

# Development of “Egg Countcrate Box” Media Oriented to Ausubel’s Learning Theory on Addition and Subtraction Material for 1st Grade Elementary School

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## Abstract

Mathematics in elementary school presents basic concepts that are useful for higher levels of education, including addition and subtraction. This material is taught starting from simple operations to more complex levels. Difficulty understanding basic concepts can hinder students' ability to absorb more advanced material. Therefore, to help students overcome their understanding problems, effective learning media is needed. Following Ausubel's learning theory, this research aims to develop Egg Countcrate Box media that is valid, practical and effective. Students will have a more interesting learning experience and develop a stronger desire to learn with the help of this medium. This research supports the importance of relevant learning according to Ausubel's learning theory, where this kind of learning helps students absorb and remember new material by relating it to what they already know. The RnD process in this research follows the ADDIE framework. The research results show that the media expert validation test has an average value of 97% and the material expert validation test has an average value of 91%. Experts provided several comments and provided minor revisions, but the Egg Countcrate Box media is still very valid for use. The teacher's assessment received an average score of 98% and students 99.5% based on data from small-scale and large-scale trials. Thus, this media practicality category is very practical without revision. There was an average increase of 0.67 in the media effectiveness test calculated using N-Gain analysis. The results from the N-Gain category are in the quite effective range, namely between 0.56-0.75. The results of testing the Egg Countcrate Box media for validity, practicality and effectiveness show that this media is very valid, very practical and effective enough to be the right choice for teaching basic counting skills.

**Keywords:** egg countcrate box; ausubel; addition and subtraction

## 1. Introduction

The science that studies calculations, studies and reasoning that allows a person to think methodically, critically and logically is known as mathematics (Yayuk, 2019). Regardless of whether one is in elementary school, middle school, high school, or college, mathematics has always been an important subject to study. This is because mathematics plays an important role in human life. Yuniawatika (2016) also stated that mathematics is a science that can be applied anywhere and can play an important role in improving the quality of human resources today. Starting from the most basic school level, namely elementary school, mathematics has become the basis for higher levels. In elementary school, students learn the basics of mathematics, including addition and subtraction.

One of the basic subjects covered in basic education, especially in the earlier grades, is basic numeracy. The challenges students face make learning more difficult; if they have trouble understanding basic concepts, they may have more difficulty with more advanced material. This means that students need tools that can help them understand the subject even if they encounter difficulties. To achieve learning objectives correctly, learning media can be a useful tool in the classroom by elaborating on the intended message. Agree with this view is Suryadi

(2020), which states that learning media functions as a channel of information from the sender (teacher) to the recipient (student) during the learning process. No one can use media carelessly without paying attention to anything. According to Pertiwi et al. (2019), effective learning media facilitate students' understanding of subject matter, encourage them to develop a strong desire to learn, and serve as a catalyst for the growth of their interests. According to Asnawir in Alwi (2017), Learning media has media selection requirements which include learning objectives, materials, characteristics of the media and students, as well as cost efficiency. If media is used without paying attention to media selection requirements, it is likely that the media will not be used effectively.

The effectiveness of using learning media can be realized one way by teachers creating appropriate learning by applying appropriate learning theories. Based on what is known about elementary school and its unique needs, it can be said that Ausubel's learning theory is the most appropriate. Meaningful learning, according to Ausubel's ideas, is when someone is able to connect new knowledge with the concepts they already have. David P. Ausubel proposed this learning theory in which the delivery of instruction in elementary schools is based on encouraging students to make connections between subject matter and their real lives.

It has been revealed that there are still some fundamental problems in integrating the concepts of addition and subtraction in first grade. Additionally, research Sumarjilah (2015) shows that students still experience difficulties in learning mathematics. The fact that students' average scores in mathematics are lower than in other subjects shows this. Of the 23 students, only 8 (34.78%) students have mastered all the basic concepts of mathematics, while the other 15 (65.21%) students have still not achieved completeness, especially in terms of addition and subtraction. Findings from student questionnaires and interviews with first grade teachers at SDN Arjowinangun 1 confirm this picture. Nearly 84% of students still have difficulty in the mathematical concepts of addition and subtraction, and almost 68% of students say that they are not interested in the media released by the school. The media that students want is toy-based media that is interesting and funny. This is proven by the results of filling out the questionnaire where 72% of students like to practice counting using toys, 88% like cute cartoons and attractive colors, even 100% of students like toys.

Based on the results of the interview, it was found that the class 1 addition and subtraction material that had been carried out at this school only used simple, monotonous media such as using marbles, dice and tools that were around the students so it was felt that it did not attract students' attention. Class I students at SDN Arjowinangun 1 need concrete media that is practical and appropriate to the children's character, namely media that uses various animations and colors in addition and subtraction material. In line with the findings Zaini and Dewi (2017), the use of media that is visually attractive and lively can encourage students to be actively involved in continuous learning. Based on the problems analyzed using a literature review, researchers will develop a fun and strategic physical game in the form of a box on addition and subtraction material, namely Egg Countcrate Box.

The Egg Countcrate Box learning media is a strategy game in the form of a box whose appearance is modified to suit the characteristics of grade 1 elementary school students, where the box has a cute and colorful cartoon animation theme using toy eggs as the main object. The subject matter in this box is second semester first grade mathematics, namely 50 numbers, so that in the box there are 50 egg holes and is equipped with a tool that helps with the

technicalities of the game in it such as an egg beating hammer, question cards, answer choice cards, and a user manual. . The use of Egg Countcrate Box media is adapted to the results of the analysis of students' media needs and aims to increase intelligence and be able to attract students' attention to learning. The technique of using this media is when the student's concept of addition is directed to take the number of eggs needed according to the question card and place them in the available holes, then add more according to the question card and calculate the results at the end. Meanwhile, in the concept of subtraction, the same thing is also done, but when subtracting, the eggs that are in the hole can be removed using a prepared hammer, then calculating the final result.

This Egg Counting Box media is different from the previous counting box media, namely in terms of appearance, materials and components inside. Based on the results of research conducted by Nurindah Restari (2023), that counting box media can help students become skilled in mastering the material, as well as help increase student activity in teaching mathematics related to subtraction and addition operations. Research by Yulia et al. (2023) also found good results, namely that students' enthusiasm and motivation to learn increased with the Calculator Box media. The similarities between the Egg Countcrate Box media and the media in previous research focused on the almost similar way of using the media. Meanwhile, in terms of differences, there is a focus on the mathematical material studied, namely if the previous research was still on operations which only reached 20 numbers, whereas the researchers had reached 50 numbers. Another difference lies in the research subject, research object, research location and modification of the media box developed.

From the results of the background description in elementary schools and from the results of previous studies, the researcher wishes to develop a concrete media in the form of a game box containing addition and subtraction material which is expected to help students' problems and help increase enthusiasm in learning. Therefore, the title used in this development research is "Development of "Egg Countcrate Box" Media Oriented to Ausubel's Learning Theory on Addition and Subtraction Material for 1st Grade Elementary School".

## 2. Method

(R&D) is an abbreviation for "Research and Development", the methodology used in this study. Sudaryono (2016) states that development studies are a technique for creating and evaluating products. The acronym ADDIE refers to the five stages of the process: "analysis, design, development, implementation, and evaluation."

Analysis is the first stage in the ADDIE model where the researcher identifies the problems that exist at the research location. This is done through observation, interviews, and distributing questionnaires with the main focus of collecting information about school needs, student characteristics, and the curriculum used. The second stage, namely the design stage, researchers designed a concrete media in the form of a box oriented to Ausubel learning theory using the Microsoft Word application and prepared an instrument which would later be validated by experts. In the third stage, the researchers created Egg Countcrate Box media which was oriented towards Ausubel's theory, which was initially still designed into physical form, then validated and evaluated to ensure its quality. In the fourth stage, researchers implemented previously designed learning media at the research location to ensure product suitability. Researchers tested products on a small and large scale to determine the level of effectiveness and practicality of the media. At the evaluation stage, researchers conduct an

analysis of the quality, feasibility, practicality and effectiveness of media development results, which are reviewed from the initial to the final stages.

Media experts, material experts and users are the focus of this research. A teacher experienced in media for elementary school students and a lecturer from the PGSD program at the State University of Malang became media experts. One experienced elementary school teacher and one lecturer from the PGSD program at Malang State University became material experts. A small-scale group consisting of 6 grade 1 students at SDN Kotalama 1 and a large-scale group consisting of 29 grade 1 students at SDN Arjowinangun 1 participated in this research.

This media development and research uses quantitative and qualitative data. Interviews, recommendations and comments from subject experts and the media, as well as literature reviews from relevant books and journals, are part of the qualitative data collection. Experts in the field of materials and media conduct validity tests, and users evaluate the practicality of the media using a Likert scale, which produces quantitative results.

**Table 1. Likert Scale**

Criteria	Score
Very Good	4
Good	3
Not Good	2
Very Bad	1

Source :Sugiyono (2020)

The validation formula proposed by Akbar (2013) can be used to calculate scores after findings from media experts, materials and users are collected. This is an expert validation formula.

$$Vah = \frac{TSe}{TSh} \times 100\%$$

Information :

Vah = Expert Validation

TSe = Total acquisition score

TSh = Total overall score

The results of calculating the percentage of validity from the formula above are then interpreted with reference to Akbar (2013).

**Table 2. Category of Validity Results**

Score Rate (%)	Category	Information
85.01 – 100.00	Very Valid	Very usable without revision
70.01 – 85.00	Fairly Valid	Can be used but needs minor revisions
50.01 – 70.00	Less Valid	Less usable with major revisions
01.00 – 50.00	Invalid	Can not be used

Source : Akbar (2013)

Media practicality by students is processed using the Guttman scale. The use of the Guttman scale is to determine true-false or yes-no answers, each of which will get a score of 1. The following is a table from Guttman.

**Table 3. Guttman Scale**

Answer Interval	Score
Yes	1
No	0

Source : Sugiyono (2020)

The data obtained from the student questionnaire is then presented using a formula that refers to Akbar (2013).

$$V_{pg} = \frac{T_{Se}}{T_{Sh}} \times 100\%$$

Information :

$V_{pg}$  = User Validation

$T_{Se}$  = Total Score Acquisition

$T_{Sh}$  = Total Score Whole

The percentage calculation results are then interpreted with reference to Akbar (2016) which is described as follows.

**Table 4. Practical Results Category (Teachers and Students)**

Score Rate (%)	Category	Information
85.01 – 100.00	Very Practical	Very usable without revision
70.01 – 85.00	Quite Practical	Can be used but needs minor revisions
50.01 – 70.00	Less Practical	Less usable with major revisions
01.00 – 50.00	Impractical	Can not be used

Source : Akbar (2016)

Level the effectiveness of the media will be tested by giving students "pretest and posttest" questions obtained from the N-gain or average normalized gain results. N-gain score can be calculated using the formula referred to Wahab (2021) as follows.

$$N \text{ Gain} = \frac{Skor \text{ Posttest} - Skor \text{ Pretest}}{Skor \text{ Ideal} - Skor \text{ Pretest}} \times 100\%$$

Information :

Pretest score = Initial test scores

Posttest scores = Final test scores

Ideal score = Score maximum

The final results obtained will later be interpreted with reference to Sugiyono (2017) which is described as follows.

**Table 5. N-Gain Effectiveness Interpretation Category**

Percentage (%)	Criteria
> 76	Effective
56 - 75	Effective enough
40 - 55	Less effective
< 40	Ineffective

Source :Sugiyono (2017) with modifications

### 3. Results and Discussion

#### 3.1 Result


The product of this research is a concrete media called Egg Countcrate Box, oriented towards Ausubel learning theory, addition and subtraction material for class I elementary school students. This product was developed through the ADDIE model. The Egg Countcrate Box product specifications include content adapted to grade 1 addition and subtraction material, a guidebook, as well as supporting components such as a hammer and toy eggs. The media display is designed to be cheerful with interesting animations, in the form of a box with 50 holes accompanied by a toy egg storage drawer. There is a counting board made of magnetic paper and question and answer cards in the form of egg fragments that can be moved. This media is made from wood with bright colored paper decoration that is attractive to students. The following is the application of Ausubel's learning theory in the media.

**Table 6. Application Of Ausubel Learning Theory In The Media**

Application of Ausubel's Theory	Display Location
<i>Advance Organizer</i> (brief introduction and overview)	Media Egg Countcrate Box front view
<i>Progressive Differential</i> (more specific explanations and examples)	Questions on the counting board (magnetic paper)
<i>Integrative Reconciliation</i> (explanation of the similarities and differences between concepts that students already understand and concepts they have just learned)	Toy eggs that have different colors (red and white)
<i>Consolidation</i> (give lots of practice questions to students)	Various practice questions shaped like broken eggs

There are several parts in the media, namely as follows.

**Table 7. Egg Countcrate Box Media Display**

Picture	Description
	<p>The front view of the media is shaped like a coffin box made from a combination of teak wood and plywood colored with oil paint. The media is decorated with various animations such as animated images of chicks and their parents made from sticker paper. The name of the media is entitled Egg Countcrate Box.</p>



The media display looks inside, consisting of several components in it such as several eggs as the main object for counting, a coaster for arranging the eggs, a counting board made of magnetic paper which is used to answer questions, a hammer which is used during the elimination process, and is equipped with questions, questions and answers.



A guidebook for media use which contains various information related to Egg Countcrate Box media. Starting from the table of contents, material description, media description, media components, media usage instructions and media developer profile.

### Validation Results

The Egg Countcrate Box media development product oriented towards Ausubel learning theory was validated by two media experts, namely PGSD UM lecturers who are experts in their fields and elementary school teachers who understand media for lower grade students. Media experts assessed three relationships, namely presentation aspects, media/display design, and usage aspects, totaling 13 statements. The result is.

**Table 8. Media Expert Validation Results**

No.	Aspect	Media Expert Score I	Media Expert Score II	Total Score	Maximum Score
1.	Presentation	12	12	24	12
2.	Design	28	27	55	28
3.	Use	11	11	22	12
	Average	98%	96%	97%	100%

Based on the table, it can be interpreted that the Egg Countcrate Box media oriented to Ausubel's learning theory got a score of 98% from "media expert I" and 96% from "media expert II", on average both experts achieved a total score of 97% with very valid criteria and can be used after revision. In addition to quantitative data, there is qualitative data in the form of comments and suggestions from media experts with the aim of helping students understand addition and subtraction, the eggs should be given different colors, the egg holes need to be smoothed again, there needs to be a divider between questions and answer choices, the guidebook should be numbered in the instructions for use section, and the developer profile should be placed on the back page of the guidebook. After receiving feedback from the validators, the next step is to improve the media according to the suggestions given.

The Egg Countcrate Box media development product oriented to Ausubel's learning theory was validated by two material experts, namely a mathematics lecturer from the UM PGSD study program and an elementary school teacher as a grade V teacher who is experienced in teaching. Experts in their fields evaluated a total of 10 statements covering three categories: "content feasibility, question suitability, and language". Next, the material expert evaluated a total of 20 questions designed to measure the effectiveness of the media, including pretest and posttest. The following is a table of the results of the validation of material experts on the media.

**Table 9. Material Expert Validation Results On Media**

No.	Aspect	Material Expert Score I	Material Expert Score II	Total Score	Maximum Score
1.	Eligibility of content	13	15	28	16
2.	Suitability of the question	10	10	20	12
3.	Language	9	10	19	12
	Average	80%	88%	84%	100%

Based on the table, it can be interpreted that the Egg Countcrate Box media material oriented to Ausubel's learning theory received a score of 80% by "material expert I" and 88% from "material expert II". Overall, both achieved a total score of 84% which is included in the criteria valid enough to be used after being revised. Comments and recommendations from experts on various topics, including solutions to various addition and subtraction problems, complete quantitative data, namely using clear and simple sentences, avoiding sentences with multiple meanings, and swapping the positions of questions 1-4 on the pretest with the posttest. Comments and suggestions given by material experts will be improved in line with the suggestions from the validator. The results of the validation of material experts on the test instrument are described as follows.

**Table 10. Material Expert Validation Results On Question Instruments**

No.	Question	Material Expert Score I	Material Expert Score II	Total Score	Maximum Score
1.	Pretest	40	37	77	40
2.	Posttest	40	40	80	40
	Average	100%	96%	98%	100%

Based on the table, it can be interpreted that the pretest and posttest questions aimed at measuring the effectiveness of the media got a score of 100% by "material expert I" and 96% by "material expert II", the total score of both got a percentage of 98% with very valid criteria and the questions can be tested after revision. In addition to quantitative data, there is also qualitative data in the form of comments and suggestions from material experts, namely "make the initial questions easier", improve pretest questions No. 6 and No. 7, exchange question C1 for the posttest with the pretest for No. 1-4, add a variety of addition and subtraction questions, and improve the sentence of the questions so that they do not have double meanings.

## Practical Results

The assessment of media practicality in this research is in the form of a questionnaire of 10 statements by users (teachers) and 7 statements by users (students) through small-scale testing of 6 students and large-scale testing of 29 students, as in Table 11 - Table 13 below.

**Table11. User (Teacher) Practical Results**

No.	Aspect	User Score I	User Score II	Total Score	Maximum Score
1.	Media suitability	39	39	78	40
2.	Attractiveness, convenience and excellence	40	40	80	40
Average		98%	98%	98%	100%

Based on the user practicality test table by class I teachers at SDN Kotalama 1 and SDN Arjowinangun 1, it can be seen that both of them obtained a total score of 39 out of a total score of 40, so the resulting percentage was 98% with the practicality criterion being "very practical to use without any revisions". This is supported by comments from teachers during the assessment, namely that the media is interesting and easy to use.

**Table12. Practical Results For Small Scale Users (Students)**

No.	Aspect	Total Score	Maximum Score
1.	Attractiveness	24	24
2.	Convenience	18	18
Average		100%	100%

Based on the small-scale user practicality test table by class I students at SDN Kotalama 1, it can be obtained that the total score is 42 out of a total score of 42, so the resulting percentage is 100% with the practicality criterion being "very practical and can be used without revision". The comments from several students are that it makes us learn with enthusiasm and good media makes me like learning.

**Table13. Practical Results For Large-Scale Users (Students)**

No.	Aspect	Total Score	Maximum Score
1.	Attractiveness	116	116
2.	Convenience	86	87
Average		99%	100%

Based on the large-scale user practicality test table by class I students at SDN Arjowinangun 1, it can be obtained that the total score is 202 out of a total score of 203, so the resulting percentage is 99% with the practicality criterion being "very practical and can be used without revision". The comments and suggestions from several students were that egg media makes them enthusiastic about learning, I like it, I really like the Egg Countcrate Box media toy because learning makes me smart, etc.

### Effectiveness Results

The effectiveness test was conducted on a large-scale trial. Researchers distributed pretest and posttest questions to determine the effectiveness of the Egg Countcrate Box media. The results is.

**Table14. Large-Scale User Effectiveness Results (Students)**

	Pretest Results	Posttest Results
Average	51	83
Maximum Score	100	100

Based on the table, the average "pretest" value is 51 and "posttest" 83. The results of the average "N-Gain" calculation above are 0.67 or 67%. In accordance with the effectiveness criteria in table 5, the Egg Countcrate Box media can be said to be quite effective for students in teaching mathematics, subtraction and addition material.

It is important to adapt the delivery of material to each student's preferred learning method. They will more easily absorb lesson material if the material is presented in a relevant way and builds on what they already know conceptually. Students need meaningful learning experiences where they do more than memorize; rather, they engage in activities designed to build connections between ideas and ensure that what they learn sticks (Rasvani & Wulandari, 2021). If we want our students to fully understand new information, we as teachers must first make connections between what they currently know and what they will learn, according to Ausubel's theory. This is what determines whether the learning process is successful or not (Gazali, 2016; Kinasih & Sinaga, 2020; Majdi, 2019).

It is believed that students' mindsets will react to stimuli formed by effective media used in mathematics learning, which will help achieve learning goals (Fais et al., 2019). Developing and packaging media in the form of games will certainly attract students' attention. To make students interested in a subject, teachers need to use interesting media, which may include media that students can use to learn while playing (Ependi et al., 2017). Thus, learning while playing can be the right choice to increase students' interest and prepare them for success in the real world.

### 3.2 Discussion

#### Media Validity

The media validity test was carried out on media validators twice with 2 different validators which were carried out on April 3 and 4 2024. The media validators consisted of 1 Elementary School Teacher Education lecturer at the State University of Malang and 1 elementary school teacher who understands elementary school learning media. The media expert validity test was carried out by filling out a questionnaire and a range of values related to media developed using a Likert scale by Sugiyono (2020) with a score range from one to four from the very bad to very good category, which is then processed according to the validity category which refers to Akbar (2013). Media experts assessed three aspects of the Egg Countcrate Box media, namely presentation, appearance/design, and use.

In the presentation aspect, the media obtained a percentage of 100% from both media experts, indicating conformity with the learning outcomes and objectives as well as the characteristics of grade I elementary school students, in accordance with the opinion Harwati (2019) that the use of media that is appropriate to the learning objectives is a principle in choosing media. In the appearance/design aspect, the media obtained a percentage of 100% from media experts I and 96% from media experts II, showing an appearance that is attractive, innovative, as well as safe and durable, agreeing with the opinion Zaini and Dewi (2017) that students will be more engaged in their continuing education if the materials used are visually appealing and full of bright colors.

Based on opinion Febrita & Ulfah (2019), one effort to increase student interest and motivation in learning is by using good, correct and interesting teaching media. This media received a percentage of 92% from both media experts regarding its usefulness, which shows its ease of use and ability to increase students' interest and motivation to learn. Various psychological influences, including increased interest, increased motivation and stimulation of learning activities. In line with opinion (Nuraini & Laksono, 2019) that one of the factors that plays an important role in relation to the subject of learning is psychological factors, which are more specifically about learning motivation.

Egg Countcrate Box media has been validated with an overall average of 98% from "media experts I" and 96% from "media experts II", including the very valid category and can be used without revision. Suggestions for improvement include using two different colors for the eggs, providing dividers in the question/answer choice boxes, smoothing the coasters, and improving the writing in the guidebook.

### **Material Validity**

The material validity test was carried out on media validators 2 times with 2 different validators which were carried out on April 3 and 4 2024. The material validators consisted of 1 Elementary School Teacher Education lecturer at the State University of Malang and 1 class V elementary school teacher who had experience in teaching. The material expert validity test was carried out by filling out a questionnaire and range of values related to the material in the media developed using a Likert scale by Sugiyono (2020) with a score range from one to four from the very bad to very good category, which is then processed according to the validity category which refers to Akbar (2013). Material experts assessed three aspects of the Egg Countcrate Box media, namely the suitability of the content, suitability of the questions, and language, as well as the suitability of the pretest and posttest questions to measure effectiveness.

In the aspect of appropriateness of the content of addition and subtraction material, the media received a percentage of 81% from "material experts I" and 94% from "material experts II", indicating suitability for learning outcomes, ease of understanding, completeness of the material, and relevance to everyday life. According to Asnawir (in Alwi, 2017) ideal media ideal media is used in accordance with the learning objectives to be achieved and the subject matter discussed will become material for consideration that can be taken into account.

In terms of suitability of the questions to the subject matter, student understanding, and Ausubel's learning theory, this media obtained a percentage of 83% from the two material experts. The aim of learning media is to encourage critical thinking and reinforce concepts in

the classroom, as their use should reflect this aim (Indriyani, 2019). In terms of language, this media received a score of 75% from material experts I and 83% from material experts II. This shows that the sentences used are short, clear, concise and communicative, which are in line with opinions Priyonggo & Qosyim (2018) that the aim of developing communicative media is so that students can understand concepts better, so it is important for the media to be able to convey these ideas effectively.

On average, all aspects were rated 80% by material experts I and 88% by material experts II, classified as quite valid "needs minor revision" and very valid "can be used without revision". Suggestions for improvement include adding a variety of questions and simplifying sentences. The feasibility of the pretest and posttest questions obtained a percentage of 100% by "material expert I" and 96% from "material expert II", considered very valid, with suggestions to change the position of some questions and simplify sentences.

### **User Practicality**

The user practicality test by the teacher was carried out with class I teachers at SDN Kotalama 1 and SDN Arjowinangun 1 on April 30 and May 15 2024. The practicality test by the teacher was carried out by filling in a questionnaire and a range of values related to the media which was developed using a Likert scale by Sugiyono (2020) with a score range from one to four from the very poor to very good category, which is then processed according to the practicality category which refers to Akbar (2013). Meanwhile, the practicality test was carried out twice by students, namely a small scale trial of 6 class I students at SDN Kotalama 1 on April 30 2024 and a large scale trial of 29 class I students of SDN Arjowinangun 1 on May 15 2024. The practicality test here is assessed in terms of attractiveness and ease of use of media by students whose indicators are processed using the Guttman scale by Sugiyono (2020) which will result in an affirmative answer in the form of "yes" and "no" where each will get a score of 1 and 0.

The practicality of the Egg Countcrate Box media was assessed by teachers and students through small and large scale trials. The teacher provides an assessment with aspects of media suitability as well as attractiveness, convenience and superiority which includes several indicators obtaining an average score of 95% from user I and 98% from user II, including the very practical category without revision. Amir (2016) confirms that the incorporation of media into the teaching process significantly impacts the effectiveness of the process. Teachers must also be clever in modifying media according to students' ability levels based on the goals they want to achieve.

Students assess the practicality of the media through a questionnaire with aspects of attractiveness and convenience including several statements given by researchers. As a result, the media obtained an average of 100% from small-scale trials and 99% from large-scale trials, also in the very practical category. The Egg Countcrate Box media is made like a toy that students can use to make it easier to answer questions about addition and subtraction. The media is concrete and adapts to the character of grade 1 students who really like cute things. The use of games in the classroom, according to Hantanti in Adilah & Minsih (2022), can open students' minds to new ideas, foster creativity, and make learning a fun experience. Both groups of users provided positive comments, stating that the Egg Countcrate Box media was interesting, easy to use, and increased learning motivation.

## Media Effectiveness

The effectiveness test was carried out during a large-scale trial of 29 students on May 16 2024 after 3x research meetings were carried out. Testing the effectiveness of the Egg Countcrate Box media was carried out by giving a pretest of 10 questions before and a posttest of 10 questions after using the media. The average pretest and posttest scores were obtained from the average formula in the Microsoft Excel application and then continued with the formula:

$$N \text{ Gain} = \frac{\text{Skor Posttest} - \text{Skor Pretest}}{\text{Skor Ideal} - \text{Skor Pretest}} \times 100\%$$

The calculation results from using the Egg Countcrate Box media showed that there was an increase in the average score from 51 in the pretest to 83 in the posttest. If the percentage increase is less than 40% then the media is considered ineffective, 40-55% less effective, 56-75% quite effective, and said to be effective if more than 76%. After the average pretest and posttest scores were obtained, they were entered into the formula and N-Gain analysis showed an average increase of 0.67 or 67% in the range of 0.56 – 0.75, which is categorized as quite effective according to Sugiyono (2017).

The effectiveness of the Egg Countcrate Box media only reaches the moderately effective category and has not yet reached the effective stage due to several factors. The first factor is limited financial resources and time, this research is limited by limited funds and short time, so it is not possible to achieve maximum results. Second, user training and readiness. Students do not receive sufficient training to implement research results well. Third, the subject participation factor, namely the lack of participation from some students which influences the final results of the research. So this can be used as an evaluation for further research.

From these results, the Egg Countcrate Box media can be said to be quite effective for learning mathematics about addition and subtraction for students in class I elementary school. This is in line with opinion Ninawati, et al. (2022) that apart from learning models, learning activities will be more effective if supported by the use of learning media. The use of media itself also greatly supports the learning process because students can understand the material by seeing it directly, as evidenced by the use of the Egg Countcrate Box media, students looked very excited and enthusiastic in learning addition and subtraction.

## Advantages and Disadvantages of Egg Countcrate Box Media Products

Egg Countcrate Box media is oriented towards Ausubel's learning theory, addition and subtraction materials have advantages and disadvantages. The advantages include: Firstly, this media is concrete and easy to use by class I students. The Egg Countcrate Box media is presented with a box-like appearance in which there are games for counting addition and subtraction. Class I students are in the lower classes where they are still unfamiliar with technology, so they need more concrete media so they can practice directly. Second, it is attractive and durable. The media is made from wood, namely a combination of teak, plywood and blabak wood which is packaged attractively and with bright colors. It can be said to be long-lasting because the strength of wood is quite high with a light weight, its resistance to electricity and chemicals is quite good, it is safer and more flexible in the event of an earthquake so that media made of wood will remain in its original condition, not easily crack, and not easy to shift.

Third, Egg Countcrate Box media is fun for learning while playing. The components contained in the media can attract students' attention, because they are like games that contain questions. Toy eggs, hammers, and egg-shaped questions make students curious and want to learn. Fourth, the media helps students understand the concept of addition and subtraction in everyday life, because the basic concepts associated with objects around us will be understood more quickly by students because they are as real as toy eggs in the Egg Countcrate Box media.

Previous research support, such as by Yulia et al., (2023) And Nurindah Restari (2023), shows that similar concrete media increases student motivation and learning outcomes, thereby strengthening researchers to develop Egg Countcrate Box media that are beneficial for students. However, this media also has disadvantages, including the following. First, it is limited to many students. The Egg Countcrate Box media cannot be used by many students, because it is concrete (not web-based) and can be accessed by anyone so it must be used in turns/groups.

Second, requires a flat place for media use. Using the Egg Countcrate Box media must be on a flat place and have a support behind the media. This is because the media is in the shape of a block, so to make it easy to use, the media should be placed on a flat place, while the support is for erecting a counting board on the media. Third, the questions contained in the media are limited, so teachers need to add additional questions if students want more practice on addition and subtraction material.

#### 4. Conclusion

Research and development of Egg Countcrate Box learning media is oriented towards Ausubel's learning theory for addition and subtraction material using the ADDIE development model. This media is tested for validity by media experts and material experts, tested for practicality by teachers and students, and tested for effectiveness with students. Based on calculations, the Egg Countcrate Box media is considered very valid, very practical, and quite effective for learning addition and subtraction. It is recommended that students use this media to improve learning activities in class, schools use this media for varied learning processes, and other researchers can improve this research based on suggestions, evaluations and existing limitations.

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