



Developing Interactive Speaking Flashcards Integrated with Revised Bloom's Taxonomy for Junior High School Students

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Abstract

Speaking remains a challenging skill for junior high school students in English as a Foreign Language (EFL) context, as classroom activities often emphasize lower-order cognitive tasks and provide limited support for structured oral expression. This study aimed to develop interactive speaking flashcards integrated with Revised Bloom's Taxonomy to facilitate HOTS-oriented speaking tasks, specifically analyzing (C4), evaluating (C5), and creating (C6). Using a Research and Development (R&D) approach, the study produced three types of flashcards, story/scenario, multiple-choice, and game-based, designed to guide students through cognitively structured speaking activities. The product was validated by experts and implemented in a small-scale classroom tryout. Expert validation results showed that the flashcards achieved valid to very valid categories, with mean scores of 3.47 (language), 4.53 (media), and 4.20 (content), supported by acceptable content validity based on Aiken's V. Classroom implementation indicated that the flashcards were practically usable within a 25-minute lesson, as all implementation indicators were fulfilled (100% observation score). Students' responses, measured through a Self-Determination Theory-based questionnaire, showed high agreement across autonomy (M = 3.93), competence (M = 3.92), and relatedness (M = 3.90). Overall, the findings indicate that the developed flashcards are feasible and practical instructional media for supporting structured, HOTS-oriented speaking tasks in junior high school EFL classrooms.

1. Introduction

Speaking is widely recognized as one of the most challenging yet essential skills for learners in English as a Foreign Language (EFL), particularly at the junior high school level (Mustamir, 2024). Speaking requires learners to produce language spontaneously, organize ideas in real time, and communicate meaning effectively in social interaction. (Brown, 2006) states that speaking is a complex skill involving linguistic competence, fluency, and communicative intent, which often creates difficulties for learners with limited vocabulary and low confidence. In Indonesian EFL classrooms, speaking anxiety and low self-efficacy remain persistent issues that negatively affect students' willingness to communicate and participate orally (Afriani, 2024).

In addition to linguistic and psychological challenges, classroom speaking instruction is frequently characterized by activities emphasizing lower-order cognitive skills. Students are commonly asked to repeat dialogues, memorize expressions, or provide short factual responses, leaving limited space for analytical or evaluative oral production. According to (Krathwohl, 2001), effective learning should progress beyond remembering and understanding toward higher-order thinking processes, namely analyzing, evaluating, and creating. However, recent studies report that teachers still face difficulties in implementing HOTS-oriented speaking instruction due to limited instructional media, insufficient time, and a lack of pedagogical support (Ngoc & Thanh, 2023). This gap becomes more evident within the context of *Kurikulum Merdeka*, which explicitly promotes critical thinking, creativity, and meaningful communication as core learning outcomes.

A growing body of research has highlighted the role of instructional media in facilitating speaking development by creating supportive and engaging learning environments. Flashcards have been widely used as visual aids to support vocabulary acquisition and basic speaking practice. Previous studies indicate that flashcards can improve students' vocabulary mastery, speaking performance, and learning motivation (Hasrah, 2021; Luthfillah, 2023; Pramadanti, 2023; Ridwan & Nurhaeni, 2021). More recent research suggests that interactive and visually supported media can reduce speaking anxiety and foster students' confidence and engagement in oral activities (Mustamir, 2024). Nevertheless, most flashcard-based studies focus primarily on vocabulary recall or guided speaking drills, rather than systematically incorporating higher-order cognitive processes into speaking tasks.

Revised Bloom's Taxonomy offers a well-established framework for structuring learning objectives across different cognitive levels. The higher levels of the taxonomy, analyzing (C4), evaluating (C5), and creating (C6), are particularly relevant to speaking instruction, as they require learners to interpret situations, judge ideas or opinions, and produce original spoken responses. Research on HOTS-based instructional design emphasizes that cognitive frameworks are most effective when they are explicitly embedded into learning media and tasks, rather than treated as abstract curricular goals (Lestari et al., 2025). In speaking contexts, HOTS-oriented tasks may involve analyzing communicative scenarios, evaluating arguments during discussion, or creating spoken solutions to contextual problems. Despite their pedagogical value, teachers often struggle to operationalize these cognitive demands in classroom speaking activities due to limited time and practical media support (Hidayat & Lestari, 2023).

To address this gap, the present study aims to develop interactive speaking flashcards integrated with Revised Bloom's Taxonomy for junior high school students. The developed flashcards are designed to guide learners through structured speaking

tasks targeting analyzing (C4), evaluating (C5), and creating (C6) levels. Unlike traditional flashcards that primarily emphasize vocabulary memorization, these interactive speaking flashcards incorporate problem-based scenarios, evaluative prompts, and creative speaking challenges that encourage learners to organize ideas, justify opinions, and generate original oral responses collaboratively. Recent studies on structured and guided speaking activities indicate that such designs can enhance students' engagement, confidence, and participation even within limited instructional time (Mulki et al., 2025). Accordingly, this study addresses one research question: "How is the development process of interactive speaking flashcards integrated with Revised Bloom's Taxonomy conducted for junior high school students?"

The novelty of this study lies in the explicit integration of Revised Bloom's Taxonomy into the design of interactive speaking flashcards, positioning the product not only as a speaking medium but also as a pedagogical tool for promoting higher-order thinking in EFL classrooms. Practically, this study is expected to provide English teachers with a feasible instructional medium to implement HOTS-oriented speaking activities within real classroom constraints

2. Method

This study employed a Research and Development (R&D) design with the primary objective of developing interactive speaking flashcards integrated with Revised Bloom's Taxonomy for junior high school students. The R&D approach was selected because the focus of the study was not to compare learning outcomes between groups, but to design, validate, and examine the feasibility of an instructional product for classroom use (Branch, 2009). The development process followed systematic stages, including needs analysis, product design, expert validation, revision, and a small-scale classroom tryout. Through these stages, the study aimed to ensure that the developed flashcards were theoretically grounded, contextually relevant, and practically applicable for EFL speaking instruction, particularly in facilitating higher-order thinking skills at the analyzing (C4), evaluating (C5), and creating (C6) levels (Judijanto et al., 2024).

The participants of this study consisted of junior high school students and expert validators selected using purposive sampling. This sampling technique was applied to ensure that participants met specific criteria relevant to the research objectives. Student participants were selected based on teacher recommendations, which ensured that the class represented typical EFL learners in terms of speaking ability and classroom characteristics.

The needs analysis stage involved 96 junior high school students who were asked to respond to a questionnaire designed to identify their speaking difficulties, learning needs, and preferences related to speaking activities. For the implementation stage, the developed flashcards were tried out in one eighth-grade classroom consisting of 32 students. The classroom was in an urban junior high school context. The selection of this class was influenced by accessibility, teacher approval, and scheduling feasibility, particularly due to limited instructional time during the school holiday period. As the study aimed to examine feasibility and practicality rather than effectiveness, no control or comparison group was involved.

Expert validation was conducted to evaluate the feasibility and quality of the developed interactive speaking flashcards before classroom implementation. Three experts with academic backgrounds and professional experience in English education

were involved in the validation process. Each expert had a specific area of responsibility to ensure comprehensive evaluation.

M. Nawawi, M.Pd., served as the language expert and evaluated linguistic accuracy, clarity of instructions, appropriateness of vocabulary, and grammatical correctness. Istiqomah Nur Rahmawati, M.Pd., acted as the media expert and assessed the visual design, layout consistency, interactivity, readability, and overall usability of the flashcards. Anna Putri Liza, M.Pd., functioned as the content expert and evaluated content relevance, alignment with Revised Bloom's Taxonomy (C4–C6), and suitability of the speaking tasks for junior high school students.

Later on, all three experts participated in validating three aspects of the product in the development stage: media, material (content), and practicality. As a result, a total of nine validation results were obtained (three experts assessing three aspects). The feedback provided by the experts was used as the basis for revising and refining the product prior to classroom tryout.

Several research instruments were employed to collect data relevant to the development and evaluation of the interactive speaking flashcards.

1. The needs analysis questionnaire was administered to 96 students to gather information about students' speaking challenges, learning preferences, and perceptions of existing speaking activities. The questionnaire used a five-point Likert scale ranging from 1 (strongly disagree) to 5 (strongly agree), allowing students to express the degree of their agreement with each statement.
2. Expert validation sheets were used to assess the feasibility of the flashcards in terms of media, material, and practicality. Each validation sheet consisted of indicators aligned with the expert's area of evaluation and was rated using a Likert-scale format. The detailed items and indicators of the validation instruments will be provided in the appendix.
3. A student response questionnaire was administered after the classroom tryout to examine students' perceptions of the practicality, attractiveness, and clarity of the flashcards. The questionnaire was adapted from relevant frameworks related to speaking activities and learning motivation, with items organized according to predefined indicators.
4. In addition, a classroom observation sheet was used to document students' participation, engagement, and interaction during the implementation of the flashcards. The observation focused on students' speaking behaviors during activities targeting analyzing, evaluating, and creating levels.

Data collection was conducted in a sequential manner following the development stages. Initially, the needs analysis questionnaire was distributed to students to identify existing problems and learning needs related to speaking instruction. The results of this stage informed the design and content of the interactive speaking flashcards.

After the product was designed, expert validation was carried out to evaluate its feasibility and practicality. The product was revised based on the experts' suggestions and feedback to improve its quality. Subsequently, a small-scale classroom tryout was conducted in one eighth-grade classroom consisting of 32 students.

The implementation was carried out in a single meeting lasting 1 × 25 minutes. This limited duration was due to school scheduling constraints during the school holiday period, which restricted the availability of instructional time. Therefore, the classroom

tryout was intended to examine the practicality and initial applicability of the product rather than to measure its instructional effectiveness over time.

The data obtained from this study were analyzed using descriptive analysis. Quantitative data from questionnaires and expert validation sheets were analyzed by calculating the mean score for each aspect using the formula:

Formula for Mean Score

$$X = \frac{\sum x}{N}$$

The resulting mean scores were interpreted using predetermined category thresholds to classify the level of feasibility and practicality, such as very high, high, moderate, or low. The detailed interpretation criteria are presented in the appendix. To examine content validity, expert validation data were further analyzed using Aiken's V formula. The Aiken's V values were interpreted based on established cut-off criteria to determine whether each aspect of the product met acceptable validity standards.

Formula for Aiken's Value

$$v = \frac{\sum s}{n(c - 1)}$$

Table 1. Indicators for Aiken's Value

V	Interpretation
≥ 0.80	Very Valid
0.60 - 0.79	Valid
< 0.60	Revise

Qualitative data from classroom observations were analyzed descriptively by summarizing observable student behaviors related to participation, engagement, and oral interaction. To enhance the reliability of the observation data, inter-rater reliability was applied by involving more than one observer. Observers discussed and compared their observations to reduce subjectivity and ensure consistency in interpretation.

Ethical considerations were carefully addressed throughout the research process. Formal permission to conduct the study was obtained from the school authorities and the English teacher. Students were informed about the purpose and procedures of the study prior to participation. Their participation was voluntary, and informed consent was obtained before data collection. To protect participants' privacy, students' identities were kept confidential, and all collected data were used solely for research purposes.

3. Result

The findings of this study are presented based on the stages of the ADDIE development model, namely analysis, design, development, implementation, and evaluation. This structure allows the results to reflect the systematic process of developing interactive speaking flashcards integrated with Revised Bloom's Taxonomy. Each stage contributes distinct evidence regarding the feasibility, validity, and practicality of the developed product for junior high school speaking instruction.

Analysis Stage

The needs analysis questionnaire was administered to 96 junior high school students. The results indicated that students experienced considerable challenges in speaking English, particularly in expressing ideas fluently, responding to contextual questions, and participating actively in classroom speaking activities. The mean scores of most questionnaire items fell within the high agreement category, indicating that students strongly perceived speaking as a difficult skill and expressed a need for more engaging and supportive speaking activities.

Furthermore, students showed high agreement toward statements related to the lack of varied instructional media in speaking lessons. Many students agreed that speaking activities were often limited to repeating dialogues or answering short questions, which did not sufficiently encourage them to analyze situations, evaluate opinions, or create original spoken responses. This finding suggests that existing speaking instruction had not fully addressed higher-order cognitive processes.

Qualitative input obtained from the English teacher supported the results of the students' needs analysis. The teacher reported that many students were hesitant to speak English due to limited vocabulary, low confidence, and fear of making mistakes. Speaking activities were often dominated by a small number of students, while others tended to remain passive unless provided with clear guidance. The teacher also noted that existing speaking materials mostly emphasized memorization and repetition because of time constraints and limited instructional resources, which restricted opportunities for students to engage in analytical or creative speaking tasks. Therefore, the teacher highlighted the need for practical and structured instructional media that could guide students step by step in expressing ideas orally and encourage broader student participation during speaking activities.

In addition, students demonstrated high to moderate agreement toward the need for interactive and visually supported media. This result indicates that students were receptive to learning media that could help them organize ideas, reduce anxiety, and increase confidence during speaking activities. Overall, the needs analysis results reflect a strong demand for instructional media that supports both speaking practice and higher-order thinking skills.

Table 2. Needs Analysis Results

Item	Mean	Interpretation	Item	Mean	Interpretation
1	3.78	High Agreement	11	3.64	High Agreement
2	3.56	High Agreement	12	3.81	High Agreement
3	3.53	High Agreement	13	3.62	High Agreement
4	3.59	High Agreement	14	3.61	High Agreement
5	3.71	High Agreement	15	3.71	High Agreement
6	3.80	High Agreement	16	3.45	High Agreement
7	3.70	High Agreement	17	3.63	High Agreement
8	3.88	High Agreement	18	3.75	High Agreement

9	3.67	High Agreement	19	3.68	High Agreement
10	3.51	High Agreement	20	3.84	High Agreement

The indicators in the needs analysis stage were determined based on students' levels of agreement toward statements related to speaking difficulties, learning needs, and preferences for HOTS-oriented speaking activities. The interpretation of students' responses followed Riduwan (2013) scale for measuring research variables, which categorizes mean scores into levels of agreement. The scale was used to interpret students' perceptions descriptively rather than to determine validity. Accordingly, the levels of agreement were classified as very high, high, moderate, low, or very low agreement. These categories served as indicators of the urgency and relevance of developing interactive speaking flashcards integrated with higher-order thinking skills.

Table 3. Indicators for Needs Analysis Interpretation

Interpretation	
Interval Mean Score	Category
4,21 - 5,00	Very High Agreement
3,41 - 4,20	High Agreement
2,61 - 3,40	Moderate Agreement
1,81 - 2,60	Low Agreement
1,00 - 1,80	Very Low Agreement

Design Stage

The interactive speaking flashcards were designed in a two-sided format consisting of visual stimuli on the front side and guided speaking prompts on the reverse side. The visual elements included simple cartoon-style illustrations representing familiar real-life contexts to support students' comprehension and reduce cognitive load. Clear typography, balanced color contrast, and concise instructions were applied to ensure readability and usability for junior high school students. Each flashcard was thematically connected to environmental awareness contexts, such as waste management, environmental problems, and daily eco-friendly behaviors.

These themes were selected to provide meaningful contexts that encourage students to generate ideas, express opinions, and engage in higher-order thinking during speaking activities.

The design stage resulted in three distinct types of interactive speaking flashcards, each mapped to specific speaking tasks aligned with the higher levels of Revised Bloom's Taxonomy.

1. The Story/Scenario flashcards were designed to support analyzing-level (C4) speaking tasks. These flashcards presented short contextual scenarios that required students to identify problems, analyze situations, and explain causes or consequences orally. Students were guided to organize ideas and respond using structured prompts, encouraging analytical speaking rather than simple description.
2. The multiple-choice flashcards were developed to address evaluating-level (C5) speaking tasks. Each card provided a question followed by several response options representing different viewpoints or solutions. Students were required to choose an option and justify their choice orally, fostering evaluative thinking, reasoning, and spoken argumentation.
3. The Game-Based flashcards targeted creating-level (C6) speaking tasks. These flashcards incorporated interactive challenges, such as role-play, idea generation, or collaborative problem-solving activities. Students were encouraged to produce original spoken responses, create dialogues, or propose solutions based on given prompts. This design aimed to stimulate creativity and fluency while maintaining structured guidance.

Picture 1. Flashcards Prototype



In the design stage, the developed interactive speaking flashcards were evaluated using an expert judgment scoring system. A five-point Likert scale was employed to allow experts to assess each indicator in detail. The scale ranged from 1 (very poor) to 5 (very good), where higher scores indicated a higher level of suitability, clarity, and feasibility of the flashcard design. This scoring scale enabled experts to provide nuanced evaluations of the product in terms of media appearance, content quality, and practical use in the classroom. The use of a 1–5 scale also facilitated quantitative analysis through mean score calculation.

Table 3. Design Stage Expert Validation Results

Language Aspects		Media Aspects		Content Aspects	
Statement	Score	Statement	Score	Statement	Score
1	4	1	5	1	4
2	5	2	5	2	4
3	4	3	4	3	4
4	3	4	5	4	4
5	3	5	5	5	4
6	2	6	5	6	5
7	2	7	5	7	5
8	4	8	5	8	4
9	3	9	4	9	4
10	3	10	5	10	4
11	4	11	5	11	5
12	2	12	3	12	4
13	5	13	5	13	4
14	5	14	5	14	4
15	3	15	5	15	4
Total Score	52	Total Score	68	Total Score	63
Mean Score	3,47	Mean Score	4,53	Mean Score	4,2
Category	Valid	Category	Very Valid	Category	Valid

The results of expert validation at the design stage indicate that the interactive speaking flashcards met acceptable validity standards across all evaluated aspects. The language aspect obtained a mean score of 3.47, which falls into the valid category, indicating that the linguistic features and clarity of instructions were generally appropriate, although minor revisions were suggested. The media aspect achieved the highest evaluation with a mean score of 4.53, categorized as very valid, suggesting that the visual design, layout, and interactivity of the flashcards were highly suitable for junior high school learners.

Meanwhile, the content aspect obtained a mean score of 4.20, which falls into the valid category, indicating that the speaking tasks and alignment with Revised Bloom's Taxonomy were appropriate and relevant. Overall, these findings demonstrate that the flashcard design was valid and feasible for further development and classroom implementation, with only minor refinements required.

Table 4. Indicators for Design Stage Validation

Interpretation	
Interval Mean Score	Category
4,21 - 5,00	Very Valid
3,41 - 4,20	Valid
2,61 - 3,40	Fairly Valid
1,81 - 2,60	Less Valid
1,00 - 1,80	Invalid

Development Stage

At the development stage, expert validation was conducted to examine the content validity of the revised interactive speaking flashcards. The validation results were analyzed using Aiken's V coefficient to determine the degree of agreement among experts regarding the relevance of each item. In this study, an Aiken's V value of 0.67 or higher was considered acceptable, as this threshold indicates sufficient expert agreement for content validity when involving three validators. Values equal to or above this cut-off suggest that the evaluated aspects are appropriate and relevant for instructional use.

The validation results showed that the flashcards met acceptable validity standards across all assessed aspects. For the media aspect, expert judgments resulted in four indicators categorized as very valid and one indicator categorized as valid, indicating that the visual design, layout, and usability of the flashcards were highly appropriate with only minor areas requiring refinement. In the material aspect, the results indicated three valid indicators and two very valid indicators, suggesting that the speaking tasks and their alignment with Revised Bloom's Taxonomy were suitable and relevant for junior high school students.

Meanwhile, the practicality aspect showed three very valid indicators and three valid indicators, reflecting experts' agreement that the flashcards were practical and feasible for classroom implementation within real instructional constraints.

Table 5. Development Stage Expert Validation Results

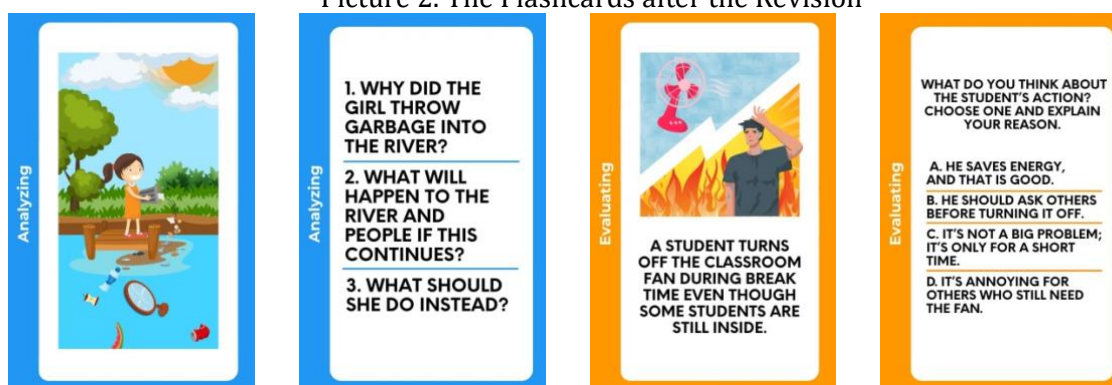
No.	Major Aspects	Assessment Aspects	Exp 1	Exp 2	Exp 3	Σ	S	V	Interpretation
1	Media Expert Validation Results	Visual Appeal & Color Harmony	5	5	5	15	12	1.2	Very Valid
2		Readability & Typography	4	4	5	13	10	0.8	Very Valid
3		Layout & Balance	5	5	5	15	12	1	Very Valid
4		Material & Size Feasibility	3	5	4	12	9	0.75	Valid
5		Engagement & Innovation	4	5	4	13	10	0.8	Very Valid
1	Material Expert	Objective & Curriculum Alignment	5	4	4	13	10	0.8	Very Valid

2	Validation Results	Relevance & Authenticity	3	4	4	1 1	8	0.6 7	Valid
3		Cognitive Appropriateness	4	4	4	1 2	9	0.7 5	Valid
4		Accuracy & Integration	4	4	4	1 2	9	0.7 5	Valid
5		Depth, Speaking Relevance, & Feasibility	4	4	4	1 2	9	0.7 5	Valid
1	Practicality Expert Validation Results	Ease of Use & Clarity of Instruction	4	4	5	1 3	1 0	0.8 3	Very Valid
2		Time Efficiency & Classroom Management	3	3	5	1 1	8	0.6 7	Valid
3		Student Engagement & Motivation	4	3	4	1 1	8	0.6 7	Valid
4		Teacher Support & Flexibility	3	4	4	1 1	8	0.6 7	Valid
5		Reusability & Implementation Feasibility	4	5	4	1 3	1 0	0.8 3	Very Valid
6		Clarity of Instruction (Students)	5	4	4	1 3	1 0	0.8 3	Very Valid

In addition to quantitative validation results, experts provided specific qualitative feedback that informed further revisions of the product. One major suggestion concerned the font color of the command text on the back side of each flashcard. Initially, the command text used colored fonts that reduced readability; therefore, based on expert recommendations, the font color was revised to black to enhance clarity and visibility.

Another revision involved the position of the text on the flashcards. The original design placed the text in a center-aligned format, which experts considered less effective for reading longer instructions. Consequently, the text alignment was revised from center-aligned to left-aligned, making the instructions easier to follow and improving overall readability. These revisions were implemented to ensure that the flashcards were not only visually appealing but also functionally effective and user-friendly for classroom use.

Picture 2. The Flashcards after the Revision





Implementation Stage

The implementation stage was conducted through a small-scale classroom tryout to examine the practicality of the interactive speaking flashcards in an authentic classroom context. The tryout was carried out in one eighth-grade class during a single session lasting 1 × 25 minutes, adjusted to the available instructional time. The English teacher acted as the instructor, while the researcher served as an observer. Students were divided into four small groups, each consisting of several students, and engaged in structured speaking tasks using the flashcards.

Quantitative data from classroom observation were collected using a yes/no checklist consisting of 10 indicators related to the implementation process, including clarity of instructions, smooth use of flashcards, student participation in group tasks, and completion of speaking activities. The observation results showed that all 10 indicators were marked “yes”, with 0 indicators marked “no”, resulting in an obtained score of 10 out of a maximum score of 10 (100%), which falls into the very good category. This finding indicates that the flashcards were practically implemented during the classroom tryout without procedural or technical difficulties.

Table 6. Observation Checklist Results

Description	Result
Total Indicators	10
Total "Yes" Responses	10
Total "No" Responses	0
Maximum Score	10
Obtained Score	10
Percentage	100%
Interpretation	Very Good

Field notes from the observation provided further evidence of classroom participation during the speaking activities. Of the four groups, three groups actively participated in the speaking tasks, while one group appeared less enthusiastic and required additional teacher prompts to complete the tasks. During the evaluating and creating activities, students were observed taking turns to speak within their groups. For example, when responding to a Multiple-Choice flashcard, one student stated, “I choose option B because throwing trash in the river can cause flooding and pollution,” demonstrating the use of oral reasoning based on the provided prompt.

Overall, the implementation results suggest that the interactive speaking flashcards were practically applicable for classroom use within limited instructional time. Although variations in group participation were observed, the structured tasks and clear prompts allowed most groups to complete the speaking activities as intended during the 25-minute session.

Evaluation Stage

The evaluation stage examined students' responses toward the use of the interactive speaking flashcards following the classroom tryout. A summative evaluation questionnaire adapted from Self-Determination Theory (SDT) was administered to capture students' perceptions across three dimensions: autonomy, competence, and relatedness. The questionnaire employed a five-point Likert scale, ranging from 1 (strongly disagree) to 5 (strongly agree), and was analyzed descriptively.

Table 4. Summative Evaluation Results

	Statement	Mean	Standard Deviation	Percentage
Autonomy	1	4.28	0.81	85.63%
Autonomy	2	4.13	0.87	82.5%
Autonomy	3	3.72	0.85	74.38%
Autonomy	4	3.78	0.75	75.62%
Autonomy	5	3.88	1.04	76.88%
Autonomy	6	3.81	1.04	76.25%
	Total	3.93	0.89	78.6%
Competence	7	3.94	1.16	76.88%
Competence	8	4.28	1.16	85.63%
Competence	9	3.91	0.86	78.13%
Competence	10	3.66	0.70	73.13%
Competence	11	3.94	0.88	78.75%
Competence	12	3.75	0.92	75%
Competence	13	3.97	0.86	79.38%
	Total	3.92	0.93	78.4%
Relatedness	14	3.88	0.79	77.5%
Relatedness	15	3.94	0.80	78.75%
Relatedness	16	3.94	1.04	77.5%
Relatedness	17	3.72	1	74.38%
Relatedness	18	3.88	0.79	77.5%
Relatedness	19	3.91	0.86	78.13%
Relatedness	20	4	0.95	80%
	Total	3.90	0.89	78%

Table 5. Reliability Test Results

Cronbach's Alpha	N of Items
,950	20

As presented in Table 4, the autonomy dimension, consisting of six items, obtained a total mean score of 3.93 with a standard deviation of 0.89, resulting in a percentage score of 78.6%. This result indicates that students generally agreed with statements related to opportunities to express ideas and participate in speaking tasks during the use of the flashcards. The competence dimension, measured through seven items, achieved a total mean score of 3.92 with a standard deviation of 0.93 and a percentage score of 78.4%, suggesting that students perceived the speaking tasks as understandable and manageable when using the flashcards.

Meanwhile, the relatedness dimension, which included seven items, obtained a total mean score of 3.90, a standard deviation of 0.89, and a percentage score of 78.0%, indicating students' agreement with statements related to interaction and collaboration during group-based speaking activities.

Overall, the descriptive results across all three dimensions demonstrate that students' responses toward the interactive speaking flashcards fell within the high agreement category. These findings suggest that the flashcards were perceived as practically usable and appropriate for facilitating structured speaking activities in the classroom context.

4. Discussion

This study contributes to the field of EFL instructional media development by demonstrating how interactive speaking flashcards explicitly integrated with higher levels of Revised Bloom's Taxonomy (C4–C6) can be designed, validated, and practically implemented in junior high school classrooms. Unlike many previous flashcard-based studies that primarily focused on vocabulary acquisition or basic speaking practice (Pramadanti, 2023; Ridwan & Nurhaeni, 2021), this study extends the pedagogical function of flashcards by embedding analyzing, evaluating, and creating prompts into structured speaking tasks. The main contribution of this study lies not in measuring learning gains, but in offering a development-oriented product that operationalizes higher-order thinking within speaking instruction in a feasible and classroom-oriented manner.

Compared to earlier flashcard studies that emphasized memorization, guided repetition, or controlled speaking drills, the developed flashcards in this study facilitated cognitively demanding speaking activities. For instance, at the analyzing (C4) level, students were required to identify problems and explain causes within given scenarios, such as analyzing environmental issues depicted on the flashcards. At the evaluating (C5) level, students were prompted to select options and justify their choices orally, as illustrated by student responses explaining the consequences of certain actions. Meanwhile, creating (C6) tasks encouraged students to propose solutions or generate original spoken ideas collaboratively. These examples indicate that the integration of HOTS prompts supported more structured and purposeful speaking tasks compared to conventional speaking activities reported in previous studies.

The findings also demonstrate how Revised Bloom's Taxonomy can be applied not merely as a framework for learning objectives, but as a design principle embedded directly into instructional media. This extends the application of Bloom's Taxonomy from abstract curricular planning to concrete classroom artifacts that guide students' oral production step by step. In this sense, the flashcards functioned as cognitive scaffolds, helping students organize ideas during speaking tasks rather than relying solely on teacher explanation. This design-oriented application of Bloom's Taxonomy offers a

practical contribution to teachers who often struggle to translate HOTS requirements into implementable speaking activities.

The evaluation results based on Self-Determination Theory (SDT) further illuminate how the flashcards supported structured speaking activities. The high agreement scores in the autonomy dimension suggest that students perceived opportunities to express ideas and make choices during group speaking tasks, which aligns with the open-ended nature of evaluating and creating prompts. The competence dimension was supported through clear instructions, visual cues, and step-by-step task structures that allowed students to understand and complete speaking activities. Additionally, the relatedness dimension reflects the group-based implementation of the flashcards, which facilitated peer interaction and collaborative speaking. Rather than indicating motivational outcomes, these results show that the flashcards created conditions conducive to structured participation and interaction during speaking tasks.

Although the implementation results showed that the flashcards were practically applicable, the single-session duration of 1 × 25 minutes represents a critical limitation. This limited time frame constrained the depth of discussion, particularly for creating-level speaking tasks that require extended idea development. Therefore, the term effective in this study should be interpreted cautiously. The flashcards were effective in supporting structured speaking tasks and classroom feasibility, not in demonstrating improvements in speaking performance or HOTS ability, which were beyond the scope of this development-focused study. Future studies employing multiple sessions or experimental designs would be required to examine learning outcomes more comprehensively.

From a pedagogical perspective, the flashcards offer several practical implications for teachers. Within limited instructional time, teachers can implement the flashcards by organizing students into small groups, assigning one flashcard per group, and sequencing tasks from analyzing to creating within a single lesson. Teachers may also need targeted professional development on facilitating HOTS-oriented speaking tasks, particularly in managing group discussions and guiding students who are less active. The findings suggest that teacher readiness and familiarity with HOTS-based instruction play a crucial role in maximizing the potential of the flashcards.

In terms of sustainability, the flashcards present a cost-effective and reusable instructional medium. Their cyclical use allows the same set of flashcards to be implemented repeatedly across different lessons and classes without requiring constant reproduction. This makes the product suitable for schools with limited resources. Furthermore, while the flashcards were developed for speaking instruction, their design allows for adaptation to other productive skills, such as writing, by modifying the prompts to require written responses instead of oral ones.

Future development could explore a digital version of the flashcards, such as interactive slides or QR-code-based prompts. However, such adaptations should be designed carefully to avoid potential distractions that may interfere with students' focus during speaking activities. Digital features should support, rather than replace, the structured and interactive nature of the physical flashcards.

Overall, the findings indicate that interactive speaking flashcards integrated with Revised Bloom's Taxonomy are feasible, practical, and pedagogically grounded as a development product. While the study does not claim instructional effectiveness in terms of performance gains, it provides a validated model for designing HOTS-oriented speaking media that can be adapted, sustained, and further examined in future research.

5. Conclusion

This study concludes that interactive speaking flashcards explicitly integrated with the higher levels of Revised Bloom's Taxonomy (C4–C6) can be systematically designed, validated, and practically implemented as an instructional medium for junior high school EFL speaking instruction. Unlike previous flashcard-based studies that primarily emphasized vocabulary learning or basic speaking practice, this study extends the pedagogical function of flashcards by embedding analyzing, evaluating, and creating prompts into structured speaking tasks. The contribution of this study lies not in measuring learning effectiveness or performance gains, but in presenting a development-oriented product that translates higher-order thinking requirements into concrete and usable classroom media.

The findings demonstrate that Revised Bloom's Taxonomy can function not only as a framework for formulating learning objectives, but also as a design principle embedded directly within instructional media. Through scenario-based, evaluative, and creative speaking prompts, the flashcards served as cognitive scaffolds that guided students in organizing ideas and participating in structured oral tasks. This design-oriented application offers practical value for teachers who often encounter difficulties in implementing HOTS-based speaking activities due to limited time and instructional resources.

Students' responses based on Self-Determination Theory further indicate that the flashcards supported structured participation in speaking activities. High agreement across autonomy, competence, and relatedness dimensions suggests that the flashcard design provided opportunities for idea expression, clear task guidance, and peer interaction during group-based speaking tasks. These findings should be interpreted as evidence of classroom feasibility and task support rather than indicators of motivational or performance improvement.

Despite these positive outcomes, the implementation of the flashcards was constrained by contextual limitations, particularly the single-session duration of 1 × 25 minutes. This limited instructional time restricted deeper exploration of creating-level speaking tasks and highlights the need for longer or repeated implementation in future studies. Additionally, as this study did not aim to measure speaking proficiency or HOTS achievement, claims regarding instructional effectiveness were intentionally avoided.

From a pedagogical perspective, the developed flashcards offer a practical, cost-effective, and sustainable instructional medium that can be reused across lessons and classes without additional production costs. Their design also allows adaptation to other productive skills, such as writing, by modifying oral prompts into written tasks. Future development may explore digital adaptations of the flashcards; however, such innovations should be carefully designed to avoid potential distractions that could reduce students' focus during learning activities.

In conclusion, this study provides a validated and adaptable model for developing HOTS-oriented speaking media grounded in Revised Bloom's Taxonomy. While further research is required to examine instructional effectiveness and learning outcomes, the present study contributes a feasible and pedagogically grounded product that supports structured speaking activities and responds to practical classroom needs.

7. References

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