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Developing Augmented Reality-Integrated Worksheets for Teaching Descriptive Writing in Junior High School

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Abstract

Augmented Reality (AR) is one of the technologies used in education. With its advanced features, AR can support innovative instruction. The use of AR in descriptive text writing instruction is still understudied. Therefore, the present study aims to investigate the process, the feasibility, and students' responses to the use of AR-integrated descriptive text worksheets in teaching writing in junior high school. This study employed Research and Development (R&D) methods with an ADDIE model, comprising five stages: Analysis, Design, Development, Implementation, and Evaluation. Thirty-two seventh-grade students at MTsN Kota Cimahi were the subjects of this study. Validation sheets and questionnaires were used to obtain the research data, and descriptive analysis was used as the data analysis technique. The findings revealed that the development of AR-integrated descriptive text worksheets is suitable to be used in writing instruction at the junior high school. The feasibility of the developed descriptive text worksheet obtained a percentage of 83,3% in the valid category. Last, students' responses of AR-based worksheets showed positive outcomes. It can be concluded that AR-integrated descriptive text worksheet for teaching writing in junior high school is feasible and appropriate to support innovative and engaging writing instruction.

Keywords: Augmented Reality; Worksheet; Teaching Writing; Descriptive Text

INTRODUCTION

Writing is one of the productive language skills used to convey information. Based on Melani (2024), writing skills are often used to measure a person's foreign language abilities or other abilities. Writing is a process carried out with the aim of conveying ideas and thoughts about information on a topic, which are organized written compositions consisting writing into of sentences or paragraphs (Astuti et al., 2023; Rahman & Susanti, 2022). In the context of English instruction, writing ability is the skill of conveying information through well-structured English. Therefore, writing skills need to be learned and practiced in order to improve creative thinking skills and to express ideas effectively in written form (Oktavia et al., 2023; Bora, 2023). This is done to produce and share information in English written form appropriately.

In teaching writing, scientific approach is commonly used to share ideas in proper way. The scientific approach focuses on guiding students in solving problems through critical and creative thinking and communication skills, using scientific activities such as investigating phenomena and integrating prior knowledge with newly acquired knowledge to build meaningful understanding of a subject, rather than merely transferring knowledge (Abidin, 2014, as cited in Irwansyah & Perkasa, 2022; Affilia et al., 2023; Kaharap et al., 2025; Susilo et al., 2016, as cited in Abhyasari et al., 2020). This approach contains detailed stages and instructions that enable students to follow a series of learning activities, thus supporting the educator's role as a facilitator (Atsnan & Gazali, 2013, as cited in Irwansyah & Perkasa, 2022).

The stages are observing, questioning, experimenting, associating, and communicating. These stages may lead students to write better texts.

Descriptive text is categorized as one of the texts instructed by teacher in secondary schools in Indonesia. According to Nuralisaputri and Megawati (2023), descriptive text describes things, such as animals, foods, people, and places to provide an undertanding of the objects described to readers. Descriptive text is one of the texts used by writers to describe a certain object, both animate and inanimate objects in detail. Descriptive writing relates to the writer's sensory observations, such as smell, sight, touch, and sound, or emotional feelings based on their experiences, to draw a vivid picture characteristics clear and detailed information (Telaumbanua et al., 2025; Huda & Purwanti, 2023; Anggraini, 2020). The outcome of descriptive writing instruction is students' ability to compose texts based on the observation and analysis activities of objects, and present them into the form of well-written texts.
In reality, when descriptive text instruction is conducted, students may face many problems.

Limited vocabulary, which results in a lack of mastery in choosing the appropriate diction is the main problem faced by students (Telaumbanua et al., 2025; Daulay et al., 2023). In addition, according to Agustin (2024), students encounter several struggles when learning descriptive text, including: (1) Grammar; (2) Vocabulary; (3) Organizing descriptive text ; (4) Content: students did not describe objects clearly because they can observe the object to describe; (5) Mechanical. In line with Nensi (2018) and Yani (2021), the problems are categorized into linguistic and cognitive problems. In linguistic problems, students find it difficult to use correct grammar, sentence structure, and appropriate word choice. Meanwhile, in cognitive problems, students have difficulty using correct punctuation, capitalization, spelling, content, and the overall organization of descriptive texts. Furthermore, the limited use of technology may afffect the learning quality and students performance (Miah, 2024; Soomro et al., 2020).This study was driven by similar problems. The issues are connected to the utilization of technology, grammar, vocabulary, and writing content in descriptive writing at the junior high school level. These issues are highly important to note because they can affect the quality of students' descriptive writing learning outcomes.

Reflecting on above problems, technology plays an inevitable role in 21st century education. According to Parveen and Ramzan (2024), Godsk and Møller (2025), and Sitthiworachart (2022), the integration of technology in education makes the process of knowledge transfer more accessible, practical, and effective, while also providing engaging, flexible, and motivating learning experience for students. This, in turn, expand access, enriches learning experiences, and improves the quality, efficiency, and equity of education (Tang et al., 2024; Kalyani, 2024; Zhang, 2022). Hence, recent educational implementation should involve technology to provide more accessible. effective, and practical instruction.

Augmented Reality (AR) is a technology that is increasingly used to enhance instructional quality and positively affect learning outcomes. AR is an artificial intelligence technology that displays two-dimensional or three-dimensional virtual objects, such as images, animations, and audiovisual content into the real-world environment in real time, enabling users to integrate digital content with the real world (Santoso, 2021; Rohman et al., 2024; Indahsari & Sumirat, 2023). Through realistic AR visualizations and interactive simulations, students can gain comprehensive knowledge and information during the learning process (Kamińska et al., 2023; Indahsari & Sumirat, 2023). The role of AR is needed to produce high-quality visualizations of objects in books or worksheets.

Several previous studies have revealed student worksheets using AR technology. AR-based student worksheets have been widely used across various topics and subjects to support a variety of learning objectives. According to Tanjung and Loiuse (2024), Ilafi et al. (2023), and Hidayani et al. (2025), the use of student worksheets based on AR has been demonstrated to increase learning outcomes and learning motivation in instructions. Based on Maimuna et al. (2024), Fendi et al. (2021), and Lu et al. (2025), students' higher-order thinking skills have also increased. This is because worksheets using AR provide students a novel and engaging learning experience (Fitriyah et al., 2023; Yusro et al., 2023). Those previous studies have confirmed that the use of student worksheets using AR has a positive impact on teaching and learning processes. Looking at the studies, most of the studies reported their research results related to the implementation of AR-integrated worksheets in the field of mathematics and science instruction.

Although numerous studies have explored the incorporation of AR in science and mathematics education (İslim et al., 2024; Vidak et al., 2024; Tanjung & Louise, 2024), its application in English language writing instruction remains underexplored, particularly in the development of instructional worksheets for descriptive text. The disciplinary characteristics of language studies, which focus on reading and writing skills, are one of the factors limiting the use of AR in language instruction (Li et al., 2025).To conclude, this study was conducted for several purposes, including: (1) to explain the process of developing AR-integrated worksheets for teaching descriptive writing; (2) to investigate the feasibility of AR-integrated worksheets for teaching descriptive writing, and (3) to describe students' responses toward the use of AR-integrated worksheets for teaching descriptive writing in junior high school. This current study contributes to the field of English language teaching by developing and validating AR–integrated worksheets designed specifically for descriptive writing instruction in junior high school contexts.

METHOD

The Research and Development (R&D) method was employed in the present study. According to Judjianto et al. (2024) and Borg and Gall (1983, as cited in Sudikan et al., 2023), Research and Development (R&D) is a systematic research method aimed at developing and testing the reliability of new products, to produce appropriate and effective products before they are widely implemented. In the current study, AR-integrated worksheet was developed to support the descriptive texts instruction based on a scientific approach. Ultimately, the developed product was deemed suitable and practical for use.

This study applies the ADDIE model, which comprises five stages: (1) Analysis; (2) Design; (3) Development; (4) Implementation, and (5) Evaluation. The analysis stage is conducted to identify student needs, instructional materials, and student characteristics. The design stage focuses on the design and development of student worksheet integrated with AR concepts based on the analysis results. The development stage involves turning the design into a prototype of descriptive text worksheets integrated with AR, which is then tested for feasibility through validation by experts. The implementation stage focuses on conducting preliminary and main field test aimed at students at MTsN Kota Cimahi. The evaluation phase focuses on collecting user responses on the descriptive text worksheet integrated with AR as a basis for evaluating the effectiveness of the product's implementation.

A total of 32 seventh-grade students at MTsN Kota Cimahi participated in this study, including of 22 female students and 10 male students, all of whom actively engaged in an English learning

activity. A closed-ended questionnaire was employed to collect students' responses toward the use of a descriptive text worksheet integrated with AR. The questionnaire includes a four-point Likert scale ranging from 'strongly disagree' to 'strongly agree' with 18 statements covering perceptions and benefits. To assess the product's feasibility, the validation sheets cover both presentation and content used a five-point Likert scale, ranging from 'invalid' to 'very valid', based on 15 statements. The validation sheet is intended for two expert validators. These experts are selected based on their educational background, teaching experience, and expertise in the relevant field, thereby ensuring the validity and credibility of the assessment.

Descriptive analysis techniques were chosen to analyze the collected data. The scores were calculated using descriptive statistics. According to Blbas (2024), descriptive statistics was employed to explain existing research data, without intending to make general conclusions. In this study, the data were calculated to determine the average score in order to identify general trends. Subsequently, the data were interpreted based on existing validity criteria. Additionally, the questionnaire data were converted into Likert scale score to determine students' response categories.

RESULTS AND DISCUSSION

Results

The current study aims to describe the process, feasibility and students' responses toward the use of AR-integrated worksheets for teaching descriptive writing in junior high school. The data below show the process of developing an AR-integrated worksheets, the validation score obtained from the expert to assess product feasibility, and students' responses to its application in descriptive writing instruction.

1. **The Process of Developing Augmented Reality-Integrated Worksheets for Teaching Descriptive Writing in Junior High School**
   This first subsection describes the process of developing AR-integrated worksheets for teaching descriptive writing. The product was developed through a series of stages based on the ADDIE model. Throughout the product development process, the product was designed to meet both pedagogical and technical requirements. The following are the stages involved in product development based on the ADDIE model.

   The first stage is the analysis stage. This stage was conducted through two activities: a literature review and school observations. Based on the literature review, it was found that the use of worksheets integrated with AR in English language instruction remains relatively limited. Consistent with this finding, the observation results revealed that the descriptive writing instruction at the school had not yet utilized AR technology. Furthermore, the English proficiency of most students, particularly their writing skills, was assessed to be at the beginner level, which is still requiring guidance and the provision of understanding through adequate text examples. These findings indicate a need for worksheets containing a systematic series of writing instruction guidelines using the Scientific Approach, accompanied by high-quality object visualizations linked to 3D AR object. These worksheets are expected to guide and improve students' ability to write coherent and more structured descriptive texts. Therefore, the results of this needs analysis need to be implemented and serve as the basis for developing a product in the form of descriptive text worksheets integrated with AR.

The second stage is the design stage. During the design stage, researchers design the products based on findings from the analysis stage, particularly regarding pedagogical needs. The pedagogical aspects considered include learning objectives, instructions, learning activities, approaches, and expected learning outcomes. In addition to considering pedagogical needs, it is also important to ensure that the designed products are suitable for use in mechanical aspects. This includes the selection of font type and size, layout, paper size, illustrations, AR functions, language appropriateness, clarity of instructions, as well as the quality and diversity of visual elements in the worksheet. The visual layout design of the worksheet was developed using the Canva application. Meanwhile, AR elements and 3D objects were created and integrated using the Assemblr Edu application.

In terms of presentation arrangement, the preliminary section of the worksheet is systematically designed to include the front and back covers, foreword, preface, framework, and table of contents.

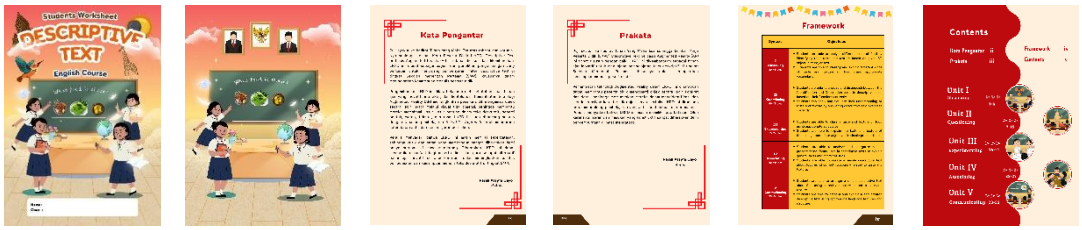

Figure 1. Preliminary Section

Figure 1 shows the *kata pengantar*, *prakata*, framework, and worksheets table of contents pages. These pages appear at the beginning, before the main content of the developed worksheets.

Furthermore, the main content of the worksheets is systematically designed in allignment with the scientific approach syntaxes, including Observing (Unit I), Questioning (Unit II), Experimenting (Unit III), Associating (Unit IV), and Communicating (Unit V).

Figure 2. Main Content: Observing (Unit I)

Figure 2 shows the main content in the Observing section of Unit I. As the name suggests, this unit focuses on observation activities. The core exercise in this unit includes a QR code linked to a food-themed AR object that students can interactively observe. In addition, several driving questions and answer columns are provided to help students articulate their observations.

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Figure 3. Main Content: Questioning (Unit II)

Figure 3 shows the main content of the Questioning section in Unit II. The main exercise in this unit focuses on question-and-answer activities. After the material is presented, students are asked to answer the attached practice questions. In addition, students are also encouraged to ask questions through the 'Question and Explore' activity, thus they can express a broader curiosity about learning descriptive texts. Question-and-answer activities are necessary to assess the students' level of understanding.

Figure 4. Main Content: Experimenting (Unit III)

Figure 4 shows the main content of the Experimenting section in Unit III. The core activity in this unit is conducting experiments through observation. This unit includes a QR code linked to a food-themed AR object, Observation Sheet I for recording observations of food regarding type, taste, shape, and texture, and Observation Sheet II. On Observation Sheet II, students are asked to experiment with forming simple sentences to describe their observations using vocabulary selected based on the findings recorded on Observation Sheet I.

Figure 5. Main Content: Associating (Unit IV)

Figure 5 shows the main content in the Associating section of Unit IV. The exercises in this unit include four QR codes linked to food-themed AR objects, an answer column for the 'Identification' section, and an answer column for the descriptive text in the 'Description' section. The main activity in this unit is for students to systematically compose descriptive texts based on the selected AR objects, following the given structure.

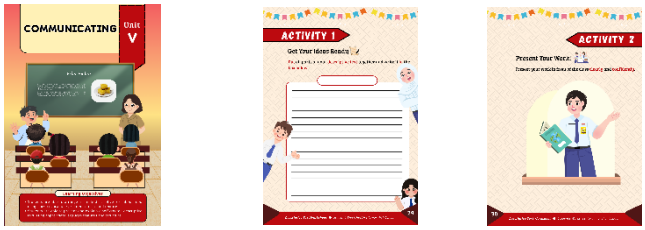

Figure 6. Main Content: Communicating (Unit V)

Figure 6 shows the main content in the Communicating section of Unit V. As the name suggests, this unit focuses on communication activities as the final stage of the learning process. The core exercise in this activity includes a column for the complete descriptive text, as well as instructions to present the descriptive text clearly and confidently in front of the class.

Lastly, the closing section of the worksheet is systematically designed to include the references and author autobiography.

Figure 7. Closing Section

Figure 7 shows the reference and biography pages located at the end of the worksheet. The reference page lists the various sources consulted in compiling the book's content and other materials. Meanwhile, the biography page provides a brief profile of the author and the developer of the worksheet.

The third stage is development. In this stage, the designed product prototype was then validated by two validators, including an information technology practitioner and a seventh-grade English teacher at MTsN Kota Cimahi. The validation process focused on evaluating the visual presentation and content of the worksheets that were developed. The purpose of the validation was to assess the product's feasibility before implementation. The results of the product feasibility assessment are discussed in the second subsection.

The fourth stage is implementation. At this stage, the products that have been declared suitable for use is then applied in classroom. In this study, the implementation stage was divided into two parts, there are a preliminary field test and a main field test. The preliminary field test was conducted over six class periods involving 11 students. Meanwhile, the main field test was conducted over six class periods involving 32 students. During the implementation process, the worksheets developed served as the primary teaching medium used to guide and assist students in learning to write descriptive texts. Students were focused on following a series of structured exercises on

the worksheets in accordance with the learning stages using a scientific approach. The first stage is observing. In this stage, students are asked to conduct independent observations by examining the AR objects displayed and writing down their findings. Additionally, students are introduced to vocabulary related to types of taste. The second stage is questioning. In this stage, explicit instruction on descriptive texts with the topic of traditional food is provided to students. During the learning process, students listen to explanations of the material, complete quizzes, and participate in Q&A sessions to reinforce their understanding. The third stage is experimenting. In this stage, students focus on identifying the displayed AR objects and creating simple sentences describing the displayed objects. The fourth stage is associating. In this stage, students are asked to systematically and comprehensively compose a descriptive text based on the objects obtained by scanning one of the four available QR codes. The fifth stage is communicating. The descriptive texts that have been created are then compiled into a complete text and presented in front of the class.

The fifth stage is evaluation. After the implementation process was completed, the researcher evaluates the use of the product. Through a questionnaire, students were asked to provide their personal responses on the use of the descriptive text worksheet integrated with AR during the implementation process or while learning activities were taking place. The evaluation results, in the form of student feedback, are discussed in the third subsection.

Based on the findings above, the results obtained provide an answer to the research question regarding the process of developing AR-integrated worksheets for teaching descriptive writing in junior high school.

2. The Feasibility of Augmented Reality-Integrated Worksheets for Teaching Descriptive Writing in Junior High School

This second subsection discusses the feasibility of AR-integrated worksheets for teaching descriptive writing in junior high school. Product validation was conducted to test the feasibility of the product, with expert validators in the field serving as evaluators. The validators assessed the research product that had been developed and provided feedback to the researchers regarding areas that needed improvement (if necessary) before the product could be used. The data are displayed in the following table.

Table 1. Validation Results from The Validators

No.	Aspect Measure	Score Obtained	
		Validator I	Validator II
Worksheet Visual Presentation			
1.	Worksheet size	4	4
2.	The layout of worksheet cover	4	4
3.	Typography of worksheet cover	4	4
4.	Component of worksheet	5	4
5.	The layout of worksheet content	4	4
6.	Typography of worksheet content	3	4
7.	Illustration of worksheet content	4	5
8.	Interface of Augmented Reality	4	4
9.	The function of Augmented Reality	5	5
Worksheet Content			
10.	Content eligibility	4	4
11.	Serving eligibility	4	4
12.	Language appropriateness	4	4
13.	Clarity of instruction	4	4
14.	Appropriateness of task and activities	4	4
15.	Support for Scientific Approach	5	5
	Σ Score	**62**	**63**
	Average	**4,1**	**4,2**
	Percentage	**82,6%**	**84%**
	Criteria	**Valid**	**Valid**

Table 1 shows that the descriptive text worksheet through scientific approach using AR received a score of 62 (82.6%) from validator I. Meanwhile, validator II gave a score of 63 (84%) to the same research product. These findings indicate that both validator I and validator II assessed that the AR-integrated worksheets for teaching descriptive is feasible to use in supporting writing instruction in junior high school.

Table 2. Recapitulation of Validation Results from The Validator I and Validator II

	Validator I	Validator II
Σ Score	62	63
Percentage	82,6%	84%
Criteria	Valid	Valid
Mean	83,3% (Valid)	

As presented in the table 2, the validation results from the validators show that the AR-worksheets for teaching descriptive wrting is 'valid', with a little bit of revision and has been tested for feasibility with a score of 83,3%.

Based on the findings above, the results obtained provide an answer to the research question regarding the feasibility of using AR-integrated worksheets for teaching descriptive writing in junior high school.

3. The Students' Responses toward the Use of Augmented Reality-Integrated Worksheets for Teaching Descriptive Writing in Junior High School

This third subsection describes students' responses toward the use of AR-integrated worksheets for teaching descriptive writing in junior high school. The data presented in this subsection were obtained from students' responses to the questionnaire collected in the preliminary feild test and main field test. The data are displayed in the following table.

Table 3. Students' Responses towards the Use of Augmented Reality-Integrated Worksheets for Teaching Descriptive Writing in Junior High School

No.	Statements	Score Obtained	
		Preliminary Field Test	Main Field Test
1.	I enjoy learning English writing descriptive text.	3,63	3,56
2.	There are a variety of activities in the worksheets.	3,81	3,87
3.	The instructions in the worksheet are clear.	3,45	3,65
4.	The tasks presented in the worksheet assist you in completing the writing exercises	3,27	3,68
5.	There are instructions to explain how the exercise should be done.	3,63	3,65
6.	There are interactive activities that require students to use new vocabulary to communicate.	3,63	3,62
7.	The activities facilitate students' use of grammatical rules by creating situations in which these rules are needed.	3,54	3,65
8.	The texts in the worksheets are clear and easy to read.	3,63	3,62
9.	There is a balance between the activities for language and activities for writing skills.	3,72	3,65
10.	Students' worksheet-based augmented reality helps me to participate actively in the learning process.	3,54	3,62
11.	Students' worksheet-based augmented reality provides learning experience by doing.	3,54	3,84
12.	I can effectively organize my ideas while writing descriptive text.	3,6	3,53
13.	I can choose appropriate vocabulary to express my ideas.	3,54	3,46
14.	It makes it easier for me to reach my learning goals.	3,63	3,75
15.	This students' worksheet helps increase my creativity.	3,72	3,75
16.	I feel motivated while writing in English.	3,63	3,68

No.	Statements	Score Obtained	
		Preliminary Field Test	Main Field Test
17.	This students' worksheet-based Augmented Reality is easy to use to support English writing.	3,63	3,75
18.	This Augmented Reality in the worksheet is easy to learn to use.	3,63	3,71
	Score	64,8	66,4
	Mean	3,6	3,68
	Percentage	90%	92,2%
	Criteria	Attractive	

The data in table above indicate that the use of this product in the preliminary field test received a positive response of 90% from 11 respondents. Meanwhile, in the main field test, this received a positive response of 92.2% from 32 respondents. From these findings, it can be concluded that the use of the AR-integrated worksheets for teaching descriptive is proven to be 'attractive' for use in writing lessons in the classroom.

Based on the findings above, the results obtained provide an answer to the research question regarding students' responses toward the use of AR-integrated worksheets for teaching descriptive writing in junior high school.

Discussion

In terms of the process of developing descriptive text worksheets integrated with AR, it was explained that product development was carried out based on the stages of the ADDIE model. The analysis stage is the first crucial step in this development. The results of the literature review indicate that the use of AR-integrated worksheets in English instruction remains very limited and has not been fully optimized, nor has it been widely implemented in science instruction (Parmaxi & Alan, 2020; Zhang et al., 2022 & Wen et al., 2023). This issue is important because the use of conventional, manual worksheets in language instruction may lead to ineffective instruction, particularly for complex materials (Darmawan et al, 2024). Therefore, integrating AR into worksheets as an alternative to enhance effective language instruction. The second is the design stage. Researchers design worksheets in accordance with the pedagogical and technical needs (Fitriyah et al., 2023) identified during the analysis stage. The design process includes setting learning objectives and determining the approach to be used (Stefaniak et al., 2025), as well as organizing the content components, including a variety of writing exercises, clear instructions, and supporting text (Simanjuntak & Purwanti, 2025). The third stage is development. The designed product is then validated by expert validators (Fitriyah et al., 2023) to assess visual presentation and content feasibility. Based on the results, the high level feability of attractive visual presentation, content, and ease of use, indicates that the AR-based worksheets are valid and practical for use in instruction (Puspita et al., 2026; Giawa et al., 2025; Muttaqiin et al., 2024; Idrus et al., 2023). The fourth stage is implementation. During the implementation stage, the product design elements were realized in the form of a book (Syathroh & Rizkiani, 2023). The final stage is evaluation. The evaluation revealed that AR-based worksheets were easy to use, helped improve students' writing skills, and increased their motivation. This findings is consistent with Giawa et al. (2025), Muttaqiin et al. (2024), Tanjung and Louise (2024), and Isna et al. (2024) state that ease of use, an attractive visual presentation, and increased student motivation, interest, skills, and understanding in the

learning process constitute positive student responses to the development of AR-based worksheets.

Regard to the feasibility of the descriptive text worksheets integrated with AR, it was found a high level of innovation and practicality. The feasibility test results from both validators show that the worksheets integrated with AR meet the feasibility criteria, both in terms of their visually appealing and representative presentation and the quality of their content, which is relevant to the learning objectives. The visual elements, including both 2D and 3D displays as well as the variety of writing exercises presented, received higher ratings from the validators. Overall, the AR-integrated worksheets is suitable for use in descriptive text writing instruction to help students organize the writing process into a more structured framework. However, this study differs from those conducted by Giawa et al. (2025), Muttaqiin et al. (2024), and Idrus et al. (2023), particularly regarding the disciplinary focus. Those studies focused more on the field of science, which emphasizes hands-on laboratory activities to apply learned learning theories. In contrast, language learning tends to emphasize verbal and non-verbal communication skills derived from observational activities. This difference in focus demonstrates that disciplinary characteristics influence the needs and utilization of AR in learning.

In terms of students' responses, based on the questionnaire results, there was an increase in positive responses. Assessments regarding perception indicate that the AR-integrated worksheets have a high quality, particularly in terms of providing diverse practice activities, clear instructions, and ease of use. Regarding benefits, the integration of visual elements, both 2D and 3D led students to state that these worksheets are highly interactive and motivating. Additionally, the variety of exercise formats enables students to facilitate meaningful learning through hands-on experience. Previous studies conducted by Giawa et al. (2025), Muttaqiin et al. (2024), Tanjung and Louise (2024), and Isna et al. (2024) state that ease of use, an attractive visual presentation in worksheets integrated by AR, may enhance student motivation and interest, which affects students' skills and depth of understanding in the instructional process. From a theoretical perspective, as outlined by Çeken and Taşkın (2022), these findings support the notion that multimedia-based instruction, delivered through a combination of visual and verbal elements, may help students' cognitive processes to get a deeper understanding rather than words alone. This indicates that worksheets integrated with AR offer significant practical value and effectiveness, thereby making an innovative contribution to learning that enhances student engagement in the process of descriptive texts instruction.

CONCLUSION

The current study contributes to the development of AR-integrated worksheets through a scientific approach to support engaging and interactive in descriptive text instruction. This supports the concept of interactive learning in the 21st century education system. The development of these worksheets utilized the ADDIE model through five stages: analysis, design, development, implementation, and evaluation. During the research process, the researcher collected data from education practitioners and worksheet users from the analysis phase through to the evaluation. It indicates that students, as users, provided positive responses to questionnaire items covering product perception and benefits, suggesting a high level of interactivity and practicality in the worksheets. Additionally, it is important to consider the findings of the validators. Both education practitioners serving as validators provided positive evaluations regarding the product's suitability. However, it was found that there were some revision regarding the design and layout. Therefore, these findings suggest the need for improvements to the developed worksheets with a focus on their visual appearance.

As a recommendation for future research, researchers interested in conducting similar studies in the field of scientific writing are advised to explore various applications of AR in the development of instructional materials for English language learning using the ADDIE model.

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