



DIGITAL TRANSFORMATION OF LANGUAGE POLITENESS: DEVELOPMENT OF CASE BASED LEARNING-BASED INTERACTIVE MEDIA IN ELEMENTARY SCHOOLS

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Abstract. Digital transformation in basic education requires the development of learning media that is not only adaptive to technology, but also able to shape students' character, especially in the aspect of language politeness. This research aims to develop an interactive media based on Case Based Learning (CBL) and test its feasibility and effectiveness in improving students' language politeness. The research was carried out on grade V students at SDN 3 Jebol, SDN 2 Singorojo, and SDN 2 Jebol, Jepara Regency. This research uses the Research and Development (R&D) method with the ADDIE model which includes the stages of analysis, design, development, implementation, and evaluation. Data collection techniques include observation, questionnaires, tests, and interviews. Data analysis was carried out descriptively, quantitatively, and qualitatively. The results of the study show that the CBL-based interactive media developed meets the criteria of valid, practical, and effective. The application of this media is able to increase students' language impressions, which is shown through the ability to use the right word choices, the application of various languages according to social contexts, and the increase of language awareness in interactions, both verbal and digital. These findings indicate that technology integration through a case-based approach can be an innovative and contextual learning strategy in shaping linguistic competence as well as the character of elementary school students.

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INTRODUCTION

Digital transformation in education has shifted the learning paradigm from conventional approaches to an interactive, collaborative, and contextual technology-based learning ecosystem. These changes are not only related to the adoption of digital devices, but reflect a pedagogical reorientation that emphasizes active student engagement, personalization of learning, as well as the integration of 21st-century skills such as communication, collaboration, creativity, and critical thinking (Kimmons et al., 2020; Maloko et al., 2024). In this context, interactive media plays a strategic role as a medium capable of combining visual, auditory, and interactive elements to improve student engagement and the quality of the learning experience (Haleem et al., 2022). Recent research shows that the use of digital technology designed pedagogically can increase students' motivation to learn, understand concepts, and social interaction in a digital learning environment (Hayrapetyan et al., 2024b; Pérez-Escoda et al., 2021). Thus, the integration of technology in basic education is no longer optional but becomes a basic necessity in building learning that is adaptive to the times.

Several previous studies have demonstrated that digital learning media can improve student engagement, motivation, and learning achievement (Haleem et al., 2022; Hayrapetyan et al., 2024b, 2024d). Other studies have also reported that Case-Based Learning (CBL) effectively enhances critical thinking, problem-solving skills, and contextual understanding through authentic learning situations (Laro, 2024; Richman, 2024). Meanwhile, research on language politeness has mainly focused on pragmatic competence, communication ethics, or the influence of digital communication on students' language behaviour (Mason, 2023; Toyohara et al., 2022). Although these studies provide important insights, they generally investigate these aspects separately. Limited attention has been given to integrating interactive digital media, Case-Based Learning, and language politeness education within a single instructional design for elementary

school students. Consequently, there remains insufficient empirical evidence regarding how technology-supported case-based learning can simultaneously strengthen students' pragmatic competence and language politeness in authentic digital communication contexts.

However, behind this positive potential, digital transformation presents significant challenges, especially related to the ethical aspects of communication and language impressions among students. The high intensity of digital interactions, especially through social media and bold communication platforms, tends to encourage the use of informal, concise, and often ignoring linguistic politeness norms (Basson & Burger, 2023). Exchange studies show that students' digital literacy is still dominated by technical aspects, while the ethical and pragmatic dimensions of digital communication have not been optimally developed (Japri & Wijaya, 2023; Martínez-Bravo et al., 2020). This condition has the potential to cause degradation of linguistic politeness, such as the use of improper diction, low sensitivity to social contexts, and decreased empathy in communication (O'Hagan, 2024). Therefore, a learning approach is needed that not only integrates technology, but systematically incorporates the values of politeness expressed through contextual and experience-based learning design, so as to be able to balance digital competence and communicative character of students in the era of digital transformation.

This study addresses the identified gap by developing an interactive learning media based on Case-Based Learning specifically designed to improve elementary school students' language politeness within the context of digital transformation. Unlike previous studies that primarily examined either interactive media, CBL implementation, or language politeness independently, this research integrates these three dimensions into a single pedagogical model through the ADDIE development framework. The novelty of this study lies in the integration of authentic communication cases, interactive multimedia features, and pragmatic language learning principles to foster students' communicative competence and ethical language behaviour simultaneously. Therefore, the objectives of this research are to develop, validate, and evaluate the effectiveness of CBL-based interactive media in improving students' language politeness. The findings are expected to contribute theoretically to the advancement of digital language learning and pragmatics education while providing practical guidance for elementary school teachers in implementing technology-supported character education.

The problem of language politeness in elementary school students is increasingly complex along with the increasingly intensive use of digital technology in daily life. Digital interactions that take place through social media, instant messaging apps, and bold learning platforms tend to shift communication norms from formal to informal, often ignoring social context and the value of linguistic politeness. Recent research shows that digital-based communication has the potential to reduce students' pragmatic sensitivities, such as the ability to adapt language to interlocutors, situations, and cultural norms (Mason, 2023; Toyohara et al., 2022). In addition, the phenomenon of online disinhibition also encourages individuals, including children, to express themselves more freely without considering the social impact of the speech used (Poláková et al., 2023). As a result, there is a tendency to use less polite language, low empathy in communication, and an increasing use of short and symbolic expressions that ignore linguistic rules (Maisyaroh et al., 2023; O'Hagan, 2024). This condition shows that the development of digital technology is not always accompanied by the development of communication ethics competencies, thus creating a gap between digital literacy and social literacy.

In the Indonesian context, this problem is further strengthened by the increasing access of elementary school-age children to digital devices from an early age, both for learning and entertainment needs. Studies show that children who are intensively exposed to digital media tend to adopt language styles that develop in the digital space, including the use of slang, abbreviations, and non-formal expressions that do not always conform to the norms of linguistic politeness in educational settings (Bandeira & Costa, 2022; Grundy et al., 2023). On the other hand, learning practices in schools are still dominated by conventional approaches that are less able to accommodate the dynamics of students' digital communication, so that the impression of language learning becomes less contextual and less effective (Haleem et al., 2022). Therefore, pedagogical innovations that can integrate digital technology with strengthening the values of linguistic



politeness through an adaptive, contextual, and experience-based approach are needed. This approach is expected not only to improve students' linguistic competence, but also to form an ethical communicative character and be responsive to communication challenges in the digital age (Martínez-Bravo et al., 2020; Pérez-Escoda et al., 2021).

Language politeness as part of pragmatic competence has an important role in the formation of students' character and social abilities. According to a pragmatic perspective, language politeness is related to an individual's ability to adapt speech to social contexts, cultural norms, and interpersonal relationships (Toyohara et al., 2022). Previous research has shown that mastery of pragmatic aspects, including politeness, makes a significant contribution to the success of students' communication and social interaction (Mason, 2023). Strengthening language politeness in elementary schools is a strategic step in forming an ethical communicative character in the digital era. One of the relevant learning approaches to develop language impressions is CBL. This approach emphasizes the use of real cases as a learning stimulus that encourages students to think critically, reflectively, and contextually (Williams et al., 2024). CBL has been shown to be effective in improving problem-solving and value-based decision-making skills, including in the context of communication (Marzouka & Amar, 2023). In language learning, the use of cases allows students to understand the context of language use in more depth, so that they can apply the principle of courtesy appropriately in real situations.

The development of CBL-based interactive media is an innovative strategy in bridging the needs of digital transformation and strengthening students' character. Interactive media has the advantage of presenting learning content visually, auditory, and kinesthetic, thereby improving student learning understanding and retention (Carol et al., 2025). In addition, the integration of CBL in interactive media allows for the presentation of authentic and varied communication scenarios, which can train students in the identification and application of the principles of linguistic politeness contextually. This is in line with research findings that state, technology-based learning designed pedagogically can significantly improve students' learning outcomes and social skills (Hayrapetyan et al., 2024d). Based on the results of initial observations conducted in grade V of SDN 3 Jebol, SDN 2 Singorojo, and SDN 2 Jebol Jepara Regency, it was found that most students still show low language politeness in daily interactions, both verbally and in digital-based communication. Indicators that emerged include the use of language that is not polite to peers, lack of ability to choose diction that suits formal situations, and lack of awareness of politeness norms in digital communication. This condition shows that there is an alignment between technological development and the formation of students' language characters.

Based on interviews with elementary school teachers, language politeness instruction is still predominantly delivered through conventional teacher-centred approaches, particularly lectures, textbook explanations, and written exercises, with limited opportunities for students to engage in authentic communicative practice. Learning activities generally emphasize memorizing polite expressions and linguistic rules rather than encouraging learners to analyse contextual situations, interpret communicative intentions, or reflect on the social consequences of language use. Teachers also reported limited experience in designing and implementing interactive digital media capable of integrating cognitive, affective, and pragmatic dimensions of language learning simultaneously. Consequently, students have relatively few opportunities to observe authentic communication, evaluate alternative language choices, or develop empathy through contextual learning experiences. These findings suggest that current instructional practices have not yet fully accommodated the multidimensional nature of pragmatic competence, which requires learners to integrate linguistic knowledge with social awareness, contextual understanding, and communicative decision-making. Similar challenges have been reported internationally, indicating that many teachers continue to experience difficulties in integrating digital technologies into language instruction because of limited pedagogical preparation, inadequate technological competence, insufficient institutional support, and uncertainty regarding effective technology-enhanced instructional design (Crompton & Burke, 2023; Haleem et al., 2022; Hayrapetyan et al., 2024a; Maloko et al., 2024; Mason, 2023).

These limitations indicate that the challenge of digital transformation in language education



is not simply the availability of technological infrastructure but the ability to integrate technology with sound pedagogical principles that promote meaningful, contextual, and learner-centred instruction. Contemporary educational research consistently demonstrates that digital technology improves learning outcomes only when it is combined with authentic learning tasks, collaborative inquiry, reflective practice, and active student participation rather than functioning merely as a platform for delivering instructional content. In language learning, interactive multimedia designed around authentic communication problems enables students to observe contextual language use, analyse interpersonal relationships, evaluate pragmatic appropriateness, and construct meaning through real-life communication scenarios. Such learning environments simultaneously support cognitive development, emotional engagement, communication competence, and digital literacy while increasing students' motivation and participation in classroom activities. Therefore, the findings of the present study reinforce the urgent need to develop pedagogically grounded interactive learning media that assist teachers in facilitating contextual language politeness instruction while supporting the broader goals of twenty-first-century education and digital transformation (Hiver et al., 2025; Honda et al., 2026; Pérez-Escoda et al., 2021; Pintos & Olvera, 2020; Schulman, 2023; Sintang et al., 2024; White et al., 2024). Therefore, learning media innovations that can answer these needs are needed.

Based on the description of these problems, this study aims to develop interactive media based on Case Based Learning in improving the language politeness of elementary school students. This research can make a theoretical contribution to the development of technology-based and pragmatic language learning, as well as a practical contribution in providing innovative, contextual, and effective learning media. Based on the aforementioned problems and research gaps, this study aims to develop, validate, and evaluate the effectiveness of Case-Based Learning-based interactive media in improving elementary school students' language politeness. The study contributes to the existing literature by integrating digital interactive media, authentic case-based pedagogy, and pragmatic language learning into a comprehensive instructional model. Practically, the developed media provides teachers with an innovative learning resource for strengthening students' communicative competence and character education in the era of digital transformation.

RESEARCH METHODS

This study uses a Research and Development (R&D) approach with the ADDIE (Analysis, Design, Development, Implementation, Evaluation) processional design model which has been updated in progressive studies as a systematic framework for the development of effective digital learning media based on user needs (Maloko et al., 2024; Srivastava & Yetgin, 2024). This approach was chosen because it allows integration between the product development process (Case-Based Learning-based interactive media) and the effectiveness of its evaluation in the context of real learning. Theoretically, the ADDIE model in this study is combined with the principles of digital learning design based on learning experience design (LXD) which emphasizes user engagement, interactivity, and meaningful learning experiences (Al Ghusaini, 2025). Thus, the research flow is designed iteratively starting from the analysis of needs to the evaluation of the impact of media use on the language politeness of elementary school students.

The research data consists of qualitative and quantitative data. Qualitative data includes the results of learning observations, interviews with teachers and students, and analysis of the needs of language politeness learning media. Meanwhile, quantitative data was obtained from the results of the language politeness test, student response questionnaires, and expert validation sheets on the developed media. The source of the research data was grade V students at SDN 3 Jebol, SDN 2 Singorojo, and SDN 2 Jebol Jepara Regency, as well as classroom teachers as supporting informants. The selection of subjects was carried out by purposive sampling by considering active involvement in digital-based learning. This approach is in line with a mixed-methods paradigm that integrates numerical and narrative data to gain a comprehensive understanding of learning phenomena (Charli et al., 2022).

Data collection techniques are carried out through observation, semi-structured interviews,



questionnaires, and tests. Observations were used to identify communication patterns and students' language impression levels before and after the intervention. The interview was conducted to explore the perception of teachers and students towards the use of interactive media based on CBL. The questionnaire was used to measure the level of practicality and user response to the media, while the test was used to measure the improvement of students' language politeness based on pragmatic indicators, such as diction selection, context suitability, and the use of politeness strategies. The research instrument was developed with reference to pragmatic theory and language impressions in language learning that emphasize social context and communication functions (Mason, 2023; Toyohara et al., 2022). The validity of the instrument was tested through expert judgment, while the reliability was tested using Cronbach's Alpha coefficient.

Data analysis was carried out descriptively, quantitatively, and qualitatively. Quantitative data were analyzed using descriptive statistics and an increase test (gain score or N-gain) to determine the effectiveness of media in improving students' language politeness. Meanwhile, qualitative data was analyzed using thematic analysis techniques that included data reduction, data presentation, and conclusion drawing (Pkhakadze, 2024). In addition, product evaluation is carried out based on the criteria of validity, practicality, and effectiveness recommended in digital learning media development research (Kolokolova, 2024; Melinda, 2021). With this approach, the research not only produced a CBL-based interactive media product that is feasible to use, but also provides empirical evidence regarding its contribution to improving students' language politeness in the context of digital learning in elementary schools.

RESULTS AND DISCUSSION

Results of Needs Analysis (Analysis Stage)

The results of initial observations in grade V of SDN 3 Jebol, SDN 2 Singorojo, and SDN 2 Jebol showed that the level of politeness in the language of students was still in the low to medium category. These findings were obtained from the observation of students' verbal interactions in the classroom and simple digital communication (study groups). Indicators observed included the use of diction, context suitability, and politeness strategies. Interviews with teachers revealed that learning language politeness has not been supported by interactive media and is still lecture-based. This shows the need for contextual and applicative technology-based media development.

Tabel 1. Results of Initial Observation of Language Politeness

No	Indicator	Average Score	Category
1.	Diction selection	58	Enough
2.	Contextual fit	55	Enough
3.	Politeness strategy	52	Enough
4.	Communication empathy	50	Low

The analysis of Table 1 shows that the level of language politeness of grade V students in the three research schools is still in the moderate to low category, with variations in achievement in each indicator. The diction selection indicator obtained the highest average score (58) in the enough category, which indicates that some students have been able to choose relatively appropriate words, although they have not been consistent in various communication situations. In addition, the indicators of contextual suitability (55) and politeness strategies (52) were in the sufficient category, which showed that students began to understand the use of language based on social situations, but were still limited in the appropriate application of politeness strategies, such as the use of polite expressions or adjustments to the interlocutor. Meanwhile, the communication empathy indicator obtained the lowest score (50) in the low category, which indicates that students are still less able to show sensitivity to the feelings and viewpoints of the interlocutor in communication interactions. Overall, these findings show that students' language politeness competence is still partial and has not been optimally integrated, so more contextual, interactive, and experiential-based learning interventions are needed to improve the pragmatic aspects and communicative character of students.

Media Development Results (Design & Development Stage)

CBL-based interactive media is developed in the form of digital modules that contain



students' daily communication case scenarios. Each case comes with response options, automatic feedback, and reflection on the value of language politeness. Validation by subject matter experts, media experts, and education practitioners shows that media has a high level of validity.

Table 2. Media Validation Results

No.	Aspects	Score (%)	Category
1.	Material feasibility	89	Very valid
2.	Media design	92	Very valid
3.	Language	87	Very valid

The analysis of [Table 2](#) shows that the interactive media based on CBL developed has a very high level of validity in all aspects of assessment, making it suitable for use in the learning process. The media design aspect received the highest score of 92% with the highly valid category, which shows that the visual appearance, navigation structure, and media interactivity have been optimally designed and able to support student involvement in learning. Furthermore, the feasibility of the material aspect obtained a score of 89%, showing that the content presented is in accordance with the learning objectives, relevant to the context of students' lives, and able to represent the values of politeness that are spoken appropriately. Meanwhile, the language aspect obtained a score of 87% which is in the very valid category, indicating that the use of language in the media is communicative, easy to understand, and in accordance with the level of development of elementary school students. Overall, the results of this validation state that the developed media has met quality standards in terms of content, design, and language, so that it is not only theoretically feasible, but has high potential to be implemented effectively in improving students' language politeness.

Implementation Results and Effectiveness (Implementation Stage)

The results of the trial showed a significant increase in students' politeness after the use of media.

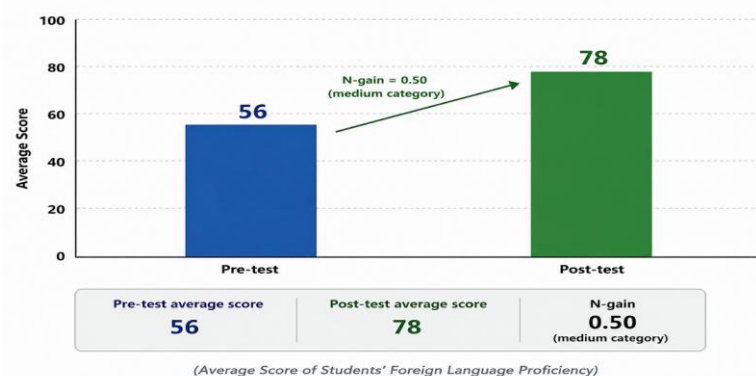


Figure 1. Comparison of Pre-test and Post-test

Analysis of [Figure 1](#) shows that there is a significant improvement in students' language politeness skills after the use of interactive media based on CBL. The average pre-test score of 56 in the category increased to 78 in the post-test with the good category, so there was a difference of 22 points. This increase was reinforced by an N-gain value of 0.50 which was included in the medium category, which indicated that the developed media had a strong enough effectiveness in improving students' abilities. Substantively, this increase reflects improvements in the aspects of diction selection, context suitability, and politeness strategies in student communication. This shows that learning interventions through case-based media are able to provide a more contextual and reflective learning experience, so that students not only understand the concept of language politeness theoretically but are able to apply it in communication practice. Thus, this Figure emphasizes that the interactive media developed contributes significantly to improving the quality of students' pragmatic competencies in language learning in elementary schools.

Results of Student and Teacher Responses (Evaluation Stage)

The students' response to the media showed a high level of practicality. Students find

learning more interesting and easier to understand because it is based on real cases.

Table 3. User Response

No.	Aspects	Score (%)	Category
1.	Media attractiveness	91	Excellent
2.	Ease of use	88	Good
3.	Benefits	90	Excellent

The analysis of [Table 3](#) shows that the response of students and teachers to case-based interactive media is in the high to very high category, which indicates an excellent level of practicality and acceptance in the implementation of learning. The aspect of media attractiveness received the highest score of 91% in the very good category, showing visual appearance, case presentation, and media interactivity that can attract attention and increase students' interest in learning. Furthermore, the usefulness aspect obtained a high score of 90% in the very good category, which indicates that the media is considered effective in helping the understanding of the material and supporting the improvement of students' language politeness. Meanwhile, the ease of use aspect obtained a score of 88% in the good category, which shows that the media is relatively easy to operate by students, although there is still little room for improvement in the technical or navigation aspects. Overall, these results confirm that the developed media is not only feasible in substance, but practical and applicative in learning, and able to create an engaging, accessible, and meaningful learning experience for elementary school students.

Digital Transformation and the Need for Interactive Media

The findings indicate that the low level of students' language politeness is not merely an individual linguistic problem but is closely associated with the quality of the learning environment and the instructional approaches implemented in elementary classrooms. Initial observations revealed that students frequently experienced difficulties in selecting appropriate diction, adapting language to different social contexts, and expressing empathy during interpersonal communication. These findings imply that language politeness cannot be developed solely through explicit instruction or memorization of linguistic rules because politeness is fundamentally a pragmatic competence requiring contextual judgment and social awareness. Contemporary studies emphasize that pragmatic competence develops through repeated participation in authentic communicative interactions where learners negotiate meaning, interpret social intentions, and regulate their language according to contextual demands ([Mason, 2023](#); [Toyohara et al., 2022](#)). Likewise, digital communication has fundamentally transformed children's patterns of interaction, creating new challenges in maintaining communication ethics, empathy, and contextual language use. Consequently, language learning should provide authentic communicative experiences that enable students to internalize politeness values rather than merely understanding them conceptually ([Martínez-Bravo et al., 2020](#); [Tesar & Pangastuti, 2024](#)).

The present findings further demonstrate that conventional language instruction remains predominantly teacher-centred and emphasizes the transmission of declarative knowledge rather than the development of authentic communicative competence. Such instructional practices often limit students' opportunities to experience language as a social practice embedded within real communication contexts. Recent educational research consistently argues that digital transformation should not be understood merely as the integration of technological devices but as a pedagogical transformation that promotes learner autonomy, collaboration, reflection, and contextual problem solving ([Haleem et al., 2022](#); [Maloko et al., 2024](#)). Similarly, [Hayrapetyan et al. \(2024b\)](#) reported that technology-enhanced learning environments significantly improve students' cognitive engagement and intrinsic motivation when digital media facilitate meaningful interaction rather than passive content consumption. [Pérez-Escoda et al. \(2021\)](#) likewise found that well-designed digital learning environments encourage deeper conceptual understanding, social interaction, and higher learning achievement. Therefore, the present findings reinforce the argument that the effectiveness of educational technology depends primarily on instructional design rather than technological sophistication itself.

From a broader educational perspective, the findings suggest that strengthening language politeness requires the integration of digital pedagogy, authentic communication practices, and



character education into a unified instructional framework. Interactive learning media provide opportunities for students to analyse communication problems, evaluate alternative language expressions, and reflect upon the social consequences of their linguistic choices within realistic situations. Such learning experiences promote not only linguistic accuracy but also empathy, ethical awareness, and communicative responsibility, which represent essential competencies in the digital era. Previous studies have shown that interactive multimedia significantly enhances learning engagement, collaborative participation, and higher-order thinking when combined with authentic learning activities (Hayrapetyan et al., 2024b, 2024d; Maloko et al., 2024). Furthermore, recent discussions on digital citizenship emphasize that digital literacy should encompass responsible communication, respectful interaction, and ethical participation in online environments rather than merely technological proficiency (Aquaron et al., 2023; Japri & Wijaya, 2023; Schulman, 2023). Accordingly, the present study extends previous literature by demonstrating that interactive digital media designed through contextual and pragmatic learning principles can simultaneously improve students' language politeness, communicative competence, and character development in elementary education.

Digital transformation has created unprecedented opportunities to redesign language learning from traditional teacher-centred instruction into interactive, student-centred learning environments that actively engage learners in constructing knowledge. Rather than merely digitising conventional classroom practices, effective digital transformation requires pedagogical innovation that integrates technology with meaningful learning experiences, collaborative interaction, and authentic problem-solving activities (Bond et al., 2021; Hayrapetyan et al., 2024c). Recent studies have consistently demonstrated that digital technologies contribute positively to learners' cognitive achievement, motivation, communication skills, and learning autonomy when embedded within evidence-based instructional designs (Crompton & Burke, 2023; Pérez-Escoda et al., 2021). Similarly, educational technology has increasingly been recognised as an ecosystem that simultaneously supports cognitive, affective, and social dimensions of learning rather than functioning solely as a medium for content delivery (Haleem et al., 2022; Williams et al., 2024). Consequently, digital language learning should prioritize learner interaction, contextual experiences, and reflective thinking that enable students to construct linguistic competence through authentic communication practices.

Within language education, interactive multimedia has emerged as one of the most effective approaches for facilitating meaningful language acquisition because it integrates visual, auditory, textual, and interactive components into coherent learning experiences. Recent evidence indicates that multimedia-supported language learning significantly improves students' engagement, comprehension, critical thinking, communication skills, and willingness to participate in collaborative activities compared with conventional instructional approaches (Honda et al., 2026; Jung et al., 2025). Furthermore, authentic digital learning environments allow learners to observe real-life communication, analyse pragmatic language use, evaluate appropriate linguistic choices, and receive immediate feedback, thereby promoting deeper understanding of language functions in social contexts (Li et al., 2025; Vidal, 2024). Such pedagogically designed digital environments also facilitate differentiated instruction by accommodating diverse learner characteristics, learning preferences, and levels of language proficiency while simultaneously fostering higher-order thinking and self-regulated learning (Crompton & Burke, 2023; Williams et al., 2024).

The interactive media developed in the present study reflects these contemporary pedagogical principles by integrating multimedia features with authentic communication cases that closely resemble elementary students' everyday social interactions. Rather than presenting language politeness as abstract concepts, the media enables students to observe contextual situations, analyse communicative behaviours, evaluate appropriate expressions, and make reflective decisions through interactive learning activities. This design aligns with recent findings emphasizing that technology-enhanced learning becomes educationally meaningful only when learners actively participate in authentic, collaborative, and reflective learning processes that connect classroom instruction with real-world experiences (Li et al., 2025; Maloko et al., 2024; Vidal, 2024). Accordingly, the integration of Case-Based Learning within interactive multimedia



is expected not only to improve students' pragmatic competence and language politeness but also to strengthen critical thinking, communication skills, digital literacy, and character development, all of which constitute essential competencies for twenty-first-century education (Haleem et al., 2022; Hetherington & Atherton, 2024; Pérez-Escoda et al., 2021).

The improvement observed after implementation indicates that contextual digital learning promotes the internalization of language politeness more effectively than conventional instruction. Students were not merely exposed to theoretical explanations of politeness but actively analysed communication problems, considered alternative responses, and reflected on the social consequences of their language choices. This finding supports Carol et al. (2025) Cognitive Theory of Multimedia Learning, which states that learners construct deeper understanding when verbal explanations are combined with meaningful visual representations and interactive learning activities. Furthermore, the findings are consistent with Pérez-Escoda et al. (2021), who reported that technology-enhanced learning environments facilitate higher student participation, deeper conceptual understanding, and improved social interaction when instructional activities are designed around authentic learning tasks. Compared with previous studies, this research extends existing knowledge by demonstrating that interactive media can support not only cognitive achievement but also the development of pragmatic competence and communicative character. Previous studies primarily examined digital media in relation to academic performance or learning motivation, whereas the present study demonstrates its contribution to strengthening language politeness through authentic case-based communication experiences.

The Effectiveness of Case Based Learning in Language Learning

The significant improvement in students' language politeness after using the developed interactive media confirms that CBL provides an effective pedagogical framework for developing pragmatic language competence. Unlike conventional language instruction that frequently emphasizes memorization of linguistic rules, CBL engages learners in authentic communicative situations that require them to identify contextual problems, analyse speakers' intentions, evaluate alternative expressions, and determine the most appropriate language choices based on social and cultural norms. This inquiry-oriented learning process transforms students from passive recipients of information into active constructors of knowledge through observation, discussion, reflection, and collaborative decision-making. Recent studies have demonstrated that learning environments centred on authentic cases significantly improve students' critical thinking, communication competence, contextual reasoning, and problem-solving abilities because learners continuously connect theoretical knowledge with real-life experiences (Honda et al., 2026; Williams et al., 2024; Yáñez García, 2023). Consequently, pragmatic competence is developed not only as linguistic knowledge but also as the ability to make socially appropriate communicative decisions in diverse interpersonal situations.

The effectiveness of CBL in language politeness learning is closely associated with its emphasis on authentic communication contexts that stimulate higher-order thinking processes. During case analysis, students are encouraged to interpret contextual cues, consider interpersonal relationships, predict possible communicative consequences, and justify their responses using pragmatic reasoning rather than relying on memorized expressions. Such learning activities align with contemporary constructivist perspectives that view language acquisition as a socially situated process in which knowledge is constructed through interaction, negotiation of meaning, and reflective dialogue. Recent empirical evidence suggests that contextual and case-based learning significantly enhances learners' pragmatic awareness, communicative confidence, collaborative skills, and metacognitive regulation because students actively evaluate multiple perspectives before reaching communicative decisions (Hayrapetyan et al., 2024d; Jung et al., 2025; Nicolau, 2023). Furthermore, authentic digital learning environments facilitate continuous feedback and self-reflection, enabling learners to internalize principles of language politeness while simultaneously strengthening empathy, perspective-taking, and social responsibility during communication (Hayrapetyan et al., 2024c, 2024a; Maloko et al., 2024).

The findings of this study therefore indicate that integrating interactive multimedia with



CBL creates a comprehensive learning environment that simultaneously develops linguistic, cognitive, and socio-emotional competencies. Multimedia elements such as animation, audio narration, interactive scenarios, and contextual dialogues enable students to visualize authentic communication situations, thereby reducing the gap between classroom instruction and everyday language use. Rather than simply identifying polite expressions, students are required to evaluate why particular utterances are appropriate within specific social contexts, fostering deeper pragmatic understanding and transferable communication skills. This pedagogical approach is consistent with recent educational research emphasizing that technology-enhanced learning becomes meaningful when digital media are integrated with active learning strategies, authentic problem-solving, collaborative inquiry, and reflective practice (Crompton & Burke, 2023; Haleem et al., 2022; Williams et al., 2024). Accordingly, the combination of interactive multimedia and CBL not only improves elementary students' language politeness but also contributes to the development of critical thinking, communication competence, digital literacy, ethical awareness, and twenty-first-century learning skills that are essential for successful participation in contemporary society.

These findings are strongly supported by contemporary constructivist perspectives, which emphasize that meaningful learning occurs when learners actively construct knowledge through authentic experiences, social interaction, reflection, and contextual problem solving rather than through passive knowledge transmission. Within this perspective, learning is viewed as a process of interpreting experiences, negotiating meaning with peers, and continuously refining conceptual understanding through reflection on real-world situations. Recent educational research has consistently demonstrated that constructivist learning environments promote deeper conceptual understanding, greater learner autonomy, and higher levels of cognitive engagement because students become active participants in knowledge construction rather than passive recipients of information (Hayrapetyan et al., 2024b; Pérez-Escoda et al., 2021; Williams et al., 2024). Furthermore, technology-enhanced constructivist learning environments provide opportunities for collaborative inquiry, immediate feedback, and authentic learning experiences that facilitate the integration of cognitive, affective, and social dimensions of learning (Crompton & Burke, 2023; Haleem et al., 2022). These characteristics explain why the interactive CBL media developed in this study successfully promoted students' pragmatic understanding of language politeness through meaningful participation in authentic communicative situations.

The present findings are also consistent with a growing body of empirical evidence indicating that CBL substantially improves learners' critical thinking, analytical reasoning, decision-making, and knowledge transfer because students actively investigate realistic situations instead of memorizing isolated concepts. During case analysis, learners are encouraged to identify communication problems, interpret contextual information, compare alternative responses, predict possible consequences, and justify their decisions using evidence-based reasoning. Such activities stimulate higher-order cognitive processes while simultaneously fostering collaborative learning and reflective thinking. Recent systematic reviews and experimental studies have concluded that CBL consistently enhances critical thinking, communication competence, teamwork, and long-term knowledge retention across diverse educational contexts because authentic cases bridge the gap between theoretical knowledge and practical application (Fahad et al., 2024; Rakočević, 2021; Varma et al., 2024). Likewise, studies in language education report that contextual case analysis enables learners to develop pragmatic competence by connecting linguistic knowledge with authentic social interactions and communicative decision-making (Alkahtany et al., 2024; Nugra Heni & Subiyanto, 2021). These findings reinforce the argument that authentic problem-solving constitutes a powerful instructional mechanism for developing students' communicative competence beyond grammatical accuracy.

From a broader pedagogical perspective, the integration of interactive multimedia with constructivist CBL establishes a learning ecosystem that supports the simultaneous development of linguistic competence, critical thinking, digital literacy, and socio-emotional skills. Interactive multimedia provides realistic visualizations of communication contexts, whereas CBL encourages students to analyse language use, evaluate social appropriateness, and reflect upon the



ethical implications of their communicative choices. Such learning experiences promote transferable knowledge because students repeatedly apply conceptual understanding to new communication scenarios rather than merely recalling predefined language expressions. Recent studies further indicate that technology-supported authentic learning environments enhance students' engagement, self-regulated learning, communication skills, and collaborative problem-solving by encouraging continuous interaction, reflection, and evidence-based reasoning (Li et al., 2025; Maloko et al., 2024; Vidal, 2024; Williams et al., 2024). Therefore, the findings of the present study extend previous research by demonstrating that the combination of interactive multimedia and Case-Based Learning not only improves elementary students' language politeness but also strengthens essential twenty-first-century competencies required for responsible communication and lifelong learning.

The effectiveness of CBL observed in this study reflects the fundamental nature of pragmatic competence as a socially situated ability rather than merely a grammatical skill. Pragmatic competence requires learners to understand how language choices are shaped by context, interlocutor status, interpersonal distance, communicative intention, cultural norms, and the possible effects of an utterance on others (Dehghankar et al., 2024; Toyohara et al., 2022). In this sense, students do not become pragmatically competent simply by memorizing polite expressions; they need repeated opportunities to interpret communicative situations, compare alternative responses, and determine why certain expressions are more appropriate than others in specific social contexts. The improvement shown by students after using the developed media indicates that authentic cases can help them move beyond linguistic accuracy toward contextual appropriateness, especially in distinguishing formal and informal expressions, selecting respectful diction, and responding more sensitively to different interlocutors.

Through repeated exposure to authentic communication cases, students were able to develop pragmatic awareness by observing how language functions in real interpersonal situations. CBL encourages learners to analyse the relationship between speakers, identify the purpose of communication, evaluate the level of politeness required, and anticipate the social consequences of inappropriate language choices. Such processes are highly relevant to language politeness learning because politeness is not determined solely by the grammatical form of an utterance, but also by social meaning, empathy, power relations, cultural expectations, and communicative intention (Barker et al., 2025; Ceribeli, 2024; Patruno, 2023). Recent studies in second language pragmatics also show that contextualized instruction, authentic interaction, and reflective analysis are more effective in developing pragmatic competence than decontextualized rule-based teaching because learners are trained to interpret language as social action (Ha et al., 2021; Martono et al., 2018; Perez-Oquendo et al., 2024). Therefore, the use of case-based scenarios in this study provided students with a meaningful learning space to practise pragmatic decision-making in ways that closely resembled their everyday communication experiences.

These findings also demonstrate that pragmatic competence develops most effectively when instructional media integrates contextual practice, reflection, feedback, and learner participation. The interactive media used in this study enabled students not only to recognize polite and impolite expressions but also to justify their communicative choices based on the situation presented in each case. This learning process strengthened students' ability to connect linguistic form with social function, thereby supporting deeper pragmatic understanding and more transferable communication skills. Technology-enhanced pragmatics instruction has been shown to support learners' engagement, pragmatic noticing, interactional awareness, and long-term retention when digital tools are designed around authentic communication tasks rather than passive content delivery (Bond et al., 2021; Haleem et al., 2022; Hayrapetyan et al., 2024c; Toyohara et al., 2022). Accordingly, the improvement in students' language politeness in this study suggests that the combination of CBL and interactive media can serve as an effective pedagogical model for developing pragmatic competence, particularly among elementary school students who require concrete, contextual, and socially meaningful examples of language use.

Unlike previous studies that mainly evaluated CBL for improving critical thinking or academic achievement, this study demonstrates its effectiveness in strengthening language



politeness and communicative ethics among elementary school students. Therefore, the present findings broaden the pedagogical application of CBL beyond cognitive outcomes toward character-oriented language education.

The Role of Interactive Media in Student Engagement

The high level of positive responses from both students and teachers indicates that the interactive media successfully fostered student engagement across cognitive, behavioural, and emotional dimensions of learning. Students demonstrated greater curiosity when exploring authentic communication cases, participated more actively in classroom discussions, maintained sustained attention throughout learning activities, and showed stronger commitment to completing language tasks independently and collaboratively. These findings suggest that the integration of interactive multimedia with CBL transformed language learning from a passive knowledge-transmission process into an active learning experience in which students became directly involved in constructing meaning through authentic communication. Contemporary research conceptualizes student engagement as a multidimensional construct encompassing behavioural participation, cognitive investment, emotional involvement, and social interaction, all of which contribute significantly to meaningful learning outcomes (Hayrapetyan et al., 2024b; Hiver et al., 2025; Maloko et al., 2024). Accordingly, the consistently positive responses observed in this study demonstrate that well-designed digital learning environments can effectively create conditions that encourage students to participate actively, think critically, and remain emotionally connected to the learning process.

The findings also indicate that the developed multimedia enhanced students' intrinsic motivation by presenting learning activities that were perceived as meaningful, enjoyable, and closely related to their everyday communication experiences. According to Self-Determination Theory, learners become intrinsically motivated when learning environments satisfy their psychological needs for autonomy, competence, and relatedness, thereby encouraging sustained engagement and self-directed participation (Hayrapetyan et al., 2024c). The authentic communication scenarios, interactive exercises, immediate feedback, and multimedia elements embedded within the developed media provided students with opportunities to make decisions, solve contextual language problems, and receive continuous reinforcement, thereby strengthening their confidence and willingness to learn. Recent studies have consistently reported that interactive digital learning environments significantly improve students' motivation, engagement, persistence, and academic achievement because learners perceive technology-supported activities as more relevant, interactive, and enjoyable than conventional teacher-centred instruction (Haleem et al., 2022; Maloko et al., 2024; Pérez-Escoda et al., 2021). These characteristics explain why both students and teachers evaluated the developed media very positively throughout the implementation process.

From a broader pedagogical perspective, the high level of engagement observed in this study confirms that interactive multimedia functions not merely as a technological tool but as a learning ecosystem that facilitates active participation, collaborative inquiry, reflective thinking, and meaningful communication. Rather than simply receiving explanations from the teacher, students actively analysed authentic communication cases, discussed alternative responses with peers, reflected on the appropriateness of language use, and justified their decisions based on contextual evidence. Such learning experiences strengthened not only cognitive engagement but also emotional attachment to learning and behavioural persistence during classroom activities. Previous studies have shown that technology-enhanced learning environments integrating authentic tasks and learner-centred pedagogy consistently promote higher levels of engagement, intrinsic motivation, communication skills, and self-regulated learning than conventional instructional approaches (Crompton & Burke, 2023; Honda et al., 2026; Li et al., 2025; Maloko et al., 2024). Therefore, the findings of this study provide further empirical evidence that integrating CBL with interactive multimedia constitutes an effective pedagogical strategy for increasing elementary students' engagement while simultaneously supporting the development of communication competence, digital literacy, and other essential twenty-first-century learning skills. Self-Determination Theory explains that learning motivation increases when instructional



environments satisfy learners' needs for autonomy, competence, and relatedness (Rochat et al., 2024). The interactive media developed in this study fulfilled these psychological needs by allowing students to make decisions, receive immediate feedback, and reflect on authentic communication problems. Hayrapetyan et al. (2024c) similarly found that technology-supported learning environments increase engagement when students are actively involved in meaningful learning activities rather than merely consuming digital content.

The multimedia characteristics of the developed media also contributed to improved learning quality. Carol et al. (2025) argues that combining text, images, narration, and interactive elements enables learners to process information more efficiently through dual cognitive channels, thereby reducing cognitive overload and improving knowledge retention. In this study, authentic communication scenarios, visual illustrations, and immediate feedback allowed students to understand abstract concepts of language politeness more concretely and apply them during classroom interactions. These findings also correspond with Hayrapetyan et al. (2024d), who reported that interactive educational technologies positively influence academic engagement, collaboration, and learning satisfaction when instructional design encourages active learner participation. Therefore, the present study confirms that interactive media should not be evaluated solely based on technological sophistication but on its capacity to facilitate meaningful engagement, reflection, and behavioural change.

Pragmatic Integration in Digital Learning

One of the most important findings of this study is the significant improvement in students' pragmatic competence following the implementation of CBL-based interactive media. Pragmatic competence extends beyond grammatical knowledge because it requires learners to interpret social contexts, recognise interpersonal relationships, and select language appropriate to communicative intentions (Toyohara et al., 2022). The observed improvements in diction selection, contextual appropriateness, and communication empathy demonstrate that students became increasingly capable of considering both linguistic accuracy and social consequences before producing utterances. This development can be explained through authentic contextual learning. By repeatedly analysing communication cases reflecting everyday school situations, students gradually internalised principles of politeness rather than memorising isolated linguistic rules. Such experiential learning aligns with Hayrapetyan et al. (2024d) experiential learning theory, which emphasises that knowledge is constructed through concrete experience, reflective observation, conceptualisation, and active experimentation. Consequently, students developed greater awareness of when, why, and how polite language should be used across different communication contexts.

The findings further support Mason (2023), who argued that pragmatic instruction should explicitly integrate authentic communicative situations into language learning because pragmatic competence cannot develop through grammar instruction alone. Likewise, Martínez-Bravo et al. (2020) highlighted that digital literacy should incorporate ethical communication and responsible language use alongside technological competence. The present study therefore demonstrates that integrating digital technology with pragmatic instruction provides an effective approach for developing both digital citizenship and communicative character among elementary school students. Overall, this study contributes to the growing body of literature on digital language education by demonstrating that the integration of interactive multimedia, CBL, and pragmatic language instruction can simultaneously improve linguistic competence, communication ethics, and character education. These findings suggest that future digital learning innovations should emphasise authentic communication experiences that prepare students not only to communicate effectively but also responsibly within increasingly complex digital environments.

CONCLUSIONS AND SUGGESTIONS

This study shows that the development of CBL-based interactive media through the ADDIE Research and Development model approach has proven to be valid, practical, and effective in improving the language politeness of grade V students at SDN 3 Jebol, SDN 2 Singorojo, and SDN 2 Jebol Jepara Regency. This is shown by the results of expert validation



which is in the very valid category, the positive response of students and teachers to the practicality and attractiveness of the media, as well as a significant increase in the ability to speak politeness which is reflected in the increase in pre-test scores to post-test with a moderate improvement category. Substantially, this media can develop students' ability to choose the right diction, adapt the use of language to the social context, and increase empathy in communication, both verbal and digital. These findings confirm the impact of integrating digital technology with a case-based approach not only to improve the quality of language learning cognitively, but also to strengthen the pragmatic dimension and communicative character of students, making it relevant as a pedagogical innovation in answering the challenge of language politeness degradation in the era of digital transformation.

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