the 2013/2014 school year fulfilled both dimensions of Law Number 20 of the National Education System.

C. Thematic Learning in Primary Schools.

1. Definition of Thematic Learning

Thematic learning is learning that uses themes to associate several subjects so as to provide meaningful experiences to students. Themes are the main ideas or ideas that are the subject of discussion (Poerwadarminta, 1983).

2. Characteristics of Thematic Learning

There are several characteristics that need to be understood from this thematic learning, namely:

- 1). Student-centered learning.
- 2). Providing direct experience to children.
- 3). The separation of subjects is not visible.
- 4). Presenting concepts from various subjects in a process of learning to be meaningful.
- 5). Flexibly.

3. Strengths and Weaknesses

1). Many of the materials contained in some subject matter have conceptual relationships, so learning becomes more meaningful and comprehensive; study a topic in depth from various aspects.

2). Students are easy to focus because some subjects are packed in the same theme.

3). Students can learn knowledge and develop various competencies in several subjects in the same theme.

A. Learning material sub-theme 1 Living things.

1. Get to know, distinguish and know the characteristics of living things. Living things consist of humans, animals and plants, in living things students must be able to distinguish between living things from one another to another besides living things also have the following characteristics:

- a. Move on all living things.
- b. Need food for all living things
- c. Move places only in humans and animals
- d. whereas plants cannot move unless someone moves them.
- e. Breed on all living things.

3. Growth and breeding of living things.

Every living thing experiences growth, for example in humans from infants, children, adults as well as animals, whereas in plants that come from seeds, seedlings, grow leaves, until plants can be planted. In addition to the growth of living objects also breed to preserve their offspring, for example in humans giving birth, in animals giving birth to cattle, laying eggs on chickens as well as plants that have seeds on coconuts with shoots on bananas.

E. Scientific Based Learning

1. Definition of Scientific Learning. Learning with a scientific approach is a learning process that is designed in such a way that students actively construct concepts, laws or principles through the stages of observing (to identify or find problems), formulate problems, submit or formulate hypotheses, collect data with various techniques, analyze data, draw conclusions

and communicate concepts, laws or the principle "found" (Kurinasih, 2014: 29).

2. Strengths and disadvantages of the Scientific Approach

a. Advantages of the Scientific approach
Advantages include: students are more creative, students can learn independently or in groups, students can explore their own potential, knowledge gained by students is more stable and long lasting, students think critically, students play an active role in learning, students find own knowledge, students feel happy because they feel more valued, democratic atmosphere can be built, teachers do not get bored teaching, teachers also get new knowledge, students can be more creative, relationships between students can be better established, students are more responsible.

b. Lack of scientific approach.

The weakness of the Scientific approach includes: requiring longer time, needing more teaching preparation, student assessment becoming more complicated, low achieving children will experience learning difficulties, the Scientific approach is less suitable for difficult material, students feel that their assignment is a lot, it takes time to change students' habits of being scientific.

4. Learning Steps

According to Minister of Education and Culture Number 81 A Year 2013 attachment IV, that the learning process consists of five main learning experiences, namely:

- a. observe; b. ask; c. Collect information / experiments; d. associate / process information; e. communicate.

In the 2013 Curriculum Learning Tool Plan, it was explained that thematic learning on the theme of 7 Objects, Animals and Plants around me was the theme 1 Living Objects contained core competencies, basic competencies, Objectives, Learning Materials, materials, learning activities, materials, method approaches, learning activities, source and media, and assessment.

a. Core Competence (KI)

KI 1: Accept and carry out the teachings of the religion they adhere to,

KI 2: Having honest, disciplined, responsible, polite, caring and confident behavior in interacting with family, friends and teachers

KI 3: Understanding factual knowledge by observing listening, seeing, reading] and asking questions based on curiosity about him, God's creatures and activities, and objects that he finds at home and school

KI 4: Presents factual knowledge in clear and logical and systematic language, in aesthetic works in movements that reflect healthy children, and in actions that reflect the behavior of children of faith and morality. b. Basic competencies Content: Indonesian (Table 2.1 about Basic Competence (KD) of Indonesian language)

No.	Basic competencies
3.6	Describing vocabulary about various types of objects in the surrounding environment through short texts (in the form of images, simple slogans, writing, and / or song lyrics) and / or environmental exploration poetry.
4.6	Using Indonesian vocabulary with proper spelling and assisted with regional languages regarding various types of objects in the surrounding environment in simple text.

Content: Mathematics (Table 2.2 about Basic Competence (KD) of Mathematics)

No.	Basic competencies
3.2	Describing numbers up to two numbers and the value of the place where the symbol is composed using concrete objects and how to read them.
4.2	Writing down the symbol of a number up to two numbers which states many members of a collection of objects with the idea of place values.

c. Objectives

1. After reading, students can deduce one characteristic of living things, that is, they can move themselves correctly.
2. After observing the example, students can explain the movement of moving things done by living things correctly.
3. After observing the example, students can explain the purpose of the move carried out by living objects correctly.
4. After discussion, students can distinguish motion from living things.
5. After getting the teacher's explanation, students can write the symbol of a two-digit number
6. After observing the example, students can determine the place of numbers correctly.

d. Materials

1. Summarizing the liquid-characteristic of living things.
2. Writing the symbol of a two digit number
3. Determining the place value of the number.

e. Learning model

1. Approach: Scientific
2. Methods: question and answer, assignments and lectures

f. Learning Resources

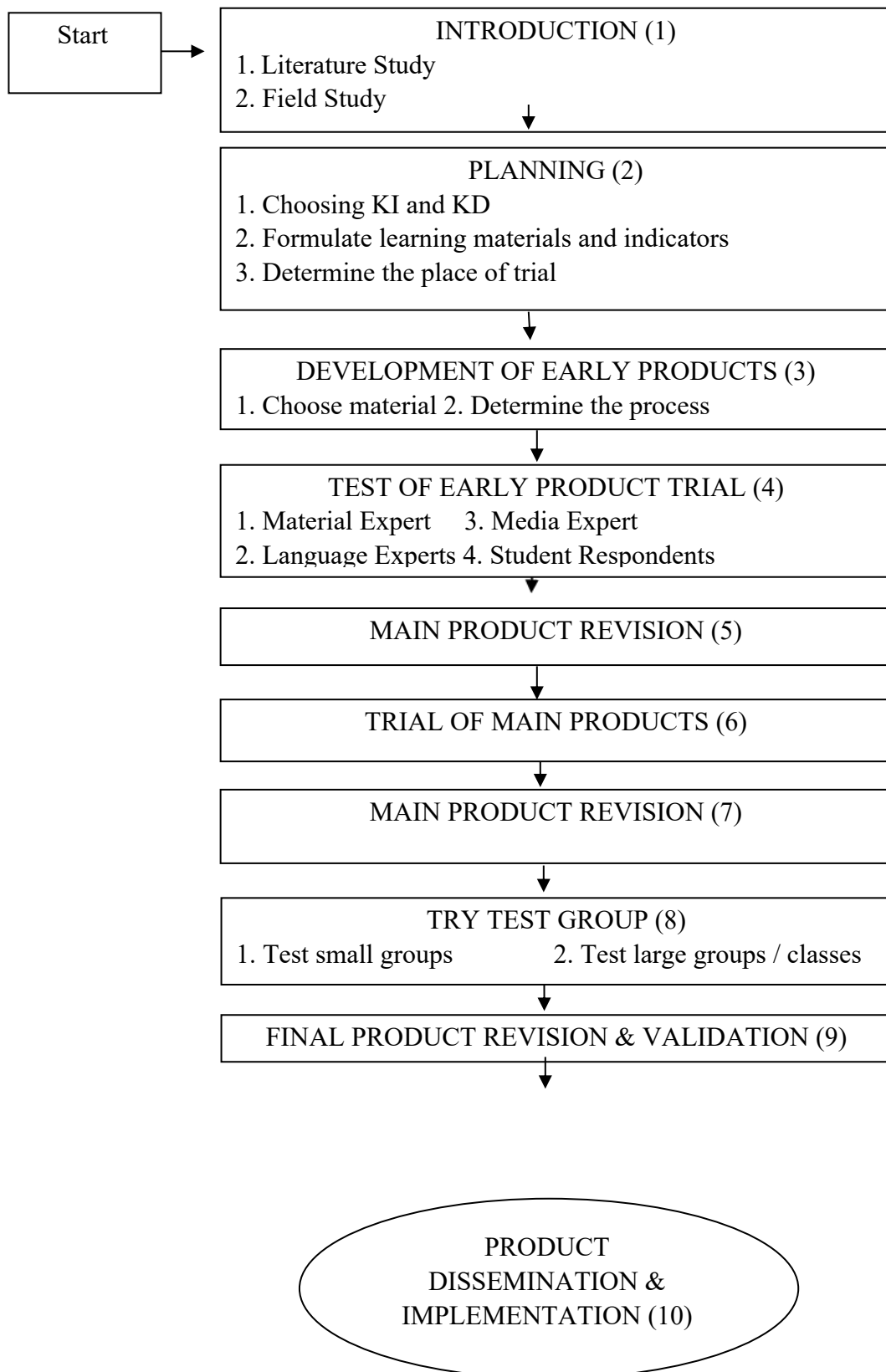
Teacher's Manual Theme: Objects, Animals and Plants around me Class 1 (2013 Integrated Curriculum Thematic Book, Jakarta: Ministry of Education and Culture, 2013). Student Book Theme: Objects, Animals and Plants around me Class 1 (Integrated Thematic Book 2013 Curriculum, Jakarta: Ministry of Education and Culture, 2013).

g. Assessment

Attitude Assessment, Knowledge assessment, Skills Assessment

C. METHOD OF DEVELOPMENT

This study uses a development model (Research and Development), a model of education research and development developed by Borg & Gall (1983: 772). In general, the product development procedure can be seen in the following figure:



In this research and development, the types of data that will be produced are qualitative and quantitative data. The instruments used to

collect data in this research trial are (1) the questionnaire needs sheet (2) expert validation sheet, and (3) questionnaire response sheet.

Analysis of the data used consisted of two techniques, namely qualitative descriptive analysis techniques for processing data from the review of mater experts, media experts and learning experts by grouping information from qualitative data in the form of input, criticism and suggestions for improvements contained in the questionnaire and the results of interviews. Quantitative data is obtained from the material expert questionnaire sheet and the

learning expert is then converted into data qualitative with a scale conversion of five.

The formulas used to calculate percentages are as follows.

$$\text{Percentage} = \frac{\Sigma(\text{answer} \times \text{weight of each choice})}{n \times \text{highest weight}} \times 100\%$$

Information :

Σ = Total

n = Number of all questionnaire items

Tabel 1

Skala Likert	Percentage	Category	Decision
1	0 % - 54 %	Very less feasible	Product failed, total revision of product content
2	55 % - 59%	Not worth it	Revision by reviewing the good parts
3	60% - 75 %	Fair enough	Products can be used by revising parts that are weaknesses
4	76 % - 85 %	Good / decent	Products can be continued and add things that are considered lacking
5	86 % - 100%	Very Worthy	Products are ready to be used in the field without revision

(Purwanto, 2014).

After knowing the feasibility of the product made, then the product test is then carried out. Test product conducted to teachers through small group tests and large group tests. The product test results are made to find out whether the product is made effective to use.

D. RESULTS AND DISCUSSION

The product produced in this study is a thematic learning supplement book. Before producing development products, it is necessary to do an initial study with research and information gathering to find out the facts of learning in the field towards evaluating thematic learning by using the rubric with analyze needs in the field. Research and information gathering is the first step taken in the process of developing teaching materials (learning supplement books), namely by

observing, interviewing, and distributing questionnaires.

1. Learning Facts in the Field

Based on the results of interviews that have been carried out in the development of a supplementary book for class I thematic living things in 003 Sangatta North Elementary School in Sangatta Utara District, the authors conducted a pre-test. After doing the pre-test it turns out that the average value is 68.06. Therefore the authors conducted research on students to explain and introduce. Supplementary books learn about living things. After that a post-test is held again and an average value of 87.8. From these results it can be seen that students already understand about living things using supplementary books.

Table 2 about the results of the pre-test and post-test

No	Student's Name	value	
		Pre-test (x1)	Post-Test (X2)
Average		68,06	87,8

2. Feasibility study supplement books.

To find out the thematic learning supplement book, the author conducted a validation test on

learning supplement books made for one junior supervisor of material experts, one headmaster of media experts and one teacher of education experts.

Table 3 Results of material expert validation

NO	Assessment Criteria	Score
Total Score		72
Maksimum score		75

$$\text{Persentase} = \frac{\Sigma(\text{Total Score})}{\Sigma(\text{nxhighest weight})} \times 100\%$$

$$\text{Persentase} = \frac{72}{75} \times 100 = 96\%$$

Table 4 Results of media expert validation

NO	Assessment Criteria	Score
Total Score		89
Maksimum score		100

$$\text{Persentase} = \frac{\Sigma(\text{Total Score})}{\Sigma(\text{highest weight})} \times 100\%$$

$$\text{Persentase} = \frac{89}{100} \times 100 = 89\%$$

Table 5 Results of validation of education experts

NO	Assessment Criteria	Score
Total Score		70
Maksimum score		75

$$\text{Persentase} = \frac{\Sigma(\text{Total Score})}{\Sigma(\text{nxhighest weight})} \times 100\%$$

$$\text{Persentase} = \frac{70}{75} \times 100 = 93,3\%$$

Based on quantitative data from material experts at 96%, media experts by 89% and education

experts by 93.3%, then products made feasible to use without revision.

Table 6 Material Material Revision

Expert	Comments or Suggestions
Material	1. Editing of the writing must be note, large letters, readability of students class 1 word usage must according to EYD. 2. Systematics of making supplementary books 3. Alternative validation relates to the component contents of the book, presentation and language.

Table 7 Revisions to Media Experts

Expert	Comments or Suggestions
Media	1. Instructions for using books are less specific 2. The contents of the book are less challenging because the book is too simple and not in accordance with the title of the thesis and the use of words must be consistent

Table 8 Revised Learning Experts.

Expert	Comments or Suggestions
Learning	The contents of the book in editing must be considered and the image must be adapted to Indonesian culture and where the research is conducted

Based on qualitative data obtained from the advice / comments of material experts in table 6, it is necessary to make improvements in editing the word eg ustat should the ustad and the size of the letters be adjusted to the user. consistent. Suggestions for improvement from

material experts are taken into consideration by the author to perfect the product development produced, while Based on qualitative data obtained from advice / comments from education experts in table 8.

2. Presentation of Trial Data Using Media Supplement Books

a. Small Group Evaluation

The product of the development of thematic learning supplement books submitted in the small group test represented by eight responders

Table 17 Small group test results

No	Statement	Skor							
		X1	X2	X3	X4	X5	X6	X7	X8
Total		67	67	66	69	68	69	66	65
Total Score		537							
Maximum score		560							

$$\text{Persentase} = \frac{\Sigma(\text{total score})}{\Sigma(\text{nxhighest weight})} \times 100 \%$$

$$\text{Persentase} = \frac{537}{560} \times 100 = 95,89 \%$$

The above calculation results show a percentage of 95.89% after qualification is very valid.

b. Field trial

Field trials were conducted on 15 students at 003 Sangatta North Elementary School. The results of field tests obtained are as follows:

$$\text{Percentage} = \frac{\Sigma(\text{total score})}{\Sigma(\text{nxhighest weight})} \times 100 \%$$

$$\text{Percentage} = \frac{984}{1050} \times 100 = 93,07 \%$$

The above calculation results show the percentage of validation results of 93.07% after being converted to a scale of 5, the

percentage of achievement level is at a very valid qualification level.

E. Conclusion

Development research on teaching materials in the form of supplementary books on living things in 003 Sangatta 1. Scientific based thematic teaching materials developed on the theme of Objects, Animals and Plants around me can be produced through the development stage, namely needs analysis, product design, product development stage, product implementation (product implementation), and product evaluation (product evaluation). The products produced in development research are supplementary books on living objects. These teaching materials contain material and exercises that are complemented by images as a medium of observation. Validity test becomes a reference in product development, the process of validation by experts on products is the main thing in research development. The results of validity show that the teaching material is declared valid by the material expert validator, media expert validator, and learning expert validator.

North Elementary School. Based on the data obtained from the research results can be concluded as follows.

2. The product trial results prove that the average student learning outcomes after using a living body supplement book are higher than the average value of students before using a living body supplement book with the acquisition of the average value of students before using teaching materials of 68.06 and the average score of students after using teaching materials is 87.8. Increased value is 17.1% tested quite effectively in improving student learning outcomes.

3. Results of t test analysis

Development of supplementary book media for class students! Primary schools are more effective at improving learning outcomes. The results of the analysis are indicated by student learning outcomes obtained from the pre-test and post-test which are reinforced by manual calculations showing t count and t table 2.14 so $3.26 > 2.14$.

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