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Developing Multimodal Learning Media Based On Pop Up Book And Qr Codes For English Language Learning

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Abstract (10 pt)
Penelitian ini bertujuan untuk mengembangkan media pembelajaran multimodal berbasis Pop-Up Book yang diintegrasikan dengan Kode QR untuk pembelajaran kosakata bahasa Inggris pada siswa kelas dua sekolah dasar, serta untuk mengetahui kelayakannya. Penelitian ini mengadaptasi metode Research and Development (R&D) dengan model ADDIE yang terdiri dari tahap Analisis (Analysis), Desain (Design), Pengembangan (Development), Implementasi (Implementation), dan Evaluasi (Evaluation). Subjek penelitian ini adalah 12 siswa kelas dua SDN Banyuraden. Data dikumpulkan melalui observasi, wawancara, angket validasi ahli, dan dokumentasi. Hasil validasi menunjukkan bahwa aspek kebahasaan mencapai 83,33%, aspek materi 85%, dan aspek desain media 84,44%, dengan skor validasi keseluruhan sebesar 84,34%. Hasil tersebut menunjukkan bahwa media yang dikembangkan layak untuk digunakan dalam pembelajaran di kelas dengan revisi kecil. Pada tahap implementasi, siswa menunjukkan respon positif dan berpartisipasi aktif dalam kegiatan pembelajaran menggunakan fitur Pop-Up Book dan Kode QR. Temuan ini menunjukkan bahwa media pembelajaran multimodal berbasis Pop-Up Book terintegrasi Kode QR yang dikembangkan ini layak untuk mendukung pembelajaran kosakata bahasa Inggris bagi siswa kelas dua sekolah dasar.

Keywords: Pembelajaran Multimodal, Pop-Up Book, Kode QR, Kosakata Bahasa Inggris, Pembelajar Usia Dini (Young Learners)

Abstract
This study aimed to develop a multimodal learning media based on a Pop Up Book integrated with QR Codes for English vocabulary learning among second grade elementary school students and to determine its feasibility. This study employed the Research and Development (R&D) method using the ADDIE model, consisting of Analysis, Design, Development, Implementation, and Evaluation. The participants were 12 second-grade students at SDN Banyuraden. Data were collected through observation, interviews, expert validation questionnaires, and documentation. The validation results showed that the language aspect achieved 83.33%, the content aspect 85%, and the media design aspect 84.44%, with an overall validation score of 84.34%, indicating that the developed media was appropriate for classroom use with minor revisions. During the implementation stage, students showed positive responses and actively participated in learning activities using the Pop-Up Book and QR Code features. The findings indicate that the developed multimodal learning media based on a Pop-Up Book integrated with QR codes are appropriate for supporting English vocabulary learning among second-grade elementary school students

Keywords*: Multimodal Learning, Pop-Up Book, QR Codes, English Vocabulary,Young Learners*

1. Introduction

In the current global era, English plays an important role in communication and interaction in various fields, including education, technology, economics, and international communication. English proficiency provides learners with access to global knowledge, international collaboration, and future educational and professional opportunities. Although English is taught as a foreign language (EFL) in Indonesia, its mastery remains important from an early age to prepare students for global communication and future challenges (Rose & McKinley, 2025). At the elementary school level, English learning should emphasize basic language skills, particularly vocabulary, as vocabulary is a foundation for developing other language skills. Therefore, vocabulary learning should involve interactive and engaging activities rather than relying only on memorization (Zucker et al., 2021).

However, English learning in elementary schools may still be dominated by conventional, teacher-centered approaches. Teachers tend to explain and transfer knowledge directly, while students mainly read and memorize vocabulary. This approach can make students passive, bored, and less engaged in learning (Liu & Cho, 2025). Preliminary observations at SDN Banyuraden showed similar conditions. English learning primarily focused on reading and memorizing vocabulary from textbooks, while students had limited opportunities to actively practice English. Students also demonstrated low motivation and confidence, particularly in pronunciation, because they were afraid of making mistakes. In addition, the limited use of interesting and interactive learning media made it difficult for students to maintain attention and develop their vocabulary.

These conditions indicate the need for learning media that are appropriate to the characteristics of elementary school students. Young learners require varied and concrete learning experiences involving different senses. One approach that can address these needs is multimodal learning, which integrates visual, auditory, textual, gestural, and spatial elements to construct meaning during learning (Jewitt & Kress, 2006). In English learning, multimodal approaches can improve students' comprehension and engagement by presenting language through different sensory channels. This approach is particularly relevant to vocabulary learning because students need to recognize word forms and meanings while also learning correct pronunciation.

Creative and interactive learning media can support the implementation of multimodal learning. One suitable media is a pop-up book, which contains three-dimensional elements that appear when pages are opened and provide attractive visual representations of learning content (Rorimpandey, 2023). Pop-up books can attract students' attention, increase motivation, and help them understand and remember vocabulary. Previous research has also shown that pop-up books can make learning more active and support English vocabulary acquisition by connecting words with visual representations (Widarini et al., 2022).

Nevertheless, pop-up books mainly provide visual and tactile experiences and may not sufficiently support students' auditory needs, particularly pronunciation practice. Therefore, QR codes can be integrated into pop-up books to connect physical learning materials with digital resources. QR codes enable students to access supplementary materials such as audio, video, and interactive activities through smartphones or Google Lens(Anggraeni et al., 2022). (Kurniawan et al., 2024)indicates that QR code-based learning can enhance students' motivation, interest, and English vocabulary mastery while supporting flexible and student-centered learning.

Although previous studies have examined pop-up books, QR code-based learning, and multimodal learning, these approaches have mostly been investigated separately. Few studies have integrated visual, auditory, and interactive elements into a single learning product. Furthermore, studies combining QR codes and pop-up books have largely focused on early childhood education rather than second-grade elementary school students and English vocabulary learning specifically.

Based on these gaps, this study focuses on developing multimodal pop-up learning media based on pop-up books and QR codes for English language learning among second-grade students at SDN Banyuraden. The study aims to develop media that suit students' characteristics and examine its feasibility in terms of language, content, and media design. The integration of physical, visual, auditory, and interactive elements is expected to provide more engaging and meaningful English vocabulary learning experiences for elementary school students.

2. Method

This study employed a Research and Development (R&D) design to develop and evaluate a multimodal learning media in the form of a Pop-Up Book integrated with QR Codes for English vocabulary learning among second-grade elementary school students. Research and Development is a method used to develop educational products and evaluate their effectiveness (Branch, 2009). The study adopted the ADDIE instructional design model, consisting of five stages: Analysis, Design, Development, Implementation, and Evaluation, because it provides a systematic framework for developing instructional materials based on learners' needs.

The research was conducted at SDN Banyuraden, Gamping, Sleman, Yogyakarta, Indonesia. The participants were 13 second-grade students, selected using a total sampling technique, since the entire population consisted of one class. The school was selected because English instruction had not yet utilized interactive multimodal learning media, while students demonstrated low motivation and limited vocabulary mastery in English learning.

The development procedure followed the ADDIE model. During the Analysis stage, students' learning needs, classroom conditions, and existing instructional problems were identified through observation and interviews. In the Design stage, the researcher planned the Pop-Up Book content, QR Code integration, learning objectives, multimodal elements (visual, audiovisual, and textual), and classroom activities. The Development stage involved producing the learning media and integrating QR Codes linking to educational videos, pronunciation materials, quizzes, and online learning games. The product was subsequently evaluated by experts in English language teaching and instructional media. During the Implementation stage, the developed media was used in classroom learning, while students' participation and responses were observed. Finally, the Evaluation stage assessed the overall suitability of the developed media for English vocabulary learning.

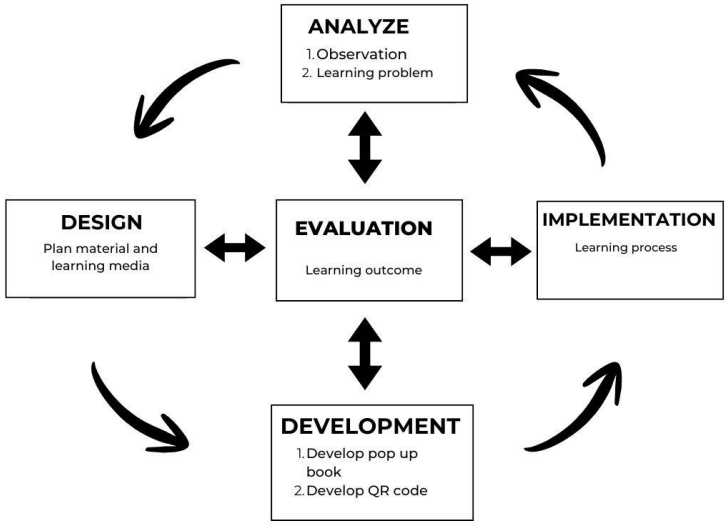


Figure 1. ADDIE Stage

Data were collected through observation, semi-structured interviews, expert validation questionnaires, and documentation. Observation was conducted during the initial analysis and classroom implementation to examine students' learning behaviors and engagement (Kager et al., 2024). Semi-structured interviews were conducted with the English teacher to obtain in-depth information regarding classroom practices and students' learning needs. Product validation was carried out by experts using a Likert-scale questionnaire to evaluate the language, content, and media design aspects of the developed product. Instrument validation followed recommendations emphasizing expert judgment to ensure the relevance and quality of educational research instruments (Khun-inkeeree et al., 2021).

The collected data were analyzed using a qualitative descriptive approach. Data obtained from observations, interviews, documentation, and expert validation questionnaires were descriptively analyzed to describe the development process and determine the feasibility of the multimodal Pop-Up Book integrated with QR Codes.

3. Results and Discussion

a. Result

1) Analysis

The analysis stage aimed to identify students' learning needs, curriculum requirements, and appropriate learning materials for developing a multimodal Pop-Up Book integrated with QR Codes. Classroom observations and interviews with the English teacher at SDN Banyuraden revealed that second-grade students had low motivation and participation in English learning because classroom instruction remained teacher-centered and relied mainly on textbooks and memorization. Consequently, students found it difficult to maintain attention and retain English vocabulary. These findings indicate the need for more interactive and student-centered learning media that can enhance students' engagement and motivation (Wang et al., 2015).

The curriculum analysis showed that the developed media should support the objectives of the Merdeka Curriculum, which emphasizes meaningful and

student-centered learning. Based on curriculum objectives and students' worksheets, Animals and Food & Beverages were selected as the learning topics because they are closely related to students' daily lives and facilitate vocabulary acquisition. These findings became the basis for designing a multimodal Pop-Up Book integrated with QR Codes that supports contextual English vocabulary learning for second-grade elementary school students

2) Design

Based on the findings of the analysis stage, the researcher designed a multimodal Pop-Up Book integrated with QR Codes to support English vocabulary learning for second-grade students at SDN Banyuraden. The media was developed around two learning topics, Animals and Food & Beverages, which were selected based on students' needs and the objectives of the Merdeka Curriculum. The design incorporated multimodal elements, including colorful three-dimensional illustrations, simple vocabulary, short instructions, and interactive learning activities to create a more engaging and student-centered learning experience.

In addition, QR Codes were embedded throughout the Pop-Up Book to provide access to supplementary digital resources, such as pronunciation audio, educational videos, interactive quizzes, and online games. This integration was intended to support vocabulary acquisition through multiple modes of representation while enhancing students' engagement during the learning process.

3) Development

During the development stage, the initial design was transformed into a multimodal Pop-Up Book integrated with QR Codes for second-grade students at SDN Banyuraden. The final product, entitled Joyful English Learning, was developed based on the selected learning topics, namely Animals and Food & Beverages. The media combined colorful three-dimensional illustrations, simple vocabulary, short instructions, and interactive learning activities to facilitate English vocabulary acquisition. To enrich students' learning experiences, QR Codes were embedded throughout the book, providing access to pronunciation audio, educational videos, vocabulary songs, interactive PowerPoint activities, and Quizizz-based exercises. This integration enabled students to learn vocabulary through visual, textual, audiovisual, and interactive modes.

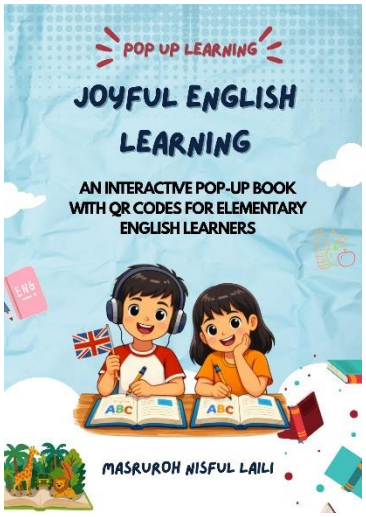


Figure 2. Cover of The Product Development

To ensure the quality of the developed media, expert validation was conducted involving a language expert, a content expert, and a media design expert. The language expert awarded a score of 83.33%, the content expert 85.00%, and the media design expert 84.44%. The overall validation score reached 84.34%, indicating that the developed media was appropriate for classroom implementation after minor revisions.

Validator	**Score**	**Maximum Score**	**Percentage**	**Category**
Language Expert	25	30	83,33%	Appropriate
Content Expert	34	40	85%	Highly Appropriate
Media Design Expert	38	45	84,44%	Appropriate
Overall	97	115	84,34%	Appropriate

Based on the experts' feedback, several revisions were made to improve the quality of the media. The revisions included enriching vocabulary items, correcting minor grammatical and spelling errors, refining the cover design, adding contextual descriptions to several vocabulary pages, improving the functionality of the pop-up elements, and optimizing the accessibility of the QR Codes. These improvements enhanced the instructional quality, visual appearance, and usability of the multimodal Pop-Up Book before its implementation in the classroom.



Figure 3. Revision of The Product

4) Implementation

The developed multimodal Pop-Up Book integrated with QR Codes was implemented in a second-grade class at SDN Banyuraden through four classroom meetings. The implementation focused on introducing and reinforcing English vocabulary related to Animals and Food & Beverages using both the printed Pop-Up Book and its integrated digital resources. Students learned vocabulary through colorful illustrations, pronunciation practice, educational videos, vocabulary songs, interactive PowerPoint activities, online quizzes, and games accessed by scanning the QR Codes.



Figure 4. Implementation in the classroom

Throughout the implementation, students actively participated in identifying, pronouncing, and recalling English vocabulary. They showed enthusiasm when interacting with the three-dimensional pop-up features and demonstrated high engagement while accessing the QR Code-based learning resources. The combination of printed and digital media created a more interactive learning environment and encouraged students to participate more confidently during classroom activities.

Students also expressed positive responses toward the developed media. They stated that the colorful illustrations and three-dimensional pop-up features made English learning more interesting and helped them remember vocabulary more easily. Furthermore, students enjoyed accessing videos, songs, and interactive games through the QR Codes, which increased their motivation and participation during the learning process. These findings indicate that the developed media successfully promoted meaningful vocabulary learning and supported active student engagement in the English classroom.

5) Evaluation

The evaluation stage was conducted to determine the quality, feasibility, and effectiveness of the developed multimodal Pop-Up Book integrated with QR Codes. The evaluation was based on three sources of data: expert validation, classroom implementation, and students' responses. The expert validation results showed that the developed media achieved an overall score of 84.34%, indicating that it was appropriate for classroom use after minor revisions. The revisions improved the quality of the media by refining the vocabulary, language accuracy, visual design, and QR Code integration.

The implementation results demonstrated that the developed media successfully supported English vocabulary learning by promoting active student participation and creating a more engaging learning environment. Furthermore, students expressed positive responses toward the media, stating that the colorful illustrations, three-dimensional pop-up features, and QR Code-based learning activities made vocabulary learning more enjoyable and easier to understand. Overall, these findings indicate that the multimodal Pop-Up Book integrated with QR Codes is a feasible and effective learning medium for supporting English vocabulary learning among second-grade elementary school students.

b. Discussion

The findings of this study demonstrate that the development of a multimodal Pop-Up Book integrated with QR Codes successfully addressed the learning needs of second-grade students in English vocabulary learning. The analysis stage revealed that students showed low motivation and participation because classroom instruction remained teacher-centered and relied mainly on textbooks and memorization. These findings indicate that young learners require more interactive and meaningful learning experiences. Therefore, the developed media was designed to create a more student-centered learning environment by combining printed and digital learning resources. This finding supports Trisna et al. (2025), who reported that interactive learning media can improve students' motivation, participation, and vocabulary acquisition.

The curriculum analysis also confirmed that the selected learning topics, Animals and Food & Beverages, were appropriate for second-grade students and aligned with the learning outcomes of the Merdeka Curriculum. Selecting familiar and contextual topics enabled students to connect new vocabulary with their daily experiences, making learning more meaningful and easier to understand. This finding is consistent with the principles of the Merdeka Curriculum, which emphasize contextual and student-centered learning.

Furthermore, the developed Pop-Up Book integrated with QR Codes successfully combined visual, textual, audiovisual, and interactive elements into a

single instructional medium. The integration of colorful three-dimensional illustrations with digital resources, including pronunciation audio, educational videos, vocabulary songs, and interactive quizzes, provided students with multiple ways to learn vocabulary. This finding reflects the principles of multimodal learning, which emphasize presenting information through multiple modes to enhance students' understanding and engagement.

The expert validation results further demonstrated that the developed media was appropriate for classroom implementation, achieving an overall validation score of 84.34% after minor revisions. The suggestions provided by the language, content, and media experts contributed to improving the quality of the product, particularly in terms of vocabulary presentation, language accuracy, visual appearance, and media functionality. These findings indicate that expert validation plays an essential role in ensuring the instructional quality and feasibility of educational media before classroom implementation.

The implementation stage showed that the developed media promoted active student participation and positive learning experiences. Students actively engaged in vocabulary learning through the Pop-Up Book and QR Code-based digital resources, while interview results indicated that they enjoyed the colorful illustrations, three-dimensional features, and interactive learning activities. These findings suggest that integrating printed and digital media can enhance students' motivation, engagement, and vocabulary learning. Overall, the developed multimodal Pop-Up Book integrated with QR Codes can be considered an appropriate learning medium for supporting English vocabulary learning among elementary school students.

This study contributes to English language teaching by providing an innovative multimodal learning medium that integrates printed and digital resources through QR Codes. Unlike conventional vocabulary media, the developed Pop-Up Book offers interactive learning experiences that encourage active participation and support student-centered learning. Therefore, the developed media may serve as an alternative instructional resource for teaching English vocabulary to young learners in elementary schools.

4. Conclusion

This study successfully developed a multimodal learning media in the form of a Pop-Up Book integrated with QR Codes for English vocabulary learning among second-grade elementary school students using the ADDIE model. The expert validation results showed an overall feasibility score of 84.34%, indicating that the developed media is appropriate for classroom implementation after minor revisions. During the implementation stage, students actively participated in learning activities and demonstrated positive responses toward the use of the media.

The integration of three-dimensional visual elements with QR Code-based digital resources created a more engaging, interactive, and student-centered learning experience. Therefore, the developed multimodal Pop-Up Book integrated with QR Codes can serve as an effective and feasible instructional medium to support English vocabulary learning for young learners.

Future studies are recommended to examine the effectiveness of this multimodal learning media with larger samples and different educational contexts to further explore its impact on students' English language achievement.

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