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Development of a Character-Based Debate, Analysis and Findings Learning Model Integrated with Digital Life Skill Technology in Elementary Schools in Indonesia

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ABSTRACT: The principal issues in this take a look at are restrained studying resources, low human resources, low critical thinking skills and mastery of digital technology of students and weak character possessed by students. This examines targets to decide the validity, practicality and effectiveness and experiments of the integrated with Character-Based Debate, Analysis and Findings (C-DAF) learning model integrated with Digital Life Skill Technology (DLST) developed. This study is a development research or Research and Development (R&D). The populace of this has a look at have been basic college college students in Bungo Regency, Jambi Province, Indonesia as many as 124 students. The sampling technique used changed into easy random sampling. The sample in this observe amounted to 50 college students. information series techniques are model validation sheets, observations, interviews, questionnaires, and tests. The validity instrument used in this study is content validity by consulting with experts. This experimental study aims to compare critical thinking skills, science skills, students' analytical skills and learning outcomes between the two groups, namely the pre-test and post-test control groups. The reliability test in this study used a Likert scale. The calculation results show that the reliability of the instrument is 74 with a percentage of 92.5% (good) by learning model design experts. 63 with a percentage of 78.75% (good) by language experts. 76 with a percentage of 95% (good) by material experts and 2880 with a percentage of 89.51% (strongly agree) by students. The data analysis technique uses the t-test. The results of the t-test calculation show that the t-count score is greater than the t table (th: 4.276 > tt: 1.994). This shows that (1) The C-DAF learning model integrated with DLST students' thinking skills, trains students' skills and is able to help students analyze learning in depth. 2) Through the (C-DAF) model, teachers are helped in the classroom so that learning takes place more systematically implemented and is significant in improving student understanding, and (3) Learning with the C-DAF learning model integrated with DFLST can make learning more effective. Researchers who are interested in continuing the development of the C-DAF learning model integrated with DLST, should pay attention to the limitations of the research, so that they can further refine the model that has been developed.

Keywords: development, character-based debate analysis and findings (C-DAF), learning model, digital life skill technology (DLST).

I. INTRODUCTION

The problem of education in Indonesia is one of the critical aspects in national development [1, 2]. Although there has been much progress, there are still a number of problems that require solutions and serious attention [3-9]. The independent curriculum is expected to be a solution to today's educational problems, but the facts in the field are that the quality of human resources and school facilities are uneven, as well as inadequate learning support, resulting in learning experiencing many obstacles in terms of technical and non-technical aspects. The current study does not provide sufficient evidence that the quality of human resources, school facilities and learning resources are evenly distributed throughout Indonesia, especially in elementary schools. One of the schools that is of concern is an elementary school in Bungo Regency, Jambi Province. Based on the outcomes of the interview, it is known that the school faces significant challenges in equipping students with the necessary skills for the 21st century. Limited learning resources, coupled with inadequacies in human resources, hinder the development of critical thinking skills and mastery of digital technology among students. Furthermore, concerns about the weak character of students underscore the need for innovative educational approaches that address these multifaceted issues [10].

In response to these challenges, this study aims to develop and evaluate the Integrated Learning Model, in response to these challenges, this study aims to develop and evaluate the Integrated Learning Model, So the focus of this research is Development of a Character-Based Debate, Analysis and Findings (C-DAF) Learning Model Integrated with Digital Life Skill Technology (DLST). The C-DAF learning model integrated with DFLST seeks to enhance students' critical thinking skills, science skills, analytical abilities, and overall learning outcomes. By combining traditional learning methods with digital tools and resources, the model aims to create a more engaging, effective, and relevant learning experience for elementary school students. The developed model is expected to be able to overcome the problems of educators and students in the future [10-15], Educators are expected to be able to create learning paths that spur student creativity. C-DAF learning model integrated with DLST emphasizes the student-centered learning process, the ability to analyze material, have character skills in communicating, and find new knowledge assisted by digital life skill technology. The C-DAF learning model integrated with DLST is designed to integrate the development of digital life skills and character education in the learning process.

This model uses debate as a platform to train students to think critically, analytically, and collaboratively, as well as to instill character values that are relevant to the digital era. The development of The C-DAF learning model integrated with DLST aims to: 1) Improve the critical and analytical thinking skills of Elementary School students in dealing with information in the digital era, 2) develop the digital life skills of Elementary School students, including the ability to use technology effectively and responsibly, 3) instill strong character values in Elementary School students, such as honesty, responsibility, cooperation, and tolerance, 4) provide an innovative learning model that can be implemented in Elementary Schools in Bungo Regency. And 5) Evaluate the effectiveness of the C-DAF learning model integrated with DLST in improving student learning outcomes.

II. LITERATURE REVIEW

The approach used is a student-centered approach by implementing the C-DAF learning model integrated with DLST. The components of the C-DAF learning model integrated with DLST model are 1) model syntax, 2) social system, 3) reaction principle, 4) support system, and 5) instructional impact. The syntax of the C-DAF learning model integrated with DLST is:

Social System is the interaction that occurs between educators and students in learning [3, 21, 22]. Where the educator acts as a facilitator [23]. social systems in the context of learning, which refers to the dynamic interactions between educators and learners [24]. his social system consists of roles, norms, values, and relationships that impact the studying system. A deep knowledge of this social system is important to developing an effective, inclusive, and empowering getting to know environment. Reaction Principle, educators offer comments and responses by means of prioritizing cognitivetasks [25]. Educators must be sure that these cognitive tasks emerge with optimal instruction at the right time. The reaction principle focuses on how educators respond to students' questions, statements, or work in ways that stimulate

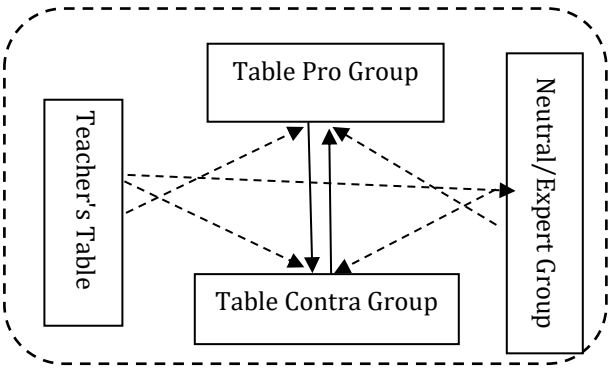
cognitive processes [16]. This means that the educator's response is not only corrective or evaluative, but also provocative and constructive.

Table 1. Syntax of learning models.

Fase	Model syntax	Learning Activities
1	Communication of learning readiness information	1. Communication of learning objects 2. Students get information from the teacher 3. Students carry out learning activities and assignments from the teacher 4. Form a group of pros and cons 5. Determine keynote speakers 6. Read the rules of debate
2	Guide	1. Focusing students' attention on the goals and topics of the debate 2. Straighten the flow of students' thinking 3. Creating a conducive debate situation 4. Give stimulus 5. Prevent monopoly talks
3	Strategy	1. Encourage active learning 2. Growing confidence 3. Encourage students to investigate the problem 4. Encouraging students to discover new knowledge from the topic being debated 5. Encouraging students to discover implicit knowledge
4	Implementation	Implementation of the components of the debate learning model, analysis and findings in science learning
5	Monitoring	1. Observing changes in student learning behavior 2. Identify learning problems 3. Guiding and being a "friend" of learning 4. Observing the interests and talents of students 5. Provide motivation
6	Evaluation Formative	1. Understanding 2. Courage 3. Fluency in speech 4. Teamwork
7	Revision	1. Summarize the data found in the summative evaluation 2. Knowing the location of the problem and the solution 3. Receive input from students
8	Summative Evaluation	Evaluating the debate learning model, analysis and findings that have been corrected to find out whether the model is suitable for use or not

Support System is everything that is needed by students to explore information in learning [27]. Support systems in learning refer to the totality of resources, strategies, and interventions designed to help learners access, understand, and apply information effectively [28]. This system aims to create an inclusive and responsive learning environment, where every learner has an equal opportunity to succeed. Instructional Impact is a deeper understanding of concepts and improved learning outcomes. Instructional impact refers to positive changes that occur in students as a result of the learning process. These changes include: 1) Deep Conceptual Understanding: Students not only memorize facts, but also understand the meaning, relationships, and applications of the concepts learned, and 2) Improved Learning Outcomes: Students show improvements in cognitive, affective, and psychomotor abilities, as reflected in grades, performance, and problem-solving abilities [26].

Meanwhile, the accompanying impact is to increase students' enthusiasm for learning, create critical attitudes and creative thinking habits [30]. significant accompanying impacts in the learning process, namely increasing students' enthusiasm for learning, forming critical attitudes, and developing creative thinking habits. These three aspects are interrelated and contribute to a more meaningful and effective learning experience. This document will outline each of these accompanying impacts, explain why they are important, and provide examples of how they can be realized in educational practice. In C-DAF learning model integrated with DLST there are three groups, namely: groups one and two facing each other are called pro groups and contra groups while the third group is a neutral group called the expert group. The position of each group can be seen in Figure 1.



(Apdoludin, Reni Guswita, Diyan Andriani, 2024)

FIGURE 1. Position of student study table.

Information

The lines of debate between the pro and con groups

Learning communication lines

Before the debate begins, two speakers are determined from each group. The debate begins by giving the first speaker from one of the groups the opportunity to formulate their arguments clearly and carefully [31-33]. Speakers from other groups respond to the opinions of the first speaker, but may not repeat thoughts that have already been conveyed. Then the second speakers from each group are given the opportunity to speak in the order of the first speakers, [3, 35]. Learning with the C-DAF learning model integrated with DLST enables students to construct learning more easily.

Digital technology-based learning enables personalized learning, where learning materials and methods are tailored to the individual needs and learning styles of students, [36-38]. Adaptive learning systems, intelligent learning software, and flexible learning platforms enable teachers to customize students' learning experiences based on their progress, interests, and preferences [10, 39]. Digital technologies help students develop 21st century skills that are essential for success in the digital age, such as critical thinking, problem solving, collaboration, communication, and digital literacy [40, 41]. The use of technology in learning encourages students to think creatively, work in teams, communicate effectively, and use technology responsibly [42, 43]. Meanwhile, Life Skills are defined as skills that are learned to do something well [44, 45]. Life skills can be defined as “skills that help an individual be successful in living a productive and satisfying life [46]. In line with Hadiyanto opinion, life skills are the abilities that a person has in facing problems in a reasonable manner, without feeling pressured, then proactively and creatively seeking solutions [47-49]. The definition that has been described shows that life skills are positive and adaptive behavioral habits that enable each individual to relate effectively to the demands and challenges of everyday life.

III. METHODOLOGY AND SEARCH RESULTS

The development data in this study refers to the Research and Development (R&D (R & D) [50-54]. The main objective of research is to produce educational products that can be effectively utilized by educational institutions [55]. The development method in this research refers to the Research and Development (R & D) stage model recommended by Borg and Gall [50].

1. DATA COLLECTION AND ANALYSIS

The development data in this study refers to the Research and Development (R&D) model as recommended by Borg and Gall. This model provides a systematic framework for designing, developing, and evaluating educational products to ensure their validity, practicality, and effectiveness, [10, 56, 52]. This study uses data collection techniques, namely model validation sheets, observations, questionnaires, and interviews. The purpose of the study is to determine the validity, effectiveness, and learning outcomes through experimental techniques. The development procedure in the study refers to the following stages:

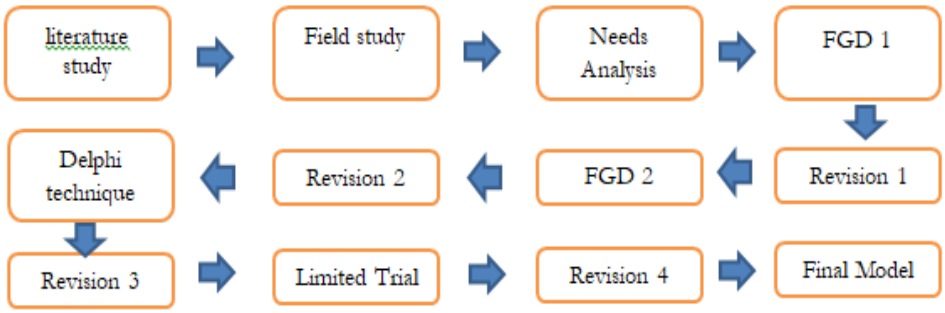


FIGURE 2. Development procedure.

This research was conducted in elementary schools in Bungo Regency, Jambi Province, Indonesia. This study included two subjects. The first subject was the validator, consisting of three expert lecturers and one classroom teacher, who served as a material expert, a model expert, and a language expert. The second subject was the participants. The subjects of the study during the limited trial were 9 people and the trial was expanded to 50 educator participants. The instruments used in this study were model validation sheets, observations, questionnaires, tests and interviews [57]. The validation sheet is used to measure the validity and effectiveness of the developed model [58]. After data validation is carried out, data interpretation is then carried out using the following score data interpretation categories.

Table 2. Validity test criteria.

Feasibility Percentage	Qualification	Description
86%-100%	Very Feasible	Very suitable for use and no need for improvement
71%-85%	Worth	Feasible to use with improvements
61%-70%	Decent Enough	Decent enough and needs improvement
46%-60%	Less Feasible	Less feasible and needs improvement
≤45%	Very Less Feasible	Very inadequate and needs improvement

Data analysis in this study used descriptive analysis techniques [60]. Qualitative data and quantitative data are collected and analyzed thoroughly [61]. The data obtained from the validation sheets provided by material experts, language experts, users and students using a Likert scale consisting of 4 (Very Appropriate),

3 (Appropriate), 2 (Not Appropriate) and 1 (Very Not Appropriate) [62]. The final product is implemented using experimental techniques [63-65], as in Table 2 below.

Tabel 3. Pretest-posttest control group research design [63].

Group	Pre-test	Treatment	Post-test
Experiment	0_1	X_1	0_2
Control	0_1	X_2	0_2

Information: O1 = Initial student ability test, X1 = Learning with C-DAF learning model integrated with DLST, X2 = gaining knowledge of with conventional models, and O2 = Initial student ability test.

2. LOCATION AND SUBJECT OF RESEARCH

This research conducted in elementary schools in Bungo Regency, Jambi Province, Indonesia. is a region with a diverse population and a mix of urban and rural areas, which provides a varied context for examining educational practices. The subjects of this research are educators and students. Educators: Elementary school teachers from various schools across Bungo Regency. The selection aimed to represent a diverse range of experience levels, subject specializations, and school locations. Students: Elementary school students 5, also representing a variety of schools and backgrounds within Bungo Regency. The focus on these grades was intended to capture students who have had sufficient exposure to the C-DAF learning model integrated with DLST to provide meaningful insights.

3. DATA COLLECTION INSTRUMENTS

The instruments used in this study were model validation sheets, observations, questionnaires, tests and interviews [64, 66, 67]. The validation sheet is used to measure the validity and effectiveness of the developed model [65]. Observation to measure the implementation of learning using C-DAF learning model integrated with DLST [68]. The observed aspects include initial, core, and final activities. The observer records the observation results in the categories that appear by giving a check mark (√) in the appropriate column (column "yes" or "no").

The assessment score given to each aspect is a score of 1 if you give a mark in the "yes" column and a score of 0 if you give a mark in the "no" column. Written tests are used to measure student learning outcomes in both the experimental and control groups.[56] The written test consists of 10 questions, namely descriptive questions. This written test is given twice, namely before using C-DAF learning model integrated with DLST as in the development (pretest) and after using (posttest).

4. DATA ANALYSIS TECHNIQUES

Data analysis in this study used descriptive analysis techniques [60]. Qualitative data and quantitative data are collected and analyzed thoroughly [61]. The data obtained from the validation sheets provided by material experts, language experts, users and students using a Likert scale consisting of 4 (Very Appropriate), 3 (Appropriate), 2 (Not Appropriate) and 1 (Very Not Appropriate) [65]. Data analysis techniques are carried out in the following manner:

- Converting score data to values.
- Determine the range of values [69].

The data analysis technique used to analyze the comparison of student learning outcomes using C-DAF learning model integrated with DFLST with those who do not use C-DAF learning model integrated with DFLST, namely using the SPSS Statistics 31 [70].

IV. FINDINGS AND DISCUSSION

1. MODEL VALIDITY RESULTS

Model validation in this study has been carried out by learning model experts, language experts and material experts, this aims to obtain information, criticism, and suggestions so that the Debate Analysis and Findings learning model based on digital life skills is developed into a quality product. The aspects validated by experts are as follows:

Tabel 4. The Rated aspect C-DAF learning model integrated with DLST.

No	Indicator	Rated aspect
1	Display Quality	The components of the learning model instrument for the Analysis and Findings Debate based on digital life skills are correct
2		Model instruments have components in the form of colors, curved lines, letters, keywords and images.
3		The instrument usage guide can be used as a learning medium
4		The model instrument user guide provides easy understanding
5		Model instrument usage guidelines can spur creativity
6		The model instrument user manual is easy to use
7		Design a user guide for an attractive model instrument
8		The image layout is correct
9		The images used are appropriate to the material
10		The composition of the background text color is correct
11		The binding results are precise and neat
12	Language Quality	The writing is clear
13		Easy to read writing
14		The use of language is easy to understand and in accordance with Indonesian language rules.
15		The language chosen is simple and easy to remember.
16		The delivery of the material has been completed
17	Graphic Quality	The shape and type of letters are appropriate
18		The font size is correct
19		The color of the letters is correct
20		The image size used is appropriate

On the content feasibility aspect sheet there are three indicators, each has a statement that has been filled in by the learning model expert validator, language expert validator and material expert validator. This feasibility aspect contains statements that discuss the accuracy of the model design, the accuracy of language use and the accuracy of the material. The validity results can be seen in the following Table:

Table 5. Product validation results.

Expert Validation	Maximum Score	Total Score	Percentage	Category
Learning Model Expert Validator	80	74	92,5%	Good
Language Expert Validator	80	63	78,75%	Good
Subject Matter Expert Validator	80	76	95%	Good

.

Table 5 shows the validation of the product of the C-DAF learning model integrated with DLST on the Learning Model Expert validator obtained a percentage of 92.5% with the criteria of "very feasible" but with improvements. Then, the language expert validator obtained a percentage of 88.75% with the criteria of

"feasible" but with improvements. This proves that the product of the learning model of debate, analysis and findings based on digital life skills is feasible to be used in learning. This is in accordance with the opinion of [59] that learning assessment can improve the quality of learning outcomes. The average validation results per indicator of the assessment instrument submitted by researchers to the assessment validator are reviewed from the assessment category, question rubric, and assessment rubric. The following are the results of the assessment validation per indicator of the assessment instrument.

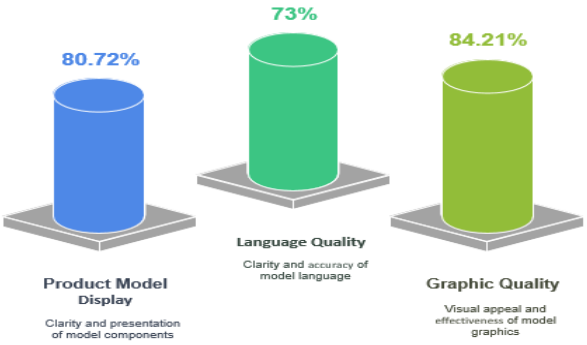


FIGURE 3. Validation Results Of C-DAF learning model integrated with DLST.

The validation results by learning model experts are based on three indicators, namely: Product model display quality, language quality and graphic quality. The product model display quality obtained 80.72%. The language quality in the application of the model obtained 3% and the graphic quality of the model obtained 84.21%. The validation of the learning model was conducted by experts, focusing on three specific indicators to assess its overall effectiveness and quality. These indicators are: 1) Product Model Display Quality: This indicator evaluates how well the model presents the product or concept it is designed to teach. It considers factors such as clarity, accuracy, and visual appeal. 2) Language Quality: This indicator assesses the clarity, accuracy, and appropriateness of the language used within the model. It considers grammar, vocabulary, and overall readability and 3) Graphic Quality: This indicator evaluates the visual elements of the model, including images, charts, and other graphics. It considers factors such as aesthetics, clarity, and relevance to the content. Then the assessment results per indicator of the assessment instrument by language experts are as follows:

2. LIMITED TRIAL RESULTS

Limited model trials are to evaluate the suitability between the sample and the population, if the results are appropriate, it means that the model is empirically supported so that no improvements are needed. If otherwise, it means that improvements need to be made. Limited trials are conducted to see the feasibility of mastering the debate model, analysis, and findings based on digital life skills that are developed so that they can be used in learning. Limited trials are also conducted on students, with a total of 9 students at State Elementary School Bungo Regency.

These limited trials are also conducted to assess the feasibility of mastering the debate model, analysis, and findings based on digital life skills that are developed so that they can be used in learning. The focus is on understanding how effectively students can grasp and apply the debate model, analyze information, and utilize digital life skills in the learning process. The limited trials were conducted on a specific group of students, comprising a total of 9 students at State Elementary School Bungo Regency. This specific sample was chosen to provide insights into the model's performance within a particular educational context and demographic. The results obtained from these trials will be carefully analyzed to determine the model's overall suitability and feasibility for broader implementation.

Table 6. The results of the limited trials are as follows.

No	Rated aspect	Questionnaire Number									Amount
		1	2	3	4	5	6	7	8	9	
	The manual for using the C-DAF Learning Model Integrated DLST is written very clearly so that it can help me in learning.	4	3	3	3	4	4	4	3	3	31
2	The learning objectives are written clearly so that it is easy for me to understand them	3	3	4	3	3	3	4	3	4	30
3	The material presented is easy for me to understand	3	3	3	4	3	4	3	3	4	30
4	The order of presentation of the material makes it easier for me to understand.	4	4	4	3	3	4	4	3	3	32
5	The competency test questions and answer keys gave me clarity in understanding the material.	4	4	4	4	3	4	3	4	3	33
6	The terms in the model user manual are easy to understand.	4	3	3	3	3	3	3	3	3	28
7	The index arrangement makes it easy for me to understand the material and use the manual.	4	3	3	3	3	4	4	4	4	32
8	The manual for using the model is equipped with Figures so that it is easy for me to understand the material	3	4	4	4	3	4	4	3	4	33
9	Figures in the model's user manual are very clear.	3	4	4	4	3	3	4	3	3	31
10	The images in the learning media are very interesting	3	3	4	3	3	4	4	3	4	31
11	The images in the media help me answer my curiosity about the material.	3	3	4	3	3	4	4	4	4	32
12	The language used is not boring	4	4	4	4	3	3	4	3	3	32
13	The sentences used in the model's user manual are not convoluted.	4	3	4	4	3	3	3	3	4	31
14	The language used in the model user manual is easy to understand	4	4	4	4	3	3	4	3	4	33
15	The font color and images in the user manual for this model are attractive	4	4	4	3	3	4	3	3	4	32
16	The front cover is attractive and represents the contents of the model's user manual.	3	4	3	3	4	4	3	3	3	30
17	The paper size in the user manual for this model is appropriate	3	3	3	4	3	3	4	3	3	29
18	The media of the model usage manual can help me understand the material concept correctly.	3	4	3	4	4	4	3	4	3	32
19	The model user manual spurred my creativity	4	3	3	4	4	3	4	3	3	31
20	The model's user manual allows me to learn independently.	3	3	3	4	4	3	4	4	4	32
Total assessment score											625
Maximum score											720
Model quality percentage											86,80%
Interpretation of model	Kategori " Sangat Setuju" (587-720)										

Table 5 explains that the score of 180 to 315 is categorized as strongly disagree, 316 to 450 is categorized as disagree, 451 to 586 is categorized as agree and 587 to 720 is categorized as strongly agree, thus the level

of student agreement towards the debate model, analysis, and findings based on digital life skills based on the student questionnaire can be categorized as strongly agree with an achievement of 625 (strongly agree).

3. PRODUCT IMPROVEMENT

Based on comments and suggestions from validators and users, the researcher made the following improvements; 1) the main components of the model were changed according to suggestions. Previously; (a) components of the C-DAF learning model integrated with DLST in independent guidance, (b) components of the C-DAF learning model integrated with DLST in classroom activities, (c) components of the C-DAF learning model integrated with DLST in home activities.

Improvements were made to the components of the digital life skill debate, analysis and findings model in 1) self-guidance, components of the C-DAF learning model integrated with DLST for home activities, and components of the digital life skill debate, analysis and findings model in classroom activities, 2) the subject matter is emphasized on C-DAF learning model integrated with DFLST, the material displayed is material that contains the latest controversial elements for students so that it can foster a spirit of debate, the material displayed is material that contains implicit knowledge, 3) Improvement of the instrument, previously there was no questionnaire response instrument grid for teachers and students, 4) the C-DAF learning model integrated with DLST book is designed in such a way that it is easy for users to understand. The researcher decided to add text in the form of commands that must be carried out by the user, 5) clarify the contents of the model components in each stage, so that step by step can be easily understood by users.

4. EXPANDED TRIAL RESULTS

After improvements were made to the C-DAF learning model integrated with DLST based on suggestions from field implementers, an expanded trial was conducted to assess the model's effectiveness and refine it beyond the limited trial stage. This broader trial aimed to evaluate the model's suitability in a more representative educational setting. The expanded implementation took place at State Elementary School in Bungo Regency, and involved a total of 36 students. The results of the expanded trial are stated in Table 7.

Table 7. Expanded trial results.

No	Rated aspect	Quantity
1	The manual for using the debate model, analysis and findings based on digital life skills is written very clearly so that it can help me in learning.	124
2	The learning objectives are written clearly so that it is easy for me to understand them	129
3	The material presented is easy for me to understand	125
4	The order of presentation of the material makes it easier for me to understand.	127
5	The competency test questions and answer keys gave me clarity in understanding the material.	124
6	The terms in the model user manual are easy to understand.	122
7	The index arrangement makes it easy for me to understand the material and use the manual.	132
8	The manual for using the model is equipped with Figures so that it is easy for me to understand the material	134
9	The Figures in the model's user manual are very clear.	130
10	The images in the learning media are very interesting	129
11	The images in the media help me answer my curiosity about the material.	134
12	The language used is not boring	128
13	The sentences used in the model's user manual are not convoluted.	124
14	The language used in the model user manual is easy to understand	129
15	The font color and images in the user manual for this model are attractive	135

16	The front cover is attractive and represents the contents of the model's user manual.	129
17	The paper size in the user manual for this model is appropriate	125
18	The media of the model usage manual can help me understand the material concept correctly.	129
19	The model user manual spurred my creativity	132
20	The model's user manual allows me to learn independently.	135
	Total assessment score	2.576
	Maximum score	2.880
	Model quality percentage	89,51%
	Interpretation of model	ongly agree " (2.341-2.880)

This report presents an assessment of the model's quality based on a predefined scoring system. The model achieved a total score of 2.576 out of a maximum of 2.880, resulting in a quality percentage of 89.51%. According to the interpretation scale, this places the model in the "Sangat Setuju" ("Strongly Agree") category, indicating a high level of agreement with or satisfaction regarding the model's quality. This strong performance suggests that the model meets the evaluation criteria exceptionally well. The results of students' answers on the questionnaire provided by the researcher, showed that students were happy with the learning model of debate, analysis and findings based on digital life skills in learning. The happy answers shown by students are one part of the data that students prefer the model of debate, analysis and findings based on digital life skills. The feelings of happiness and liking of students are evidence that students are interested and enthusiastic about learning that uses the model of debate, analysis and findings based on digital life skills.

The data is in accordance with the presentation of the fourth-grade teacher "Learning using the debate, analysis, and findings model based on digital life skills can make students more active, dare to ask questions, answer questions, be responsible and able to analyze the material presented in depth". The researcher's observation on 02/13/2025 showed that students looked active when the teacher used the debate, analysis, and findings model based on digital life skills. Thus, the researcher can conclude that the C-DAF learning model integrated with DLST is effectively applied to fourth grade students of State Elementary School Bungo Regency, Jambi Province, Indonesia.

5. EXPERIMENTAL AND CONTROL GROUP PRE-TEST DATA ANALYSIS

Presentation an analysis of the pre-test data collected from fifth-grade students at Bungo Regency. The pre-test aimed to assess the students' science learning outcomes before the implementation of a debate model in the experimental class. The analysis focuses on the experimental class's performance, including maximum and minimum scores, average value, and the number of students who achieved completion. Out of the 25 students in the experimental class, only four achieved completions, representing approximately 30% of the class. Conversely, nine students did not complete the pre-test, accounting for 70% of the class.

The pre-test data indicates that the science learning outcomes of the fifth-grade students in the experimental class were relatively low before the implementation of the C-DAF learning model integrated with DLST. The average score of 50.03 suggests that the students had a limited understanding of the science concepts covered in the pre-test. Furthermore, the fact that only 30% of the students completed the pre-test highlights the need for an intervention to improve their learning outcomes. The C-DAF learning model integrated with DLST is expected to enhance the students' understanding of science concepts by encouraging them to actively engage with the material, critically analyze different perspectives, and articulate their own ideas. By participating in debates, students will have the opportunity to deepen their knowledge, develop their communication skills, and improve their overall learning outcomes.

FIGURE 4. Completeness of experimental class learning outcomes.

6. *DEBATING SKILL DATA, ANALYSIS, AND FINDINGS*

Results of debate skills data analysis, analysis skills, and findings observed in experimental and control groups. Data was collected through observations, focusing on various aspects of debating, concept analysis, and the ability to identify and utilize findings. The frequency distribution of these skills is compared between the two groups to assess the effectiveness of the debate, analysis, and findings models in the science learning process. Figure 5 presents the frequency distribution of debating skills, analysis skills, and findings for the experimental class, categorized by value intervals.

FIGURE 5. Frequency distribution of debating skills, analysis, and experimental class findings.

As shown in Figure 5, the majority of students in the experimental class demonstrated very good debating, analysis, and finding skills, with 53.84% falling into the "Very good" category and 38.46% in the "Good" category. Only a small fraction (7.70%) was categorized as "Enough," and none were in the "Less" category. Figure 4 shows the frequency distribution of debating skills, analysis skills, and findings for the control class, based on the same value categorization.

In contrast to the experimental class, the control class showed a different distribution. None of the students were categorized as "Very good." The largest portion (50%) was in the "Enough" category, followed by 33.33% in the "Good" category, and 16.67% were categorized as "Less. Comparing the results from Figure, a clear distinction emerges between the experimental and control classes in terms of debating skills, analysis skills, and findings. The experimental class demonstrated a significantly higher level of proficiency, with the majority of students performing in the "Very good" and "Good" categories. Conversely, the control class had no students in the "Very good" category, with most students performing at the "Enough" level or below.

FIGURE 6. Frequency Distribution of Debating Skills, Analysis, and Findings of the Control Class.

7. EXPERIMENTAL AND CONTROL GROUP POST-TEST DATA

The post-test was carried out at the end of the lesson to find out the differences in science learning outcomes. the learning outcomes of an experimental class, which utilized the (C-DAF) learning model integrated with (DLST), with those of a control class. This analysis focuses specifically on the experimental class, examining the distribution of scores, average performance, and the percentage of students who achieved completion.

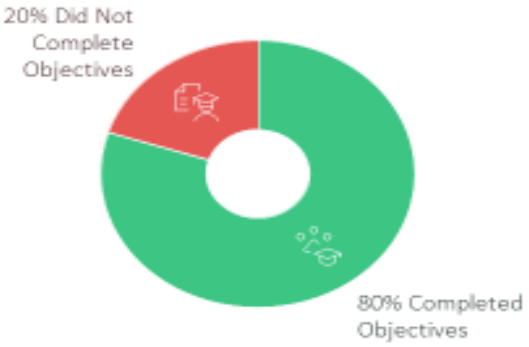


FIGURE 7. COMPLETENESS OF EXPERIMENTAL CLASS LEARNING OUTCOMES.

The findings from the experimental class's post-test results offer valuable insights into the effectiveness of the debate model in enhancing science learning outcomes. The average score of 79.5 suggests that the debate model had a positive impact on student learning. The high completion rate of 80% further supports this conclusion, indicating that most students were able to grasp the key concepts and demonstrate their understanding on the post-test.

Figure 7 makes it clear that the completeness level of the post-test results of the experimental group was given the treatment of debate models, analysis, and findings in learning. Furthermore, an analysis of the learning outcomes of the control class data was carried out, which did not use conventional models in learning with a maximum score was 73 and a minimum achievement score was 50, with an average value of 62.1. Of the 25 students, thirteen students completed with a percentage of 52% and twelve students did not complete with a percentage of 48%, as shown in the following diagram.

FIGURE 8. Student score analysis.

The diagram illustrating the completion rates of the control group. This diagram visually represents the 52% completion rate and the 48% non-completion rate. While the diagram itself is not available in this text-based format, the numerical data provides a clear understanding of the completion status within the control group. Conversely, the non-completion rate in the control group was 48%. This indicates that 48% of participants assigned to the control group did not fully complete the study. There could be various reasons for non-completion, including low critical thinking skills, participant withdrawal, and loss of contact. Understanding the reasons behind this non-completion rate is important for interpreting the overall study results and identifying potential areas for improvement in future research. Perbedaan antara tingkat penyelesaian dan tidak penyelesaian relatif kecil (52% vs. 48%), menunjukkan adanya pembagian yang cukup merata pada kelompok kontrol. This balance is important to consider when comparing the control group's performance to other groups. A significant difference in completion rates between groups could introduce bias and complicate the interpretation of results. Based on the experimental class and control class data described above, the last step is to calculate the interpretation of the t value with the SPSS Statistics 31.

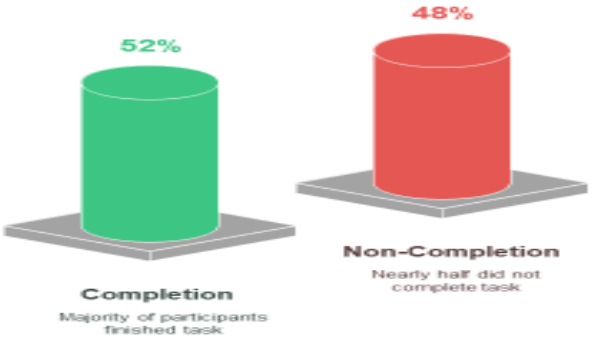


FIGURE 9. Completeness of control class learning outcomes.

8. RESULTS OF NORMALITY TEST OF LEARNING OUTCOME DATA

The results of the normality test of student learning outcome data using the SPSS Statistics 31 program can be seen in the following Table 7:

Table 7. Results of normality test of student learning outcome data.

Kolmogrorov-Smirnov Test		
N		25
Normal Parameters [a,b]	Mean	0.0000000
	Std. Deviation	3.89778694
Most Extreme Differences	Absolute	0.079
	Positive	0.079
	Negative	-0.048
Kolmogrove-Smirnov Z		0.477
Asymp. Sig. (2-tailed)		0.097

- Test Distribution is Normal.
- Calculated from data.

Based on Table 7, it can be seen that for the normality test using the Kolmogorov-Simornov, the sig value = 0.977 > 0.05, so H0 is not rejected, which means the residuals are normally distributed. To test the output results, there are several provisions that serve as benchmarks for researchers. The following are several steps for the normality test provisions from Table 7 above. The Decision Criteria are: 1) If Sig, or probability < 0.05, then the data is not normally distributed. 2) If Sig, or probability > 0.05, then the data is normally distributed. Based on the data analysis, it can be concluded that the learning outcome test data for the experimental group using the (C-DAF) learning model integrated with (DLST) and the control group using the conventional learning model are within the normal distribution level. Thus, one of the requirements for statistical testing has been met.

9. HOMOGENEITY TEST RESULTS

Homogeneity test was conducted between the experimental and control groups' learning outcomes. The results of the homogeneity test of student learning outcomes using SPSS Serie 17 are shown in Table 8.

Table 8. Results of the homogeneity test of the data results.

Levene Statistic	df1	df2	Sig
0.057	1	70	0.813

Table 8 explains that the Levene Statistic value for the experimental group and control group learning outcome test is 0.057 with a probability value (sig) of 0.813. The basis for testing for data homogeneity is as follows. Decision Criteria: 1) Sig. Value. Or probability value <0.05, the data comes from a population that has unequal variance (not homogeneous). 2) Sig. Value. Or probability value >0.05, the data comes from a population that has the same variance (homogeneous). It is known that the probability value (Sig) for student learning outcomes is 0.813, greater than 0.05. Guided by the decision criteria, it can be concluded that the student learning outcome test data has the same variance, meaning that the research data is homogeneous.

10. HYPOTHESIS TEST RESULTS

The results of the t-test show that there is a difference in student learning outcomes between the control group using the conventional model and the experimental group using the model (C-DAF) learning model integrated with (DLST), the experimental group was higher than the control group.

Table 9. t-test results of posttest data.

Data	t_h	t_t	t_f	Information
Posttest values of the control group and posttest of the experimental group	4,276	1994	70	$T_h > t_t$=sig

Table 9 explains that the calculated t value is 4.276 with df 70. Then the calculated t score is consulted with the t table values at a significance level of 5% and df 70. The t table score at a significance level of 5% and df 70 is 1.994. This shows that the calculated t score is greater than the t table score (th: 4.276 > tt: 1.994).

The study compares the learning outcomes of students taught using the debate model with those taught using conventional methods. The results of the t-test analysis indicate a significant positive influence of the debate learning model on student science learning outcomes. The research was conducted at elementary school Bungo Regency, with the researcher acting as the science teacher for both the student. The experiment class received treatment using the C-DAF learning model integrated with DLST, while the control class was taught using conventional learning methods. A posttest was administered to both classes to collect data on their learning outcomes. The core of the the C-DAF Integrated with DLST learning model lies in its ability to stimulate deep thinking and knowledge construction through debate and analysis of learned concepts. This approach aligns with the findings of several studies, [12, 24, 48, 73, 71], which suggest that debate, analysis, and findings learning models offer concrete experiences that enhance learning and provide opportunities for students to reflect on their experiences. This reflection process facilitates generalization and abstraction, leading to a deeper understanding of the subject matter.

The statistical analysis involved calculating the degrees of freedom (df) using program SPSS Serie 17. In this case, df = (13 + 12) – 2 = 23. The calculated df value was then used to consult the t-table at a significance level of 5%, resulting in a t-table value of 2.069. The t-test results revealed a t-count value of 9.01. Comparing this value to the t-table value, we find that t-count (9.01) is greater than t-table (2.069). This finding supports the acceptance of the working hypothesis (Ha), which posits that the C-DAF learning model integrated with DLST, incorporating analysis and findings, has a significant influence on the science learning outcomes of fifth-grade students at elementary school Bungo Regency.

Since the t-count value (9.01) was greater than the t-table value (2.069), the results of the t-test were statistically significant at the 5% significance level. This means that there was a statistically significant difference between the means of the two groups. Based on this finding, we accept the working hypothesis (Ha), which posits that the C-DAF learning model integrated with DLST, incorporating analysis and findings, has a significant influence on the science learning outcomes of fifth-grade students at elementary school Bungo Regency. In other words, the C-DAF learning model integrated with DLST had a positive and statistically significant impact on the science learning outcomes of the students in the study. The integration of analysis and findings within the C-DAF learning model integrated with DLST framework appears to contribute to improved learning outcomes in science for fifth-grade students in the specified context. This suggests that the C-DAF model, when combined with DLST and incorporating analysis and findings, is an effective pedagogical approach for enhancing science education in elementary schools.

The t-test results revealed a t-count value of 9.01, which exceeded the t-table value of 2.069 at the 5% significance level. This outcome indicates that the results of the t-test are statistically significant. In statistical terms, this signifies that the observed difference between the means of the two groups being compared is unlikely to have occurred by chance alone. Instead, it suggests a genuine and meaningful difference between the groups. Given the statistical significance of the t-test results, we proceed to interpret their implications within the context of the study's hypothesis. The working hypothesis (Ha) proposed that the C-DAF learning model integrated with DLST, incorporating analysis and findings, has a significant influence on the science learning outcomes of fifth-grade students at elementary school Bungo Regency [11, 71, 72].

Since the t-test results are statistically significant, we accept the working hypothesis (Ha). This acceptance implies that there is indeed a statistically significant difference between the science learning outcomes of students who were exposed to the C-DAF learning model integrated with DLST and those who were not. In

practical terms, accepting the working hypothesis means that the C-DAF learning model integrated with DLST had a positive and statistically significant impact on the science learning outcomes of the students in the study. This finding suggests that the C-DAF model, when combined with DLST, is an effective pedagogical approach for enhancing science education in elementary schools.

The integration of analysis and findings within the C-DAF learning model integrated with DLST framework appears to contribute to improved learning outcomes in science for fifth-grade students in the specified context. This suggests that the C-DAF model, when combined with DLST and incorporating analysis and findings, is an effective pedagogical approach for enhancing science education in elementary schools [21, 74-76]. The inclusion of analysis and findings likely enhances the learning experience by providing students with opportunities to reflect on their understanding, identify areas for improvement, and deepen their comprehension of scientific concepts.

In conclusion, the research findings provide evidence for the effectiveness of the C-DAF learning model integrated with DLST in enhancing science learning outcomes. The application of this model encourages students to engage in critical thinking, knowledge construction, and reflection, leading to a deeper and more meaningful understanding of scientific concepts. The research results show that combining character-based debate, analysis and findings integrated with digital life skills technology into science education can be a valuable approach to improving student learning outcomes.

V. CONCLUSION

Based on the results of the trial and evaluation, the C-DAF learning model integrated with DLST showed significant effectiveness in improving: 1) Critical and Analytical Thinking skills: Students are able to analyze information critically, identify valid arguments, and formulate logical conclusions, 2) Digital Life Skill skills: Students are able to use technology effectively and responsibly, and are able to collaborate online, 3) Character values: Students show an increase in character values such as honesty, responsibility, cooperation, and tolerance and 3) Learning motivation: Students are more motivated to learn and actively participate in the learning process. C-DAF learning model integrated with DLST is a promising innovation in improving the quality of education in Elementary Schools. This model not only improves students' critical and analytical thinking skills, but also develops digital life skills and instills strong character values. With proper implementation, C-DAF learning model integrated with DLST can make a significant contribution to the advancement of education in Bungo Regency and Indonesia in general.

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Author Contributions

Apdoludin: formal analysis, investigations, writing original draft. Elfa Efriyani: Conceptualization, methodology. Ahmad ridhoh and Dexza Isma Putri: Writing - review and editing.

Conflict of Interests

The authors declare no conflict of interest.

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