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Designing Application-based News Text Teaching Materials Integrated with 4C Skills

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Keywords

Teaching materials, news texts, 4C skills, applications

Abstract

News text learning in schools generally still uses conventional teaching materials that do not fully support the demands of 21st-century education. This study aims to design application-based news text teaching materials integrated with 4C (critical thinking, creativity, communication, and collaboration) skills for seventh-grade junior high school students. The research uses the Research and Development (R&D) method with the ADDIE model which includes the Analyze, Design, Development, Implementation, and Evaluation stages. The research participants were seventh-grade students of SMP Negeri 1 Kenduruan, SMP Negeri 2 Jatirogo, and SMP Negeri 1 Senori. Data were collected through a needs analysis questionnaire, expert validation sheets, and news text writing tests. The results of the study showed that the teaching materials developed obtained a feasibility level of 80% from material experts and 92.5% from media experts. The implementation test showed that the calculated t-value (39.7695) was greater than the critical t-value (1.99601), while the N-Gain value of 0.691165 was in the medium category. Therefore, the designed teaching materials were found to be both feasible and effective to improve students' ability to write news texts.

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Introduction

A news text is a text that contains fact-based information about a subject or event that is important for the public to know (Maryani et al. in Safi'i et al., 2021) and conveyed through various media such as radio, television, newspapers, or in the form of digital news (Arizal et al.,

2021). Similarly, Yusuf (2024) said that news texts are writings that contain events accurately and are considered important for the public to know. News text can also be interpreted as a report on an event that is actual and factual and neutral (Efendi et al., 2023). As a medium for information dissemination, news texts are published through both print and digital media (Latifah et al., 2023). Based on some of these opinions, it can be concluded that news text is written in the form of a report on a recent problem based on facts in the field.

There are several stages that writers need to go through in writing news texts. News writing activities are carried out in four stages, namely determining the events to be reported, finding the source of the event, conducting interviews to obtain data, and then compiling news (Sari et al., 2024). According to Tarigan (2021), the stages of writing news include gathering information, writing information, arranging information into structured writing, and then perfecting the writing by involving manuscript editing activities. In line with this opinion, according to Riana et al. (2024), writing news texts begins with the pre-writing stage, which is determining news topics, news sources, and data, then the writing stage, which is compiling the information obtained by paying attention to the elements of 5W+1H, and then the editing stage, which is checking the news script and developing it into a complete and complete news text in accordance with the news structure.

In carrying out this news writing step, news writers can utilize the 4C (Critical thinking, creativity, communication, collaboration) skills in order to produce good and interesting news texts to read. 4C skills are a series of skills that students must have in 21st-century learning (Sapitri et al., 2022) because in this era, learning challenges are increasingly complex (Tawakkal et al., 2026). According to Riskayanti (2021), the 4C skills include critical thinking, communication, creativity, and collaboration. This is in line with the concept introduced by the Partnership for 21st Century Skill (P21) that the competencies that humans must have in the 21st century are critical thinking skills, creative thinking skills, communication skills, and collaboration skills (Arnyana, 2019). This is due to the increasing demand for individuals in the 21st century to demonstrate effective communication skills in accordance with appropriate social and communicative norms (Wijayanti et al., 2024). Therefore, it can be concluded that to face the development of the 21st century, humans must have 4C skills including, skills to be critical in thinking, skills to be more creative, communication skills, and collaboration skills.

The 4C skills must be incorporated into the learning process (Sholikha & Fitrayati, 2021). According to Sanjayanti et al. (2020), 4C skills need to be promoted into learning in order to create students who are ready to face the future. Consistent with this view, Susanti et al. (2025) said that 4C skills are a very important element in the world of education and modern life. Based on some of these opinions, it is very clear that these 4C skills must be integrated into the learning process.

However, the 4C skills have not been integrated into the learning process in depth and thoroughly. According to Maulinda (2023), one of the factors hindering the integration of 4C skills in education is the limited availability of teachers and their inadequate skills in implementing 4C-oriented learning. Supporting this argument, Aziza et al. (2025) added that the problems faced in integrating 4C skills in learning are the limitations of teacher training, the

lack of adequate learning media, and the increasingly dense curriculum structure. In addition, 4C skills have not been optimally integrated into learning because most of the learning in Indonesia still uses conventional methods by making teachers the center of learning (Armando, 2019).

The same thing happened in the learning of news texts in several schools, such as SMP Negeri 1 Kenduruan, SMP Negeri 2 Jatirogo, and SMP Negeri 1 Senori, located in Tuban Regency. Based on initial observations, the three schools have not generally integrated 4C skills in news text learning. This is because there are no adequate teaching materials for integrated news texts with 4C skills. The teaching materials used in schools are still conventional because they only focus on the available textbooks and have not integrated the 4C skills to the maximum. The use of conventional teaching materials has not been able to attract students to be more active in learning news texts so that learning seems boring. The selection of this material is an important component in supporting learning success (Yuanta & Suprihatien, 2026). The use of appropriate teaching materials can enhance the effectiveness of the learning process for both teachers and students (Hasanudin et al., 2024). To overcome this, it is necessary to develop interesting and innovative 4C skills integrated teaching materials (Rumahorbo et al, 2021).

Teaching materials can be developed into digital form. These digital teaching materials have an important role in today's world of education and are in line with the digitalization era (Sampelolo et al., 2024). This is because digital teaching materials can make the learning process more interesting and interactive, as well as contribute to environmental conservation by reducing the use of paper (Nisa et al., 2024). Widya et al. (2021) argue that in developing digital teaching materials, applications should be utilized.

The use of applications as teaching materials has several advantages. By using applications, teaching materials can be accessed on smartphones and tablets (Rifa'i et al., 2024) and can be accessed by anyone independently (Fadhilla et al., 2021). Anar et al. (2025) added that applications can support the learning process because they have the advantage of providing learning resources more flexibly. Therefore, the creation of learning media such as application-based teaching materials will support students in obtaining learning resources that can be accessed anytime and anywhere.

Based on the background of the problems that have been described above, it can be concluded that the integration of 4C skills into the learning of news texts by using application-based teaching materials provides a great opportunity in improving students' understanding of news texts. The integration between learning news texts, 4C skills, and applications can be a solution to limited learning resources, support students to learn independently more flexibly, and help students improve their 4C skills. Therefore, this research is important to be carried out in producing application-based 4C skill-integrated news text teaching materials.

Method

Research design

This study uses Research and Development (R&D) research design. The research and development approach is a scientific method used to research, design, produce, and test a product (Sugiyono, 2019). R&D can also be interpreted as a research approach to produce

innovations both in the form of making new products and developing existing products (Muqdamien et al., 2021) in a systematic and measurable way (Siahaan, 2025).

Research sample

The sample for this study consisted of seventh-grade students from three public junior high schools in Tuban Regency: SMP Negeri 1 Kenduruan, SMP Negeri 2 Jatirogo, and SMP Negeri 1 Senori. The selection of this sample is based on the consideration that the selected school has characteristics that are relevant to the target users of the developed product. In addition, the Indonesian language learning process in the three schools is still dominated by the use of textbooks as the main learning resource, thus allowing researchers to obtain data that is in accordance with the research. Another consideration is in the aspect of accessibility. The three schools chosen have good accessibility for researchers, both in terms of location and ease of coordination.

Research procedure

This study utilized the ADDIE development model. The ADDIE model is an instructional process consisting of five stages analysis, design, development, implementation, and evaluation (Aini et al., 2023). The ADDIE model is considered more rational and comprehensive for developing educational products, such as methods, models, strategies, media, and instructional materials (Sabdarini et al., 2021). The procedures of the ADDIE development model are detailed as follows. In the analysis stage, the researcher analyzed students' needs regarding instructional materials through a questionnaire. This questionnaire was distributed to students and comprised various items concerning student needs, the required instructional materials, and the structural concepts of the materials expected by the students. Through this questionnaire, the researcher obtained the analysis results and ensured that the developed instructional materials could support and satisfy students' learning needs. The blueprint for this questionnaire instrument is detailed below.

Table 1. Needs analysis questionnaire instrument grid

No	Aspects	Indicator	Number of Items
1	Teaching material needs	Availability of news text teaching materials	1
		Need for textual teaching materials for integrated news texts 4C skills based on application	2
2	Learning content requirements	Increase interest in creating news texts	2
3	Instructional delivery needs	Presentation technique	2
		Serving completeness	1
4	Need for a language component	Appropriate to student development	2
5	Evaluation needs	Form of evaluation	2
6	Product specification requirements	App name	1
		Front page design	1
		App display colors	1
		App menu display design	1

No	Aspects	Indicator	Number of Items
Total			16

The design stage in this study was conducted by creating the visual design of the instructional materials. In this process, the researcher developed flowcharts and storyboards for the instructional materials being created. The flowchart encompasses the workflow, starting from the login page to the menu exploration, which consists of the user instructions, learning content, summary, reference list, evaluation, and about application menus. Subsequently, this workflow was visualized in the form of an initial design. This design covers the application interface, learning navigation flow, and the layout of the news text material. In addition, the design process also included creating the application logo. Data during this stage were collected using a suitability checklist.

The development stage represents the phase of realizing the product design into an actual product. The manufacturing of this product also involved a validation process. This validation included material validation and media validation. Data at this stage were collected using expert validation instruments. The material aspect was validated by two subject matter experts. The blueprint for the material validation instrument is detailed below.

Table 2. Material validation instrument grid

No	Aspects	Indicator	Rating				
			1	2	3	4	5
1	Material feasibility	Material compatibility with CP and ATP					
		Clarity of concept and content of the material					
2	Language qualifications	Conformity with language rules					
		Readability of the teaching materials					
3	Presentation eligibility	Integration of material presentation					
4	Eligibility of references	Compatibility of references with the material					
5	Evaluation feasibility	Conformity of evaluation questions					

Modified from [Sundari & Fatonah \(2025\)](#)

Meanwhile, the media aspect was validated by two experts competent in the field of instructional media development. In this media aspect, the instructional materials were validated in terms of visual design, typography, and usability. The blueprint for the media expert validation instrument is detailed below.

Table 3. A grid of material validation instruments

No.	Aspects	Indicator	Rating				
			1	2	3	4	5
1	Background fit						

	Design and layout	Application color suitability
		Layout proportional suitability
2	Typography	Font type selection
		Font size selection
3	Usage	Clarity of instructions for use
		Ease of use
		Flexibility of teaching materials (can be used anytime and anywhere)

Modified from [Lisnawati \(2024\)](#)

In the implementation stage, students were engaged in writing news texts with the assistance of the developed instructional materials. Data during this stage were collected through a news text writing test. The students' written news texts were then assessed based on a predefined evaluation rubric. These scores served as the basis for determining the effectiveness of the instructional materials by comparing the test results before and after using the materials.

The evaluation stage represents the phase for assessing the success and effectiveness of the product in resolving the identified problems. This stage aimed to evaluate the quality and success of the developed instructional materials. Furthermore, this phase ensured that the students' needs regarding the instructional materials were fully satisfied. Data at this stage were collected using a student score comparison instrument.

Data analysis

Data analysis was conducted at each stage of development due to the varying types of data obtained in every phase. In the analysis stage, the data were analyzed using descriptive statistics to calculate the percentage of students' responses to the needs analysis questionnaire. In the design stage, the data were analyzed using the Miles & Huberman framework. In the development stage, the data were analyzed by calculating the percentage of scores from validators to determine the eligibility criteria of the instructional materials. These eligibility criteria include highly valid (81%-100%), valid (61%-80%), fairly valid (41%-60%), invalid (21%-40%), and very invalid (0%-20%) ([Maulidi & Aisa, 2023](#)). At the implementation stage, the data was analyzed using the Paired Sample t-test to see the influence of teaching materials. The provisions in this Paired Sample t-test are that if the t-table is $> t$ -table, H_0 is rejected and H_1 is accepted (there is a significant influence), but if the t-table $< t$ -test, H_0 is accepted and H_1 is rejected (there is no significant effect) ([Wahyudi et al., 2023](#)). Meanwhile, at the evaluation stage, the data is analyzed using N-Gain calculations to measure the effectiveness of teaching materials. The N-Gain effectiveness criteria include high ($1,00 \geq g > 0,7$), moderate ($0,7 \geq g > 0,3$), and low ($0,3 \geq g > 0,00$) ([De Cock as cited in Nisa & Dwiningsih., 2021](#))

Results and Discussion

Results

Based on the needs analysis conducted at SMP Negeri 1 Kenduruan, SMP Negeri 2 Jatirogo, and SMP Negeri 1 Senori, students' responses to the needs analysis questionnaire were obtained. The survey responses to be utilized in developing the instructional materials

were selected based on the options most frequently chosen by the students. The distribution of the most frequent responses is detailed below.

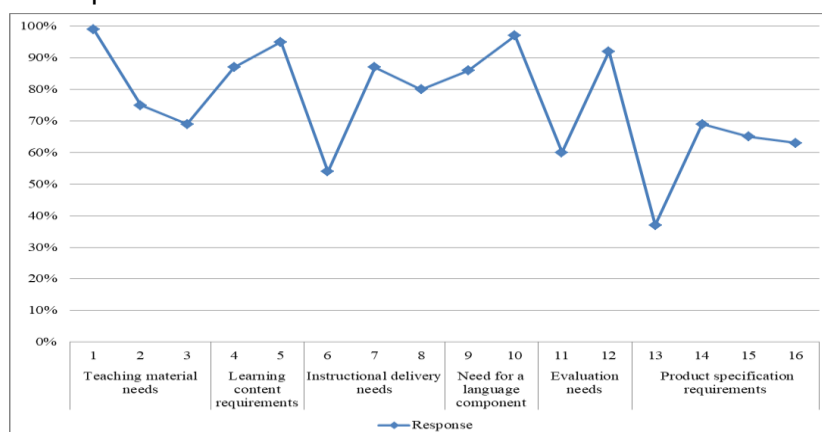


Figure 1. The highest percentage of answer choices for each question item

Based on the image above, students' responses are classified into several aspects. Each aspect has a different number of question items. The results of the students' responses to the questionnaire questions are described as follows.

Based on the figure above, student responses were classified into several aspects, each containing a different number of items. The detailed findings of student responses to the questionnaire are outlined as follows. The aspect of needs for application-based news text instructional materials integrated with 4C skills was analyzed through three questions. Student responses to this section can be summarized as follows: 1) 99% of students stated that instructional materials were already available at their school, but noted that these materials still required further development; 2) 75% of students indicated a need for instructional materials that focus not only on news text content but also incorporate 4C skills (critical thinking, creative thinking, communication, and collaboration); and 3) 69% of students required digital instructional materials, such as an application that can be accessed anytime and anywhere. These findings lead to the conclusion that news text instructional materials need to be developed by integrating 4C skills and transformed into a digital format via an application.

The aspect of learning content needs for application-based news text instructional materials integrated with 4C skills was analyzed through two questions. The student responses can be summarized as follows: 1) 87% of students felt that the current news text materials successfully increased their interest in news writing; and 2) 95% of students required news text content that could facilitate their news text writing process. These findings conclude that the development of news text instructional materials must carefully consider the included content to ease students' news writing process.

The aspect of instructional delivery needs was analyzed through three questions. The survey responses can be summarized as follows: 1) 54% of students felt that the news text materials were presented separately, focusing individually on definitions, elements, or steps of news writing; 2) 87% of students preferred materials delivered in the form of an application, indicating that the development of news text materials needs to be presented discretely and

deployed as an application; and 3) 80% of students agreed that the instructional materials should be equipped with learning objectives, summaries, and evaluations.

The linguistic component aspect is highly critical in instructional materials as it directly influences students' comprehension level. Linguistic needs were analyzed through two questions, summarized as follows: 1) 86% of students felt that the language used in the instructional materials should be adapted to their level of understanding; and 2) 97% of students required simple yet clear language in the materials.

The evaluation aspect is necessary as it serves as a tool to measure student learning success and assess instructional effectiveness (Fuadiy, 2021). Student needs regarding the evaluation format were analyzed through two questions, summarized as follows: 1) 60% of students preferred multiple-choice questions; and 2) 92% of students required evaluation formats that can authentically demonstrate their understanding.

The product specification aspect queried to the students related to the application naming and user interface. These specification needs were analyzed through four questions, summarized as follows: 1) 37% of students favored "Sibertac" as the application name; 2) 69% of students felt that the visual elements used in the materials should align with the news text theme; 3) 65% of students preferred a bright color theme; and 4) 63% of students preferred a grid menu with rounded rectangles.

Following the student needs analysis, the development process proceeded to the design stage. The design of the instructional materials was tailored to the results of the needs analysis. In this stage, the learning content was structured and designed to be presented more engagingly and comprehensively. The structural design of the content is detailed below.



Figure 2. Material design in teaching materials

In addition to designing materials, at this stage also designing the appearance of the application interface. The researcher first compiled a flowchart and storyboard so that the design process was more directed and structured. This design includes the selection of application colors and the selection of elements that match the news text material. The following is the initial application display design and menu page appearance.



Figure 3. Interface display design

The results of the design stage are in the form of prototypes which are then realized at the development stage. The prototype was realized into an application with the help of the Koulalar platform. This process also involves creating navigation buttons and setting up programs to allow applications to run.

After the prototype is realized, it is followed by expert validation. This validation aims to ensure that the teaching materials developed are suitable in terms of material and media. The results of the material validation can be presented in the following graph.

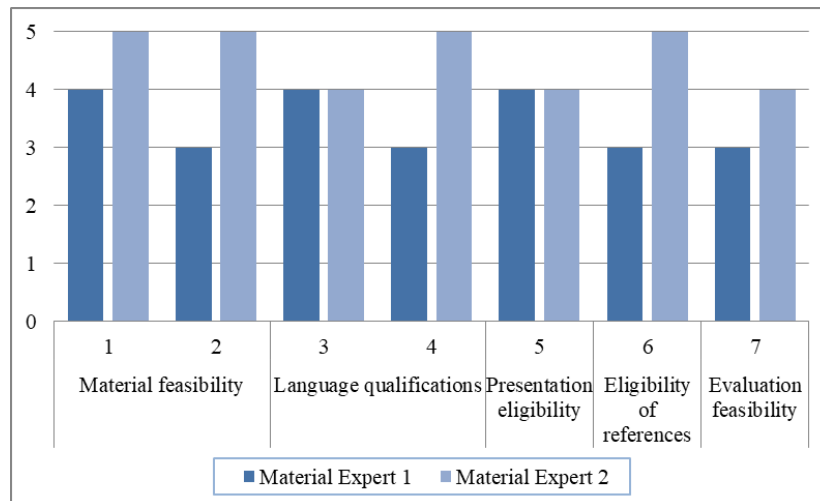


Figure 4. Results of material expert assessment

Based on the image above, the validation results are then recapped based on each aspect of the assessment. In the aspect of material feasibility, the total score obtained was 17. In terms of linguistic feasibility, the total score obtained was 16. In the aspect of presentation, the total score obtained was 8. In terms of reference eligibility, the total score obtained is 8. Meanwhile, in the aspect of evaluation feasibility, the total score obtained was 7. Based on the validation of these two validations, the average percentage obtained is 80%. From this percentage, teaching materials are included in the eligibility criteria. Subject matter expert I provides notes and

suggestions for including CP in teaching materials and revises question items on the evaluation page. Meanwhile, subject matter expert II provided notes and suggestions related to analysis questions on the evaluation page. Subject matter expert II suggested that questions in the form of analysis be multiplied at the time of evaluation.

Furthermore, the results of the assessment by media experts are as follows.

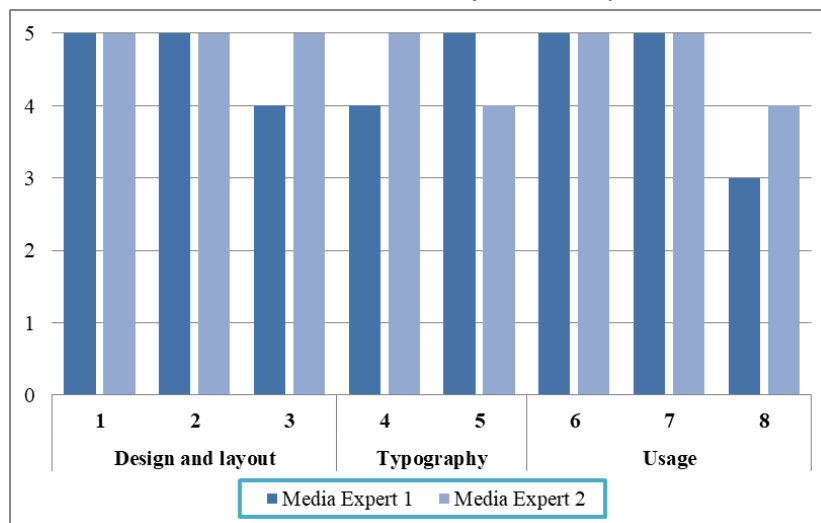


Figure 5. Results of media expert ratings

Based on the image above, the validation results are then recapped based on each aspect of the assessment. In terms of design and layout, the total score obtained was 29. In the topographic aspect, the total score obtained was 18. Meanwhile, in terms of use, the total score obtained was 27. Based on the validation of these two validations, the average percentage obtained is 92.5%. Of this percentage, teaching materials are included in the criteria that are very feasible. Media expert I gave advice to researchers to release the teaching materials developed to the PlayStore to increase the flexibility of teaching materials. Meanwhile, media expert II gave suggestions for improvements to enlarge the font size on the summary page.

Notes and suggestions from validators are the basis for researchers to revise teaching materials. This revision ensures that the teaching materials developed are in accordance with standards and are suitable for field testing. Therefore, after revising the teaching materials, the next stage is the implementation of teaching materials.

The implementation of teaching materials was carried out at SMP Negeri 1 Senori, SMP Negeri 2 Jatirogo, and SMP Negeri 1 Kenduruan. This implementation was carried out to assess the influence of teaching materials developed with the results of writing student news texts. To see this influence, the results of students' writing before using the teaching materials are compared to the learning outcomes of students when they have used the developed teaching materials. This process involves paired sample T-test to see the influence of teaching materials.

	<i>Postes</i>	<i>Pretes</i>
Mean	85.8824	54.41176471
Variance	38.0158	21.29060579
Observations	68	68
Pearson Correlation	0.29394	
Hypothesized Mean Difference	0	
df	67	
t Stat	39.7695	
P(T<=t) one-tail	1.2E-48	
t Critical one-tail	1.66792	
P(T<=t) two-tail	2.5E-48	
t Critical two-tail	1.99601	

Figure 6. Result of Paired Sample T-test

Based on the test results, it was known that the calculated t-value (39.7695) was greater than the critical t-value (1.99601). Thus $t_{\text{calculated}} > t_{\text{critical}}$ so that H_0 is rejected. Therefore, it can be concluded that the teaching materials developed have a significant effect on student learning outcomes.

After obtaining the results at the implementation stage, the development process continues to the evaluation stage. This evaluation stage is carried out to measure the effectiveness of the teaching materials developed. The results of the evaluation of the 4C-based integrated news text teaching materials were obtained by measuring the improvement of student learning outcomes before using teaching materials (pretests) and after using teaching materials (post-test). This improvement in learning outcomes can be simply concluded by looking at the minimum grade, maximum grade, and average student grade. In simple terms, this difference in results can be seen in the following image.

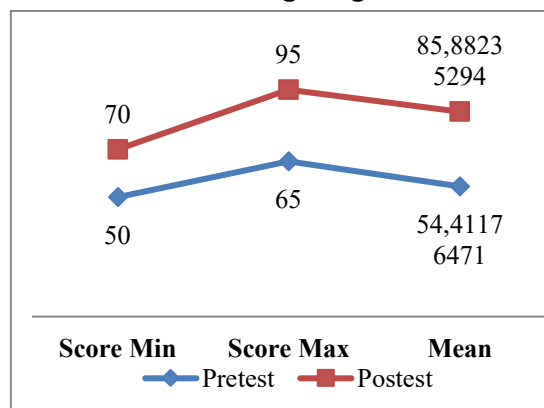


Figure 7. Comparison of pretest and post-test results

Based on the table above, students' scores after using the app-based 4C skill-integrated news text teaching materials showed an increase compared to students' scores before using the teaching materials. The average student learning outcome when post-test increased by 31.47 or by 57.8%. These results were then analyzed using N-Gain to determine the effectiveness of the teaching materials developed.

Based on the results of data analysis, an average N-Gain value of 0.691165 was obtained. The value is in the medium category, but the position is close to the high category. In more detail, the N-Gain category obtained is presented in the following figure.

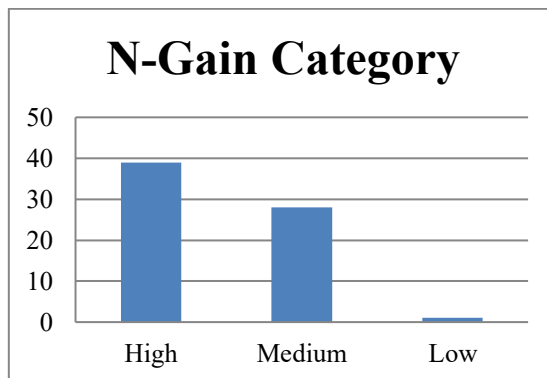


Figure 8. Graphics category N-Gain

This shows that the use of application-based 4C skills integrated news text teaching materials provides a significant improvement in students' news text writing skills after the learning process is carried out.

Discussion

Discussion

Based on the results of the research that has been described, the discussion is focused on the main findings which include, (1) students' needs for instructional materials for 4C skills integrated news text teaching materials, (2) the feasibility of teaching materials based on the validation of material experts and media experts, (3) the influence of teaching materials on student learning outcomes, and (4) the effectiveness of teaching materials in improving student learning outcomes.

First, students' need for text-based integrated news text teaching materials based on application-based 4C skills is based on the lack of innovation in teaching materials and the dominance of the use of textbooks as teaching materials so that learning seems monotonous. This is in line with the findings of [Aegustinawati et al. \(2024\)](#) who stated that news text teaching materials are already available in schools but most of them still focus on textbooks provided by the government, so other forms of teaching materials such as digital teaching materials have not been widely used. In line with that, [Putri et al. \(2025\)](#) emphasized that the teaching materials used in schools are still simple and have not yet utilized technology in accordance with the demands of learning in the digital era. One of the teaching materials that answers this problem is teaching materials that are packaged in the form of applications. Research by [Fansury et al. \(2025\)](#) shows that students need teaching materials that are developed into learning applications because of the ease of learning flexibility. On the other hand, the digital era does not only focus on the use of digital products but also needs to pay attention to the 4Cs (critical thinking, creative thinking, collaboration, communication) skills. [Marwa et al. \(2023\)](#) revealed that the 4C skills need to be integrated into learning by providing more effective teaching materials in accordance with the era of globalization.

Second, the teaching materials for the integrated news text with application-based 4C skills are considered feasible in terms of material and very feasible in terms of media. According to [Hariyati & Rachmadyanti \(2022\)](#), the validation process is important to be carried out in the development of teaching materials because it aims to test the feasibility of teaching materials and obtain the necessary input in improving the developed teaching materials. This feasibility also involves a revision process so that the teaching materials meet the standards and are ready to be tested. This revision process is based on the notes and suggestions provided by validators ([Farida et al., 2022](#)).

Third, the teaching materials of news texts integrated with 4C skills based on applications have a significant influence on student learning outcomes. This is similar to the research of [Putri et al., \(2025\)](#) which reveals that application-based teaching materials can improve students' understanding of news text materials. In addition, research conducted by [Wulandari \(2026\)](#) also shows that application-based teaching materials are able to improve students' ability to write news texts after going through the trial stage.

Fourth, app-based 4C skills integrated news text teaching materials can effectively help improve student learning outcomes. This effectiveness is measured through the calculation of N-Gain. This is in line with the opinion of [Putra et al. \(2023\)](#) that the N-Gain calculation aims to determine the level of effectiveness of teaching materials in improving students' abilities during the learning process. The N-Gain calculation is considered to be able to describe a more proportional increase in student scores compared to only measuring the difference in pretest and post-test scores ([Anugrah et al., 2026](#)). The higher the N-Gain score, the more effective the teaching materials are considered in improving student learning outcomes ([Canes et al., 2026](#)).

Conclusion

Application-based 4C skills-integrated news text teaching materials need to be developed because the teaching materials used in schools have not fully supported the demands of 21st century learning. The results of the needs analysis show that students need teaching materials that not only utilize technology, but also are able to develop critical thinking, creativity, communication, and collaboration skills. The development of teaching materials is carried out through the preparation of flowcharts and storyboards that are tailored to the needs of students. The validation results showed that the teaching materials developed had a high level of feasibility, with a percentage of media feasibility of 92.5% (very feasible) and feasibility of 80% (feasible). In addition, the implementation of teaching materials showed significant results with the calculated t-value (39.7695) was greater than the critical t-value (1.99601). The effectiveness of the teaching materials is also supported by an N-Gain value of 0.69115 which is in the medium category, so that the teaching materials for news texts integrated with application-based 4C skills are declared effective in learning news texts.

Authorship Contribution Statement

Fadlilah: Analyzing user needs, compiling research instruments, designing and developing teaching material applications, collecting and processing research data, and writing

article manuscripts. Hasanudin: provides methodological direction, research supervision, and coordinates the preparation of articles. Sutrimah: providing input in research development, especially related to product validation, including recommendations and determination of validators for teaching materials.

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