



Gage Bangbangtut: educational game innovation in Indonesian language learning in Islamic elementary school

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This study aims to develop an educational game based on Temanggung local wisdom called *Game Genially Bang Sindoro, Bang Sumbing, Tembakau Temanggung (Gage Bangbangtut)* as a learning medium to instill politeness in elementary school students. This game is designed by incorporating local cultural values relevant to the Temanggung community's daily lives, so that students can learn to speak politely through contexts close to their environment. Research and Development (R&D) with the ADDIE model was applied as the research design to develop *Gage Bangbangtut*. The *Gage Bangbangtut* feature is designed with the Genially platform and can be installed on Windows. The content of *Gage Bangbangtut* contains the legend of Sindoro, Sumbing, and Temanggung Tobacco, Temanggung local wisdom (Names of Cultural Arts, Culinary Names, and District Names in Temanggung) in the form of games for students to play, and Temanggung's distinctive language with two languages, namely Javanese and Indonesian, for grade 4 of the Islamic elementary school. The feasibility test results indicate that the mean score from game media expert validators is 0,97 (very high validity), from local wisdom expert validators is 0,68 (high validity), and from language politeness expert validators is 1,00 (very high validity). In addition, the results of the *Gage Bangbangtut* trial received a positive response from teachers and students and proved effective in improving the understanding of grade IV students about politeness in Indonesian language.

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1. Introduction

The development of digital games for Indonesian-language learning in elementary schools that incorporate local wisdom is urgently needed. This is because Indonesian language learning in elementary schools faces significant challenges, especially in responding to language damage, lack of politeness, low interest, and increasing student motivation to understand the material in depth (Amelia et al., 2023; Reznik-Nevet et al., 2025; Liang et al., 2025). As the primary language of instruction in education, Indonesian has an essential role in developing students' literacy and communication skills (Prihartini et al., 2024).



However, the conventional approach that is predominantly used in teaching often does not actively involve students, thus potentially reducing engagement and effectiveness in achieving language competencies (Sadiah et al., 2024). According to data from the Programme for International Student Assessment (PISA) 2022, the position of reading, mathematics, and science literacy skills in Indonesia is still low, ranking 66th out of 81 countries (Bilad et al., 2024). The reality is that currently, many elementary school students still experience difficulties in achieving the expected literacy standards, especially in reading, writing, and speaking skills (Almagro et al., 2024; Elliot, 2024). Rude speech and low politeness in language among elementary school students are also worrying because they use rude words, swear, use slang, and do not use language wisdom according to local wisdom in Indonesia (Pradita et al., 2024; Susandi et al., 2024). This indicates the need for innovative learning media that are interesting and can optimize students' understanding of Indonesian and instill politeness in language.

The development of digital technology is unstoppable, especially in digital games for elementary school children, making educational games a necessity that must continue to be developed as part of learning (Patel et al., 2025). In early 2015, Spain saw the birth of Genially, an educational game based on a website platform that can be used for entertaining and active teaching and learning activities. Genially is supported by various templates that can be used for free, such as gamification, video presentations, interactive images, and infographics (Cabrera-Solano, 2022). Studies on Genially are relatively scarce, as Genially is used to improve students' reading and writing skills online. For example, recognizing and using correct grammar structures, identifying appropriate transitions, organizing ideas in paragraphs, and demonstrating awareness of essay organization are some game-based activities that can effectively develop writing skills (Castillo-Cuesta & Quinonez-Beltran, 2022). Meanwhile, other research uses Genially to develop Newton's law material for high school 10th-grade students (Febrina et al., 2023).

Within the concept of gamification, the use of Information and Communication Technologies (ICT) through games in language learning provides a solution to facilitate elementary school students' understanding of language introduction, words, phrases, sentences, literature, stories, reading, writing, speaking, listening, viewing, presentation skills, and politeness (Mayopu et al., 2024; Wulandari et al., 2024; Rakhimova et al., 2024). In this context, local wisdom strongly supports the development of politeness in elementary school students. This is because politeness is a social construct born from a given community's values, knowledge, intelligence, and local wisdom (Juita et al., 2024; Nurjanah et al., 2024). Students who adhere to local wisdom will have good politeness, and vice versa (Sudaryat & Rahman, 2019; Fateah & Mardiyani, 2022). This necessitates the development of games tailored to the needs and language development of children, in accordance with the local wisdom of their

region, so that the onslaught of digitalization does not disrupt culture and language (Mar'atussolichah et al., 2024).

Few Genially-based game developments have focused on linguistic material, particularly Indonesian, Javanese, and other regional languages. The development focus on the Genially game is still solely on English (Kang & Alghifari, 2024). In addition to the content aspect, games in elementary schools that are being developed predominantly use the Unity 2D Game Development platform, Adobe Flash CS6, and Ren'py (Sadewa, 2016), *Twine*, and *TyranoBuilder* (Ciesla, 2019). A number of these platforms have advantages and disadvantages. However, several studies state that Genially positively impacts elementary school students because it creates an interactive, communicative, and constructive environment (Putra & Afrina, 2023). In the current digital era, a real phenomenon is the damage to language in children, such as swearing, being impolite, not being able to use polite language (*krama*), and not knowing the local wisdom of their region (Vincent Basile, Adam York, 2019). This is indeed dangerous because among the signs of the destruction of a nation are the increasingly bad use of language (rude), the loss of politeness towards parents and teachers, the loss of good and evil moral values, low personal responsibility, and citizens who do not care about local wisdom and nationalism (Lickona, 1992). In the context of Temanggung Regency, politeness in language is important to study because this area has interesting local wisdom in the aspects of language, culture, and social conditions, whether tangible or intangible. The novelty of this study is in the form of multimedia innovation through the development of a digital game called *Gage Bangbangtut* with the Genially platform, which is specifically designed to strengthen Indonesian and Javanese language materials based on Temanggung local wisdom as an interesting strategy in building politeness in language and character of elementary school students in the digital era.

With the advancement of digital technology, this research is urgently needed to develop games containing local wisdom to instill polite language skills in elementary school students. Game-based learning provides an interactive learning experience that can be tailored to student characteristics and offers flexibility in delivering material in a fun way. In this context, the game will be developed as an innovative educational game to support Indonesian language learning in elementary schools. This research contributes to the field of educational innovation and enriches the literature on the effectiveness of game-based learning in language learning at the elementary level. Furthermore, the results serve as a reference for application developers and educators learning to optimize the use of technology for more effective Indonesian language learning that is relevant to today's students' needs.

Based on a preliminary study, Islamic elementary school teachers (*madrasah ibtidaiyah*) in the Parakan, Kledung, and Bansari Districts of

Temanggung Regency, Indonesia, still rarely use educational games in their lessons; in fact, none of the teachers are familiar with the game *Genially*. Based on the needs analysis for students and teachers, the results of the game needs analysis for teachers and students regarding the *Gage Bangbangtut* based on Temanggung local wisdom obtained the highest score of 19 out of 23 items from 20 aspects, and the highest score of 12 out of 20 aspects in 23 elementary school teachers in the Temanggung area. Based on the initial study and needs analysis, it is necessary to develop the *Gage Bangbangtut* so that teachers can apply it in learning.

This study is indeed in the form of research and development of *Gage Bangbangtut*, with the main focus not only on the technical aspects of the product, but also on efforts to solve the core educational problem, namely the crisis of politeness in elementary school students' language, which is intertwined with low literacy and the weakening internalization of local wisdom in Indonesia. In this context, the development of *Gage Bangbangtut* is not positioned as an end in itself, but rather as a pedagogical instrument deliberately designed to address these problems. This *Genially*-based game media was developed with Temanggung local wisdom values integrated in language, dialogue, speech choices, and communication scenarios, so that students not only learn linguistic aspects structurally but also practice politeness in contextually and meaningfully meaningful ways. Therefore, the feasibility and product features aspects in this study serve as a means to test the extent to which the developed *Gage Bangbangtut* answers the fundamental educational problem, namely the formation of polite language attitudes as part of the character and cultural identity of Islamic elementary school students.

The aim of this research and development is to develop the *Game Genially Bang Sindoro, Bang Sumbing, Tembakau Temanggung (Gage Bangbangtut)*, which contains local wisdom that is pedagogically effective in instilling politeness in the language of Islamic elementary school students. Therefore, the researcher proposed the main problem formulation: how to develop *Gage Bangbangtut*? To answer this question, three research questions were posed: (1) What are the novelties of the *Gage Bangbangtut* design? (2) What is the feasibility of the *Gage Bangbangtut* as an educational game? and (3) What is the integration of the effectiveness of *Gage Bangbangtut* within a conceptual framework?

2. Methods

Gage Bangbangtut was developed using the ADDIE model because it aligns with the characteristics of the development process, time efficiency, and available resources (Branch, 2009). The development of *Gage Bangbangtut* is an innovation in digital learning media that incorporates elements of Temanggung local wisdom. The ADDIE stages are practiced through five sequences: analysis,

media design, media development, implementation of the developed media, and evaluation of the developed media, referring to the Branch model (Branch, 2009).

The analysis stage (Hong et al., 2025), was carried out by searching for compatible previous research data and analyzing the needs of students and teachers to map the needs for the development of *Gage Bangbangtut* in the initial study. As samples, this mapping needs to be detailed in 23 items from 20 aspects in 23 teachers and 23 elementary school students in Temanggung Regency, Central Java, Indonesia. The needs analysis results were used as the basis for the design.

The game content, songs/music, background, duration, text, and assessment were designed at the design stage. The design phase involved developing the *Gage Bangbangtut* media, which incorporates Temanggung's local wisdom, encompassing the legends of Sindoro, Sumbing, and Tobacco, in the form of animations/moving images accompanied by music. Temanggung's local wisdom (names of arts and culture, culinary arts, and sub-districts) was presented as a game for students to play, and the Temanggung language and its Indonesian equivalents were presented as a game for students to play.

In the development stage, the *Gage Bangbangtut* was reviewed and assessed by two expert validators of learning media, one expert validator in learning technology, one expert validator of Temanggung local wisdom material, and one expert validator of politeness in elementary school language. Furthermore, a small-scale trial was conducted in one class at Darul Jihad Banaran Elementary School in Temanggung Regency. The Indonesian language learning using the *Gage Bangbangtut* was conducted in two meetings, each lasting 2 x 45 minutes. After that, revisions were made to the *Gage Bangbangtut*, which was developed based on suggestions and input from validators, teachers, and students.

The data collection instruments were developed in a structured and conceptually validated manner, including (1) an observation sheet for students' politeness, containing indicators of word choice, forms of address, intonation, and appropriateness of speech to the local socio-cultural context; (2) a semi-structured interview guide for teachers to explore pedagogical perceptions, ease of use of the media, and changes in students' language behavior; and (3) a five-level Likert-scale questionnaire for students and teachers that measured engagement, clarity of material, relevance of local wisdom, and meaningfulness of learning.

Data analysis procedures were conducted using descriptive-qualitative and simple quantitative methods, namely through data reduction, thematic categorization, and presentation of percentage scores and user responses in tables (Setiawati et al., 2026). Furthermore, the validity of the findings was strengthened through technical triangulation (observation, interviews, and

questionnaires) and source triangulation (students and teachers), so that the research results not only describe the feasibility of the product, but also provide pedagogical evidence regarding the impact of the game on the formation of politeness in Islamic elementary school students.

3. Results

3.1 Learning needs, student characteristics, and school infrastructure

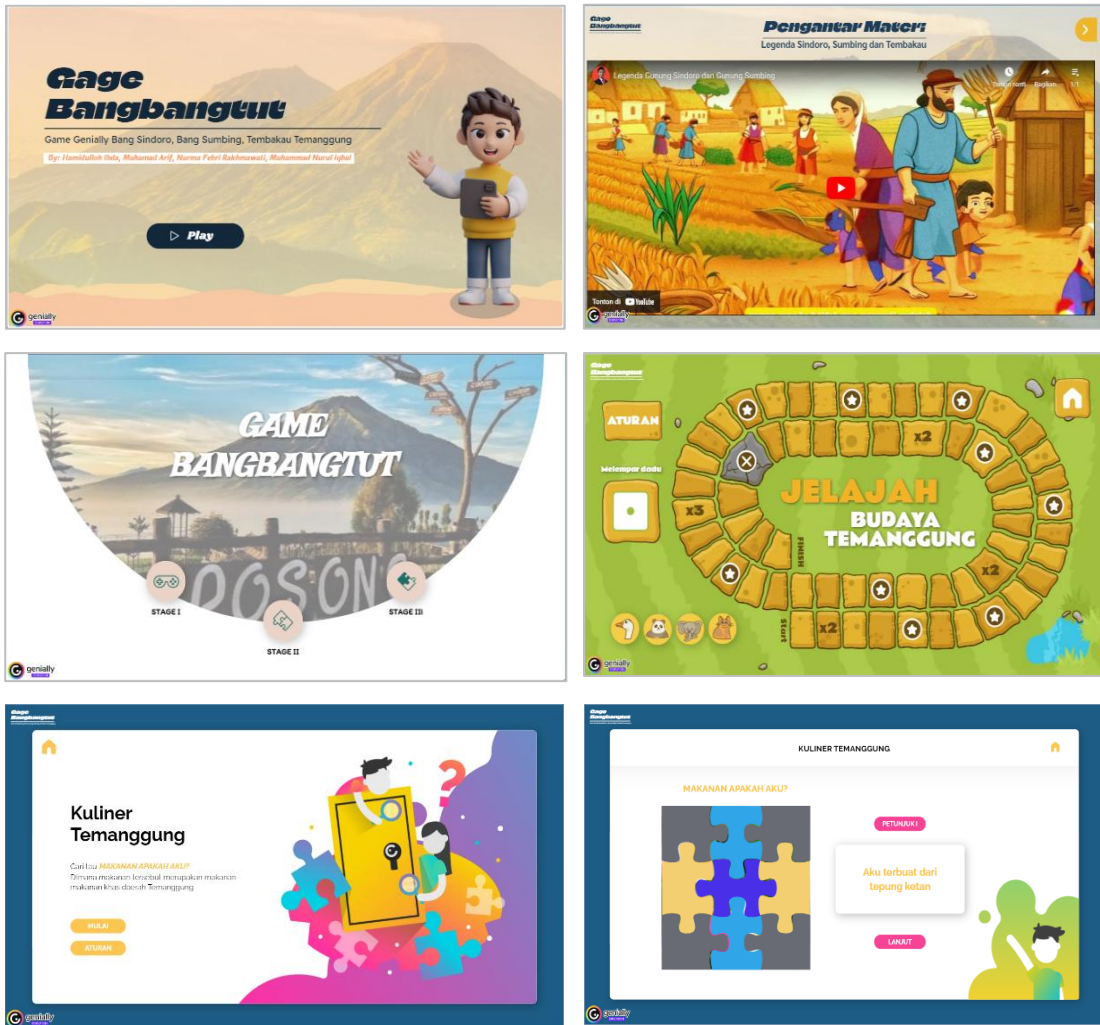
The analysis revealed that fourth-grade students at Madrasah Ibtidaiyah required Indonesian language learning media that could instill polite language in a contextual, engaging, and relevant manner, incorporating local wisdom from Temanggung. Furthermore, the devices available at the target school were predominantly Windows-based PCs, so media development focused on platforms compatible with these conditions. This phase revealed a low level of integration of Temanggung local wisdom into Indonesian language learning media, particularly those related to language, culture, and social values. Based on these findings, it was decided that the developed learning media should (1) be based on educational games, (2) contain Temanggung local cultural content, (3) use regional languages and Indonesian in a balanced manner, and (4) serve as a stimulus for fostering polite language habits.

3.2 Design of the Gage Bangbangtut

The educational game was designed using the *Genially* platform called *Game Genially Bang Sindoro, Bang Sumbing, Tembakau Temanggung (Gage Bangbangtut)*, which can be installed on Windows. Windows is used because it is compatible with the PCs available at the target schools, and based on a needs analysis. *Gage Bangbangtut* contains the legends of *Sindoro*, *Sumbing*, and *Tembakau Temanggung*, local wisdom of Temanggung (names of arts and culture, culinary delights, and sub-districts in Temanggung) in the form of games for students to play, and the distinctive language of Temanggung in two languages, namely Javanese and Indonesian, for 4th-grade elementary school students. This game is designed explicitly for Madrasah Ibtidaiyah (MI) students to instill values of polite language use in daily life. Through exciting and interactive adventures, players are introduced to polite expressions, etiquette, and Temanggung-specific vocabulary. *Gage Bangbangtut* is detailed in Figure 1.

The initial display of *Gage Bangbangtut*, on the *Gage Bangbangtut* feature, includes several aspects. First, there is a mini game that contains challenges involving knowledge of local wisdom, including the culture of Temanggung and the food/cuisine of Temanggung Regency, as well as the distinctive language of Temanggung, which includes the Temanggung dialect and its equivalents (meanings) in Indonesian and the original swear words of Temanggung Regency. Second, local and national languages, namely vocabulary learning in the

Temanggung language and its equivalents in Indonesian. Third, social awareness, namely education on the importance of using good language and avoiding profanity. There are several menus available on *Gage Bangbangtut*. First, the main menu introduces the material, starting with the history of Mount Sindoro and Mount Sumbing. Then, select the stage/level containing stage 1: mini game name (exploring Temanggung culture), which includes dances, tools used in Temanggung dances, and others; stage 2: mini game name (Temanggung culinary), which introduces the cuisine of Temanggung, Stage 3: mini game name (learning the Temanggung language), where you learn to speak the Temanggung language, and game guidelines containing instructions on how to play, rules, and tips for playing mini games.



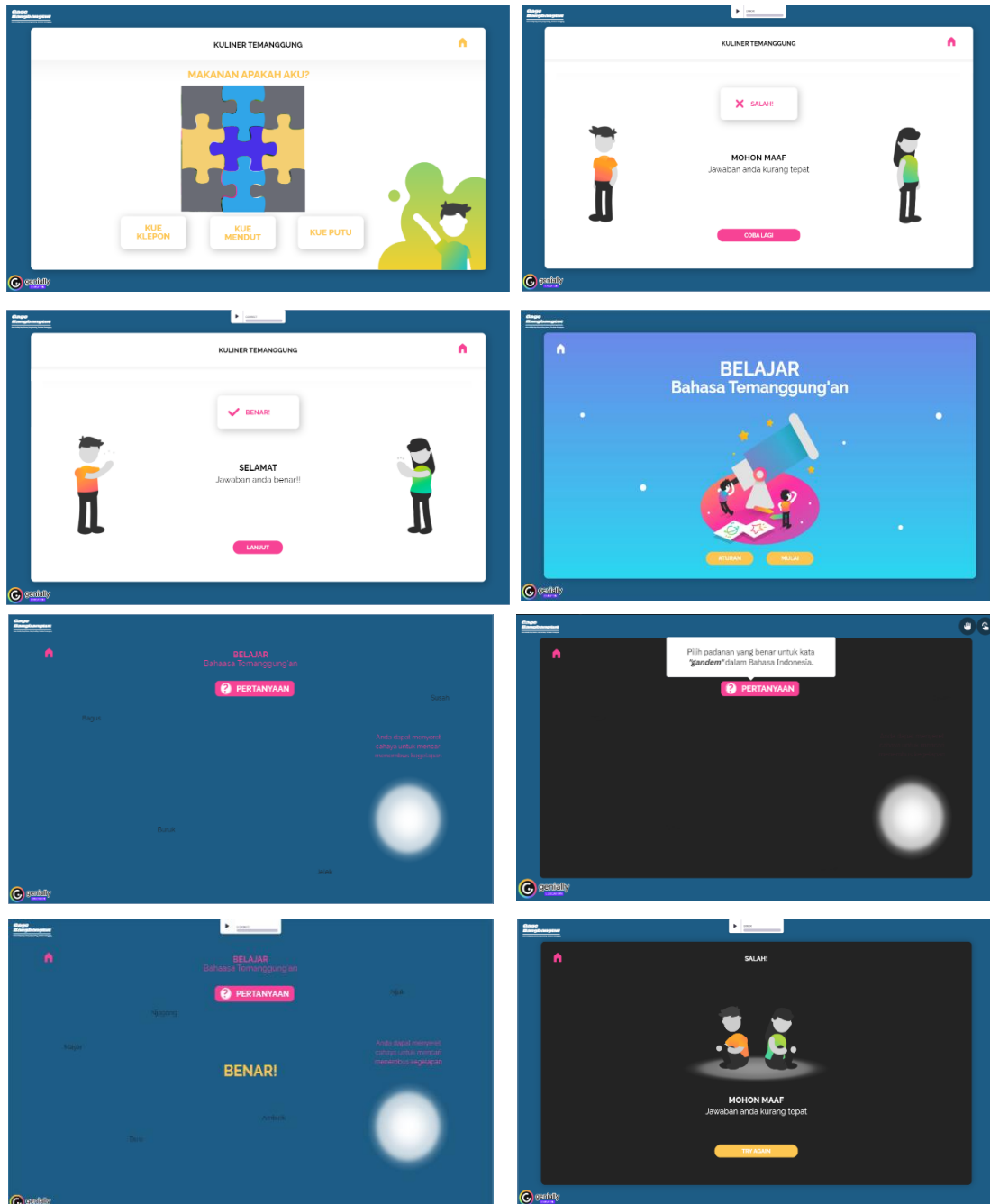


Fig. 1. Display from the beginning to the end of the game.

In the upper right corner, a yellow arrow icon (>) serves as the following menu to access the *Gage Bangbangtut*. After players select a stage or level, they will be directed to various interactive menus introducing the richness of Temanggung's local culture. These menus include exploring the Temanggung culture, the Temanggung culinary, and learning the Temanggung language. Furthermore, the following menu offers several options available to players. First, "Start Challenge" allows players to enter the game and begin a challenge based on the selected stage or level. Second, there is the "Mini-Games" menu, which offers a variety of educational games with local themes.

In these mini-games, players can choose from several engaging activities. In “*Jelajah Budaya Temanggung*,” players are invited to learn more about typical dances, traditional musical instruments, and other cultural elements of Temanggung. In “*Kuliner Temanggung*,” players are introduced to various regional specialties that define local culinary identity. Meanwhile, through “*Learn Temanggung Language*,” players can learn vocabulary and expressions in the Temanggung language. Finally, a Return to Main Menu option exists to exit the current level and return to the game’s initial screen. With this interactive and diverse menu structure, *Gage Bangbangtut* provides entertainment and an educational tool that introduces the rich culture and language of the Temanggung region in a fun way.

The game also includes material on the legends of Sindoro and Sumbing. The history of Mount Sindoro and Mount Sumbing has been uploaded to YouTube (<https://bit.ly/LegendaSindoroSumbing>). *Gage Bangbangtut* has three stages that users can play. Stage 1: *Jelajah budaya Temanggung* (Explore Temanggung culture), which includes dances, instruments used in Temanggung dances, and more.

The game’s rules are listed in the main menu for each stage. In Stage 1, the game is played by two to four players per group. Each player selects a token, rolls a digital die, and the player with the highest number starts the game. Players move their tokens according to the number on the die and are challenged with questions about whether they land on a square with a star icon. If they land on a square with the number X2 or X3, they double their moves accordingly. However, if they land on a “*Bahaya*” (“Danger”) square, they cannot roll the dice until another player passes that square, the player who reaches the finish line first wins. In Stage 2: *Kuliner Temanggung* (Temanggung culinary), players are introduced to various regional culinary specialties. The game can be played individually or in groups. The guide gives clues in stages, from the first to the third clue, with a pause of about ten seconds between each clue. Players are only allowed to answer after the last clue has been read. Meanwhile, in Stage 3: *Belajar Bahasa Temanggungan* (Learning the Temanggungan Language), players are invited to learn the Temanggungan language through an interactive game. Players read questions that appear when the cursor is pointed at an icon, then find the answer by sliding the white circle of light. If the answer is correct, the player proceeds to the next question. If the answer is wrong, the turn passes to the next player, and a fear animation indicates the error.

The *Gage Bangbangtut* is a digital game developed through Genially, which is intended for grade 4 elementary school students. The point of this game is to instill language politeness. In learning Indonesian, this game can be adapted into a fun medium to train students to use Indonesian and Javanese well and politely. Meanwhile, the Genially application is a platform that allows users to

create various kinds of engaging digital content, including presentations, infographics, and interactive games. Using Genially, the *Gage Bangbangtut* can be presented more modernly and attractively for students. Temanggung's local wisdom, which can be integrated into the *Gage Bangbangtut*, is diverse. Temanggung's local wisdom in this *Gage Bangbangtut* includes the names of Temanggung's typical arts and culture, the names of Temanggung's typical culinary delights, the names of sub-districts in Temanggung, and the typical Temanggung language. In this way, students not only learn Indonesian and Javanese, but also learn more about the culture and history of their region. This game can be played via <https://bit.ly/GameBangBangTut> and is currently being exported to Android.

This research, from a gaming perspective, also differs from existing research. One study developed an Android game using a prototype method for Indonesian language learning in elementary schools. This research focused on providing a game to facilitate students' understanding of Indonesian language lessons. The *Gage Bangbangtut*, which was developed, emphasizes local Temanggungan wisdom, including the legends and history of Mount Sindoro and Mount Sumbing, the names of Temanggung's unique cultures, Temanggung culinary specialties, and the names of sub-districts in Temanggung Regency. It also emphasizes politeness in the language of fourth-grade elementary school students. This confirms that this game is distinct from existing games.

The *Gage Bangbangtut*, combined with the Genially application and based on Temanggung's local wisdom, brings fresh air to the world of education, particularly in Indonesian language learning for sixth-grade elementary school students. The *Gage Bangbangtut* is an up-and-coming innovation in education. This game provides a fun learning experience and contributes to cultural preservation and the development of politeness in elementary school students.

3.3 The feasibility of the Gage Bangbangtut

The feasibility of the *Gage Bangbangtut* was obtained from an analysis divided into several aspects, namely the feasibility of the elementary education game, as assessed by media experts, Dr. Herwulan Irine Purnama, M.Pd., and technology expert Ilham Defriono, S.T., M.Sc., expert on the local wisdom of Temanggung, namely Dr. H. Muh. Baehaqi, M.M., and an expert on the politeness of elementary school language/Islamic elementary school, namely Dr. Nesi Anti Andini, M.Pd. Each expert's feasibility is described below. First, the feasibility analysis results of the elementary education game media experts on *Gage Bangbangtut*. From the assessment of the results of the analysis of educational game media experts, the results obtained were: (1) Suitability with the characteristics of grade 4 MI students received a score of 5, (2) Creative in expressing ideas received a score of 5, (3) Visual (Layout and Color) received a score of 5, (4) Use of Text received a score of 4, (5) Moving media (animation)

received a score of 4, (6) Audio (Sound Effect) and songs received a score of 4, (7) Interactive layout (navigation icon) received a score of 4, (8) Fun and effective in its use received a score of 4, (9) Can create student motivation received a score of 4, and (10) Triggers student enthusiasm and creativity received a score of 4. Second, the results from technology experts obtained feasibility results, namely: (1) Suitability with the characteristics of grade 4 MI students received a score of 4, (2) Creative in expressing ideas received a score of 4, (3) Visual (Layout and Color) received a score of 4, (4) Use of Text received a score of 4, (5) Moving media (animation) gets a score of 4, (6) Audio (Sound Effect) and songs get a score of 4, (7) Interactive layout (navigation icons) gets a score of 4, (8) Fun and effective in its use gets a score of 4, (9) Can create student motivation gets a score of 4, and (10) Triggers student enthusiasm and creativity gets a score of 4. The details can be explained in Table 1.

Table 1.

Aiken's V results from game media expert validators.

No	Rater 1	Rater 2	s1	s2	$\sum s$	V	Description
1	4	5	3	4	7	0.88	Very high
2	4	5	3	4	7	0.88	Very high
3	4	5	3	4	7	0.88	Very high
4	4	4	3	3	6	0.75	High
5	4	5	3	4	7	0.88	Very high
6	4	5	3	4	7	0.88	Very high
7	4	5	3	4	7	0.88	Very high
8	4	5	3	4	7	0.88	Very high
9	4	5	3	4	7	0.88	Very high
10	4	5	3	4	7	0.88	Very high
Average						0.97	Very High

Based on Table 1 above, when examining the ten indicators, based on Reliability, Assurance, Tangibility, Empathy, and Responsiveness (RATER) 1 and 2, based on the Aiken's V results, it can be explained that Aiken's V is an index used to measure the level of agreement between raters on an item, particularly in the context of content validation. Aiken's V values range from 0 to 1, with higher values indicating greater agreement. The analysis results in Table 2 above show that nine items from two media experts obtained an Aiken index of $0.87 > 0.8$, and one item obtained an index of $0.75 < 0.8$. Overall, the validation by the *Gage Bangbangtut* media experts obtained an average index of 0.97, indicating that all items in the *Gage Bangbangtut* media instrument have very high validity and are suitable for use. The Aiken's V results in this table show that most items have a V value of 0.88, which is interpreted as a very high level of agreement between the two raters. Item 4 has a slightly lower V value, namely

0.75, which is still in the high category. Overall, the inter-rater agreement for all items in this table is excellent.

Third, the feasibility results from the local wisdom material expert, Dr. H. Muh. Baehaqi, M.M., obtained varying scores. Aspects (1) Suitability of content with the Legend of Sindoro, Sumbing and Tobacco gets a score of 4, (2) Suitability of content of material on the Name of Arts and Culture, Name of Culinary, and Name of District in Temanggung gets a score of 5, (3) Accuracy of content with Temanggung's typical language and its equivalent in Indonesian in the form of a game for students to play gets a score of 3, (4) Up-to-dateness of content with the Legend of Sindoro, Sumbing and Tobacco gets a score of 3, (5) Truth of Concept of content with the Legend of Sindoro, Sumbing and Tobacco gets a score of 3, (6) Truth of content of material on the Legend of Sindoro, Sumbing and Tobacco gets a score of 3, (7) Suitability of characters in the game that depict the characters of Bang Sindoro and Bang Sumbing Temanggung gets a score of 5, (8) Suitability of Difficulty Level with Student Cognitive Development gets a score of 5, (9) Communicative gets a score of 5, and (10) Straightforward gets a score of 5. Aiken's V Results from Local Wisdom Expert Validators are described in Table 2.

Table 2.

Results of Aiken's V from local wisdom expert validators.

No	Rater 1	s1	$\sum s$	V	Description
1	4	3	3	0.75	High
2	5	4	4	1.00	Very high
3	3	2	2	0,50	Enough
4	3	2	2	0,50	Enough
5	3	2	2	0,50	Enough
6	3	2	2	0,50	Enough
7	4	3	3	0.75	High
8	4	3	3	0.75	High
9	4	3	3	0.75	High
10	4	3	3	0.75	High
Average				0,68	High

The analysis results in Table 2 above show that of the five statement items from local wisdom experts, the Aiken index was 0.75, four statement items obtained an index of 0.50, and one obtained an index of 1.00. Overall, the validation of the local wisdom experts for the *Gage Bangbangtut* obtained an average index of 0.68, meaning that all statement items in the *Gage Bangbangtut* media instrument are highly valid and suitable for use.

Fourth, the results of the feasibility test from the MI/SD language politeness expert Dr. Nesi Anti Andini, M.Pd., with the following details: (1) The suitability of the content with the maxim of wisdom (short expressions or statements containing advice, principles, or life guidelines that are full of meaning and wisdom) gets a score of 5, (2) The accuracy of the content with the value/principle

content in politeness of language which aims to minimize the losses experienced by others and maximize the benefits they get in a conversation gets a score of 5, (3) The up-to-dateness of the content with the value/principle content in politeness of language which aims to minimize the losses experienced by others and maximize the benefits they get in a conversation gets a score of 5, (4) The suitability of the content with the main objectives of the maxim of wisdom: (a) Maintaining good relations, (b) Preventing conflict and (c) Creating a comfortable atmosphere gets a score of 5, (5) The accuracy of the content with the main objectives of the maxim of wisdom: (a) Maintaining good relations, (b) Preventing conflict and (c) Creating a comfortable atmosphere gets a score of 5, (6) The up-to-dateness of the content with the main objectives of the maxim of wisdom: (a) Maintaining good relations, (b) Preventing conflict and (c) Creating a comfortable atmosphere get a score of 5, (7) The truth of the concept of content with the primary objective of the maxim of wisdom: (a) Maintaining good relations, (b) Preventing conflict and (c) Creating a comfortable atmosphere get a score of 5, (8) Suitability of the Level of Difficulty with the Cognitive Development of Students gets a score of 5, (9) Communicative gets a score of 5, and (10) Straightforward gets a score of 5. Meanwhile, the results of Aiken's V from the Expert Validator of Language Politeness are described in Table 3.

Table 3.

Results of Aiken's V from the expert validator on language politeness.

No	Rater 1	s1	$\sum s$	V	Description
1	5	4	4	1.00	Very high
2	5	4	4	1.00	Very high
3	5	4	4	1.00	Very high
4	5	4	4	1.00	Very high
5	5	4	4	1.00	Very high
6	5	4	4	1.00	Very high
7	5	4	4	1.00	Very high
8	5	4	4	1.00	Very high
9	5	4	4	1.00	Very high
10	5	4	4	1.00	Very high
Average				1.00	Very high

The analysis results in Table 3 above show that out of ten statement items from the language politeness expert, the Aiken index obtained was 1.00. Overall, the validation of the language politeness expert in the *Gage Bangbangtut* obtained an average index of 1.00, meaning that all statement items in the *Gage Bangbangtut* media instrument are highly valid and suitable for use.

3.4 The effectiveness of the Gage Bangbangtut

The effectiveness of Gage Bangbangtut was assessed by administering a test on Indonesian language politeness to grade IV students at Darul Jihad Banaran Elementary School before and after its use. Indonesian language learning using the *Gage Bangbangtut* was conducted in two sessions, each

lasting 2 x 45 minutes. The learning resources in the experimental group were the fourth-grade Indonesian Worksheets and the *Gage Bangbangtut*. The results of the pre-test and post-test of the experimental and control groups are shown in Table 4.

Table 4.

Results of the pre-test and post-test of the experimental and control groups.

Value Range	Experimental group		Control group	
	Pre-test	Post-test	Pre-test	Post-test
85-100	4	13	0	0
75-84	4	2	3	6
65-74	5	0	4	6
25-64	2	0	7	2
Quantity	15	15	14	14

Based on Table 4, the post-test results of the experimental group students differed significantly from their learning outcomes before using the *Gage Bangbangtut*. Table 5 shows that 13 of 15 scored in the 85-100 range, while the other two scored in the 75-84 range. In addition, the post-test results of students in the control group also differed slightly from their pre-test results: 6 of 14 scored in the 75-84 range, 6 of 14 in the 65-74 range, and 2 of 14 in the 25-64 range.

The effectiveness of the *Gage Bangbangtut* in Indonesian language learning for fourth graders in Islamic elementary schools was calculated using a t-test because the normality test indicated a normal distribution, and the homogeneity of variance test indicated that the post-test data in both groups had the same variance. As shown in Table 5, the pre-test average before using the *Gage Bangbangtut* was 71.67, while the post-test average increased to 92.33. The paired sample test results indicate that Sig. value is less than 0.05, indicating a significant difference. This means that the use of *Gage Bangbangtut* significantly improves Grade IV students' understanding of politeness in language at Darul Jihad Banaran Elementary School.

Table 5.

Paired samples test results of the experimental group.

		Mean	N	Std. Deviation	Std. Error Mean
Pair 1	Pretest	71.67	15	13.844	3.575
	Posttest	92.33	15	6.779	1.750

Paired Differences									
		Mean	Std. Deviation	Std. Error	95% Confidence Interval of the Difference		t	df	Sig. (2-tailed)
		Mean	Std. Deviation	Mean	Lower	Upper			
Pair 1	Pretest - Posttest	-20.667	12.799	3.305	-27.754	-13.579	-6.254	14	.000

Teachers' responses also indicate that they are interested in using the *Gage Bangbangtut* based on Temanggung local wisdom and agree that it fosters students' creativity and imagination. In addition, students' responses indicate that

students at Darul Jihad Banaran Elementary School were highly interested and enthusiastic about participating in learning using the *Gage Bangbangtut*. This was evident in the score, which showed that 93% of students enjoyed using the *Gage Bangbangtut* based on Temanggung local wisdom, 93% of students could speak politely through the *Gage Bangbangtut* based on Temanggung local wisdom, 87% of students could speak well without harming others, 93% of students responded enthusiastically and were motivated to participate in learning activities, and 100% of students strongly agreed that using the *Gage Bangbangtut* based on Temanggung local wisdom can foster a sense of concern for using polite language in everyday life.

4. Discussion

4.1. Novelties of the *Gage Bangbangtut* design

From a game design perspective, the *Gage Bangbangtut* has several novelties. First, the novelty comes from integrating technology and culture (Temanggung local wisdom). The *Gage Bangbangtut* has successfully combined modern technology (Genially) with the richness of Temanggung local culture. This is a step forward in preserving culture while utilizing technology for educational purposes (Parwati et al., 2018; Asmayawati et al., 2024). Second, the novelty comes from the interactive learning aspect. In contrast to conventional learning methods, the *Gage Bangbangtut* offers a more interactive and enjoyable learning experience. Students listen to explanations and are actively involved in the game (Putra & Afrina, 2023; Afni & Bektiningsih, 2024). The *Gage Bangbangtut*, with its attractive appearance and exciting gameplay, can be an alternative learning medium that is more interesting for students than textbooks. Third, the personalization of digital game-based learning. Through Genially, the *Gage Bangbangtut* can be adjusted to the needs and interests of each student. This game makes learning more effective and engaging in language learning (Cabrera-Solano, 2022; Lopes et al., 2024; Marín et al., 2024). Fourth, strengthening local values through Temanggung local wisdom integrated into the game (Suardin et al., 2023). This game not only teaches Indonesian and Javanese, but also instills the values of politeness and good manners, which are an integral part of Javanese culture.

Proportionally, the findings of this study need to be understood by positioning politeness as an affective-sociocultural construct that develops through habituation, role modeling, and interaction contexts, so that the implications of *Gage Bangbangtut* are not merely permanent and universal character changes. The implementation results show that this game is effective as a pedagogical stimulus in increasing students' awareness, sensitivity, and preference for the use of more polite language in learning contexts, especially

when local wisdom values are presented contextually and interactively. Therefore, this research claim is limited to strengthening polite language awareness and speech behavior tendencies during the learning process, not to generalizing long-term attitude changes outside the classroom context. Despite these limitations, the results of this study still provide a valid empirical contribution to the role of game-based learning grounded in local wisdom in supporting Indonesian language learning in Islamic elementary schools, opening up space for further studies with longitudinal or comparative designs to examine the in-depth internalization of politeness values.

4.2. The feasibility of the Gage Bangbangtut as an educational game

The results of the feasibility analysis by experts indicate that *Gage Bangbangtut* has a very high level of validity from media, technology, local wisdom material, and language politeness. The novelty of this study is the multidisciplinary integration between Genially-based digital game technology with character education content and Temanggung local wisdom, which contains language politeness values according to the context of elementary school students (Kholisna & Sukasih, 2025; Rahmawati et al., 2025). *Gage Bangbangtut* is not just an educational entertainment media but also a pedagogical instrument that holistically integrates cognitive, affective, and psychomotor aspects through a digital local wisdom-based learning approach (Cinantya et al., 2024; Wahyudi et al., 2025). The integration of animation, interactive visuals, and narratives typical of Temanggung Regency strengthens the contextual aspect of culture-based learning, while strengthening the aspect of politeness in language, which presents ethical learning that is compatible with the *Projek Penguatan Profil Pelajar Pancasila (P5)* (Pancasila Student Profile Strengthening Project).

The three main areas of novelty in *Gage Bangbangtut*. Learning media innovation based on Temanggung local wisdom using Genially, internalization of the value of politeness in language as a character of Nusantara culture in digital media, and strengthening thematic learning models based on regional culture that are adaptive to the development of current-century technology. This novelty shows that *Gage Bangbangtut* is not only academically worthy, but also very visionary in supporting the transformation of elementary school learning towards edutech that has the character and identity of Temanggung, a typical Indonesian locality.

4.3. Integrating the effectiveness of Gage Bangbangtut within a Conceptual Framework

The implementation of *Gage Bangbangtut* showed a significant increase in the understanding and practice of politeness in elementary school students, as evidenced by the difference in the average pretest and posttest scores from 71.67 to 92.33. Theoretically, the effectiveness of this media can be explained through

the theory of social constructivism, which emphasises that meaningful learning occurs through social interaction and cultural context (Vygotsky & Cole, 1978). *Gage Bangbangtut* contains local wisdom of Temanggung, constructing a contextual learning experience, in accordance with the concept of contextual teaching and learning (CTL), which emphasises the importance of linking material to students' real lives to make it easier to understand and internalise (Johnson, 2002; Acsal & Habib, 2025).

In developing polite language character, this study's findings align with Leech's view, stating that politeness is a pragmatic strategy to maintain social harmony through relevant language choices (Leech, 1983). The novelty of this study lies in combining politeness values with interactive digital game elements (*Gage Bangbangtut*) based on local wisdom, as this approach has not been widely developed in the context of Indonesian language learning in elementary schools. *Gage Bangbangtut* is not merely an innovative learning medium, but also a means of preserving local culture through a fun and character-oriented educational approach. The findings of this study enrich the literature on contextual digital media-based learning and expand the application of Vygotsky and Leech's theories within the framework of language character education in elementary schools in the digital era.

5. Conclusion

The development of *Gage Bangbangtut* referred to the ADDIE Branch type scheme. This research succeeded in developing *Gage Bangbangtut* based on Temanggung local wisdom as an effective learning medium in instilling the values of politeness in language in Islamic elementary school students. By integrating Temanggung cultural elements into the game flow, students can learn Indonesian while getting to know their regional cultural heritage. The feasibility of *Gage Bangbangtut* from educational game media experts and technology experts, from nine statement items from two media experts obtained an Aiken index of $0.87 > 0.8$ and one statement item obtained an index of $0.75 < 0.8$, overall validation of this *Gage Bangbangtut* media expert obtained an average index of 0.97 which means that all statement items in the *Gage Bangbangtut* media instrument have very high validity and are suitable for use.

From the Temanggung local wisdom experts, five statement items from local wisdom experts obtained an Aiken index of 0.75, four statement items obtained an index of 0.50, and one statement item obtained an index of 1.00. Overall, the expert validation of the *Gage Bangbangtut* local wisdom obtained a mean index of 0.68, indicating that all items in the *Gage Bangbangtut* media instrument are highly valid and suitable for use. Based on the Islamic elementary school language politeness expert's assessment results, the ten statements obtained an Aiken index of 1.00. Overall, the expert validation of the *Gage*

Bangbangtut language politeness obtained a mean index of 1.00, indicating that all items in the *Gage Bangbangtut* media instrument are highly valid and suitable for use.

The effectiveness of the *Gage Bangbangtut* learning media based on Temanggung local wisdom in Indonesian language learning in fourth-grade Islamic elementary schools was calculated using a t-test. Before the t-test, prerequisite tests were conducted, namely normality and homogeneity. After parametric analysis using the Shapiro-Wilk method, the pretest and posttest data in the control and experimental classes showed a normal distribution with a significance value greater than 0.005. The Shapiro-Wilk normality test shows that H_0 is clearly rejected, thus it can be analysed and concluded that the average student understanding in the initial test is still relatively low, then after the learning action using the *Gage Bangbangtut* media based on Temanggung local wisdom, the students' final test experienced an increase with 95% confidence.

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