



Scratch-based Game Design of *KaKu* to Improve Students' Ability in Distinguishing Indonesian Formal Words at Primary School

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Abstract, *Formal words are words which follow the language rules that have been determined in formal situations both in oral and written. The purpose of this study is to improve the ability of primary school students in distinguishing formal words. The method used is SDLC (System Development Life Cycle) in waterfall model. The result of this study is the design of a scratch-based game design of KaKu to improve students' ability to distinguish formal words at primary school has code blocks on 1) Teacher's sprite, 2) Easy quiz, 3) Medium quiz, 4) Hard quiz, 5) Tick sprite, 6) Cross sprite, 7) Easy sprite, 8) Medium sprite, and 9) Hard sprite. The conclusion of this study is that there are 9 scratch-based game designs of KaKu (formal words) to improve students' ability to distinguish formal words at primary school.*

Keywords: *Formal, Words, Primary, Distinguish*

1. INTRODUCTION

Formal words follow the language rules that have been determined by institution for formal situation both in oral and written forms. According to KBBI (Indonesian dictionary), formal words are in line with Indonesian language structures. Rohman et.al. (2023) argue that most of Indonesian people do not use formal words in their daily conversations. Formal words are written based on standardized rules (Privana et.al, 2021). It has been justified without adding particular accent in its writing and pronunciation (Ningrum, 2019). According to Lisa, et.al. (2024), its grammar and structure have formal rules and guidelines.

Most people do not utilize formal words in their daily life. They tend to use informal words in writing and conversation. An example of the simplest pronunciation used is when people ask *bagaimana* [how] that is replaced with the word *gimana* or *kekmana* (Devianty, 2021). Another examples of informal language that mostly used are the word *standard* which has formal word of *standar* (Setiawati, 2016) and the word *antri* which has to be *antre* (Sari et.al., 2024).

Moreover, formal words have different characteristics. The characteristics are mostly used in formal situations such as writing letters, formal documents, or scientific

articles (Prakasa and Wardana, 2024). In addition, people have mispronounced the formal words (Utami et.al., 2022). The formal and informal words have almost the same writing (Raif et.al., 2024). The pronunciation of informal words is influenced by regional language. People can search and implement the formal words using Scratch website.

Scratch is an online site used for people who want to learn programming (Chaerunnisa and Bernard, 2021). This site provides interesting and easy features for beginners (Nashih and Perdana, 2024). Its users are able to create games, learning animations, and stories (Muharram and Fajrin, 2021). Scratch has colorful code blocks which can be arranged dragging and dropping like a puzzle. This site can be utilized as learning media for primary school students.

Scratch has several advantages for its users. According to Rahmadika et.al. (2024), scratch is able to develop user's creativity and freedom in creating games, animation, and many others based on his imagination. Furthermore, scratch develops user's skill, logic, and reasoning to solve problems (Pratama, 2018). By creating a project in scratch, the user learns to think critically and solve problems because each code block has certain function which can be combined. Scratch can also be used by teachers as a learning media.

The use of scratch in education creates interesting learning for students. It has several features that can be used as game and presentation media, so the students learn it happily. Putro and Astuti (2022) explain that stakeholders of a school can take a schedule of learning computer about this programming by utilizing scratch to make students learn easier. Scratch learning for primary school trains students to think critically and wisely (Wardhana and Pratiwi in Ulfaida and Hasanudin, 2022). In addition, it can be a project to make primary school students to be creative and have critical thinking (Qurin et.al., 2024).

Primary school students are in the elementary level with the age of 6 to 12 years old (Angga and Iskandar, 2022). They are in the initial stage of learning in educational institutions (Maryono et.al., 2018). They can be referred as children who take learning process to develop their knowledge, basic skills, and characters (Apriliani and Radia, 2020). They have their own characteristics.

The characteristics of primary school students are influenced by physical, emotional, social, and cognitive developments. In physical development, they have stable progress for height and weight (Kesuma and Istiqomah, 2019). Their motor skills are more active (Kiranida, 2019) such as tend to run, jump, and play ball. According to Faqumala and Pranoto (2020), in emotional development, primary school students tend to show direct expressions when they are angry, sad, or happy. Moreover, they like to be appreciated for

their success to increase their self confidence (Zulmuqim et.al., 2022). Social development is more about playing with peers and forming circles (Khairiah, 2018). In cognitive development, students tend to have high curiosity (Wardani and Janattaka, 2022), and limited attention, so interesting learning is need to be not monotonous.

Students' needs in primary school include individual interest, talent, and readiness (Pebriyanti, 2023). Elpira and Ghufron (2015) state that teachers have to determine students' interest to create relevant learning. Talent can be described as student's potential in certain field (Afniola et.al., 2020). When a student has good talent in writing, he can be directed to join journalistic extracurricular. According to Andini (2016), to prepare students' needs, teacher can take a learning method because each student has different need. By understanding those three students' needs in primary school, teacher can create effective learning to develop students' potential developments.

2. LITERATURE REVIEW

Formal Words

Formal words have been justified its structures and grammars in writing and oral formal situation. Student's ability to distinguish formal words in primary school is very important because it can increase their critical thinking. Basic skill in Indonesian language learning is to be able in distinguishing formal words. According to Ruhamah et. al. (2018), introducing formal and informal words will drive students to recognize many words, so they can use it well.

Most of students have difficulties in communicating effectively because they often use their regional language in interacting with their peers, families, and teachers (Sormin et.al., 2024).

Scratch

Scratch is a platform media for various usages in creating PowerPoint, games, etc. Sutikno, et.al. (2019) state that learning using scratch media has not been widely used in education. This media will make students to be more enthusiastic in learning (Yunita and Indrajit, 2022). Creating game in scratch is able to improve students' critical thinking and motivation to learn because this media is enjoyable. Udani, et.al. (2024) utilize scratch as learning media which is very effective and valid. Students tend not to get bored in this learning process.

Primary School Students

Primary school students are in elementary level with the age of 6 to 12 years old (Setyanugrah and Setyadi, 2017). In this age range, they still need teacher's guidance so they can develop their knowledge, abilities, and characters (Handayani et.al., 2022).

3. METHODS

This study implements SDLC (System Development Life Cycle) and waterfall model. According to Pricillia (2021), SDLC is a method to create, test, and document the software system. SDLC method which is often used in developing software is waterfall model. This model develops structured software (Yusron and Huda, 2021). Sukamto and M. Salahudin in Yusuf and Badrul (2024) explain waterfall model as a development method which provides flowchart from need analysis to final stage. The stages of waterfall method can be viewed in figure 1.

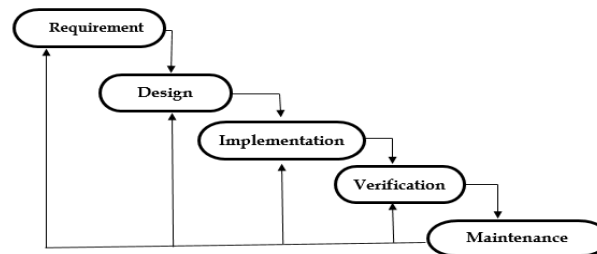


Figure 1. Stages of waterfall method (Pressman in Ismunandar et.al., 2021)

Requirement

Requirement or need analysis is a process in which the researchers search for requirements in software to produce detailed needs (Pebriawan and Isnain, 2024). In this stage, the creator and user determine what is needed in the software (Hasanah and Untari, 2020).

Design

The design of software development is a technique to plan identified needs to create better result (Budi and Abijono, 2016). This design is useful to create frameworks such as making diagrams and selecting technology (Iswandy, 2015).

Implementation

Implementation stage is developed by making codes in the program from the smallest unit until the system is complete (Rusman and Suwardoyo, 2022). This stage aims to produce a desired system that has been structured (Yahya et.al., 2020).

Verification

In verification stage, software is reviewed to find errors and claim that its results are in line with users' expectations (Rakasiwi, 2023). Verification and testing stages are key steps in the waterfall model to ensure that the software is qualified, meets requirements, and ready to be used in operational environments (Dawis et.al., 2023).

Maintenance

Maintenance stage is the final stage of waterfall model (Nugroho and Saifudin, 2022). In this stage, the completed software is protected. This is important stage because good maintenance makes software can last longer (Hadiprakoso, 2020).

4. RESULTS

Scratch-based game design of *KaKu (Kata Baku)* to improve students' ability in distinguishing Indonesian formal words at primary school has results as followed.

Teacher's Sprite Bu Guru

Teacher's sprite utilize code block as viewed in figure 2.

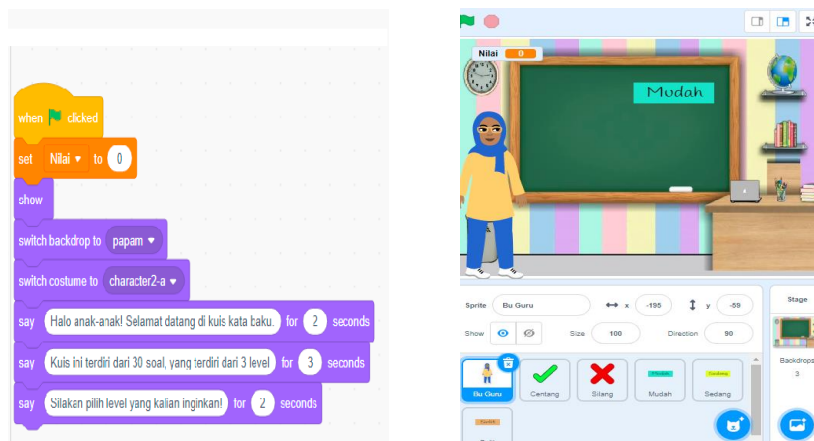


Figure 2. Teacher's Sprite

Teacher's sprite has first code block in left side contains 'when green flag clicked', 'set *nilai* to', 'show', 'switch backdrop to *papan*', 'sweet custom to *character2-a*', 'say *halo anak-anak* [Hi kids] for 2 seconds', 'say *kuis ini terdiri dari 30 soal dan 3 level* [this quiz contains 30 questions and 3 levels] for 3 seconds', and 'say *silakan pilih level* [Please select a level] for 2 seconds'.

Code block of 'when green flag clicked' is located in the 'events' code which functions to start the game. The code block of 'set *nilai* to' is located in the 'variable' code which functions to set the game scores. The code block of 'show' is located in the 'looks' code which functions to show the scores. The code blocks of 'switch backdrop to' and

'switch custom to' are located in the 'looks' code which function to show background of board and character. The code blocks of 'say *halo anak-anak*', 'say *kuis ini terdiri dari 30 soal dan 3 level*', and 'say *silakan pilih level*' have functions to show the words for several seconds.

Easy Level Quiz

In easy level, the code blocks that are used can be viewed in figure 3.

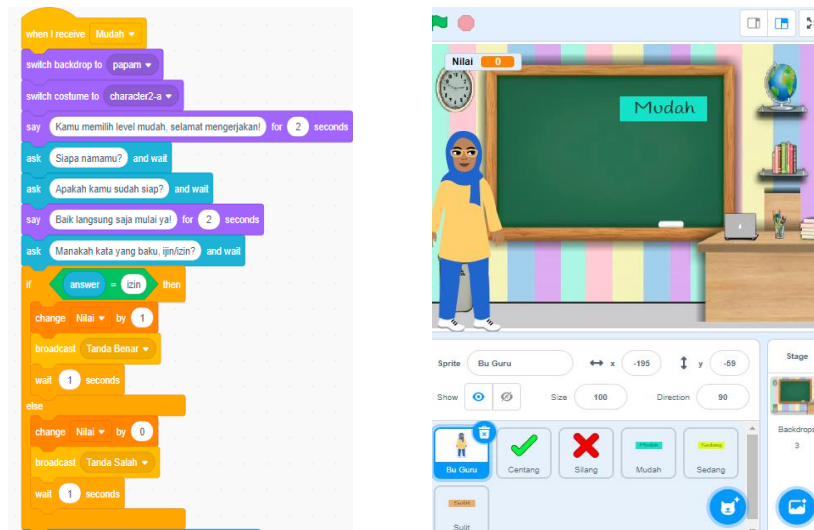


Figure 3. Easy Level Quiz

The second code block contains 'when I receive *mudah* [easy]', 'switch backdrop to papam', 'switch costume to character2-a', 'say *kamu memiliki level mudah, selamat mengerjakan* [You have an easy level, good luck] for 2 seconds', 'ask *siapa namamu* [what is your name] and wait', 'ask *apakah kamu sudah siap?* [are you ready?] and wait', 'say *baik langsung saja mulai ya!* [Let's begin] for 2 seconds', 'ask question provided and wait', 'if answer = correct then change *nilai* [score] by 1', 'broadcast *tanda benar* [correct sign]', 'wait 1 second', 'else change *nilai* by 0', and 'broadcast *tanda salah* [wrong sign] wait 1 second'.

The code block of 'when I receive *mudah*' is located in the 'event' code which functions to choose easy level. The code blocks of switch backdrop to papam' and 'switch costume to character2-a' are located in the 'looks' code which have functions to change background of green board and character after choosing easy level. The code block of 'say *kamu memiliki level mudah, selamat mengerjakan*' is located in the 'looks' code which functions to show sentence in 2 seconds. The code blocks of 'ask *siapa namamu* and wait' and 'ask *apakah kamu sudah siap?* and wait' are located in the 'sensing' code which have functions to show questions and wait for a moment. The code block of 'say *baik langsung*

saja mulai ya! for 2 seconds' is located in the 'looks' code which functions to show sentence in 2 seconds. The code block of 'ask *soal pertama* [first question] and wait' is located in the 'sensing' code. The code block of 'if then else' is located in the 'control' code. In this code block, there is 'operators' code namely '= izin'. Furthermore, it needs to add the word 'answer' in the 'sensing' code. The 'change' code is located in the 'variables' code. The code block of 'broadcast *tanda benar*' is located in the 'events' code. The code block of 'wait 1 second' is located in the 'controls' code. In other words, the correct answer will get one score. On the other hand, the wrong answer remains no score.

Moreover, there is a code block in easy level to proceed to medium level. It can be viewed in figure 4.

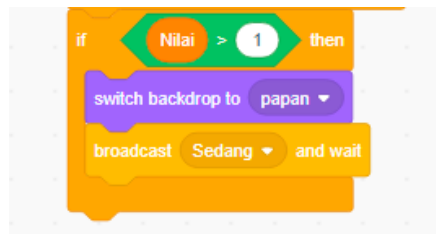


Figure 4. Code block of easy level

The code block 'if then' is located in the 'control' code. There is 'operators' code in it. The 'variables' code is submitted with the word '*nilai*' [score]. In addition, the code block of 'switch backdrop to papan' is located in the 'looks' code, while the code block of 'broadcast sedang and wait' is in the 'events' code. It has function to proceed to medium level and change background when the score of easy level is more than 1.

Medium Level Quiz

The medium level quiz utilizes code block as viewed in figure 5.

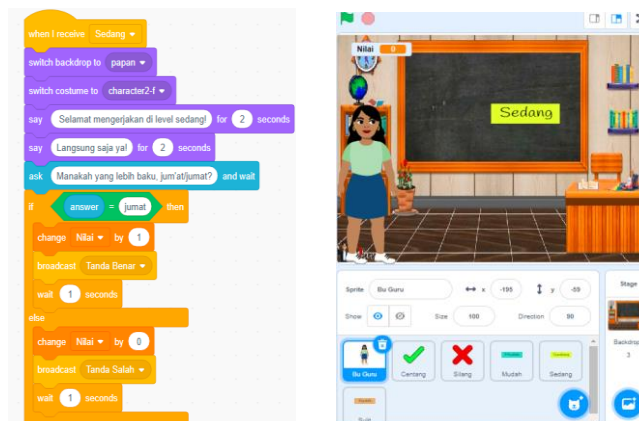


Figure 5. Medium level quiz

The code block of medium level contains 'when I receive sedang', 'switch backdrop to papan', 'switch costume to character2-f', 'say *selamat mengerjakan di level sedang* [good luck for medium level] for 2 seconds', 'say *langsung saja ya* [let's begin] for 2 seconds', and many others which are the same with easy level that contains questions.

The code block of 'when I receive sedang' is located in the 'event' code which functions to show medium level. The code blocks of 'switch backdrop to papan' and 'switch costume to character2-f' are located in the 'looks' code which have function to change background of black board and the character after choosing medium level. The code block of 'say *langsung saja ya* for 2 seconds' is located in the 'looks' code which functions to show sentence for 2 seconds. The code block of 'ask *soal pertama di level sedang* [first question in medium level] and wait' is located in the 'sensing' code. The code block of 'if then else' is located in the 'control' code which has 'operators' code namely '= Jumat'. After submitting the word 'answer' in the 'sensing' code, the 'change' code has to be chosen in the 'variables' code. The code block of 'broadcast *tanda benar* [correct signal]' is located in the 'events' code. The code block of 'wait 1 second' is located in the 'controls' code. When the answer is correct, the user will obtain one score. On the other hand, when the answer is incorrect, there is no score for user.

Moreover, the code block in medium level to proceed to hard level can be viewed in figure 6.

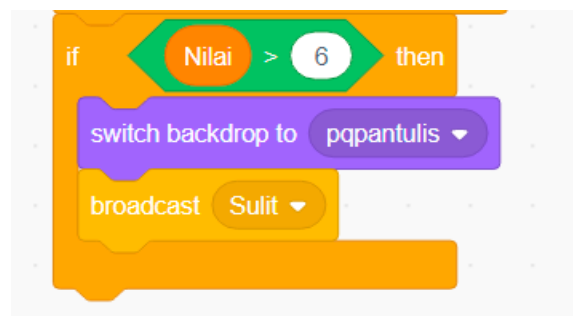


Figure 6. Code block of medium level

The code block of 'if then' is located in the 'control' mode. There is 'operators' code in it to submit 'variables' code with a word '*nilai* [score]'. Moreover, the code block of 'switch backdrop to pqpantulis' is located in the 'looks' code. The code block of 'broadcast sulit' is located in the 'events' code which has function to automatically proceed to hard level and change background when the score of medium level is more than 6.

Hard Level Quiz

The code block of hard level quiz can be viewed in figure 7.

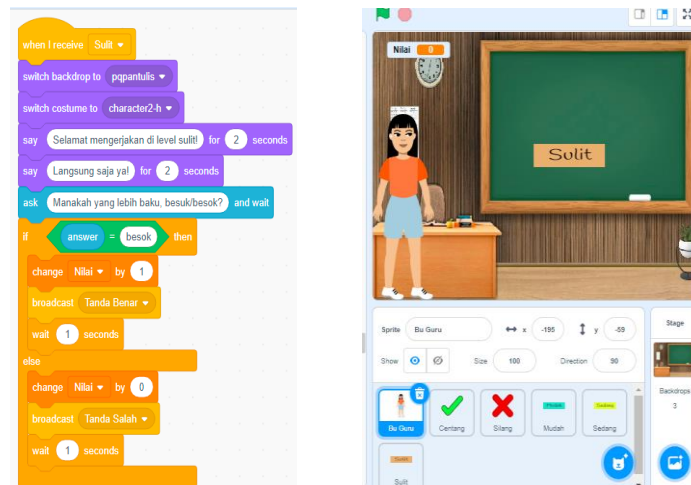


Figure 7. Hard level quiz

The code block of hard level quiz contains ‘when I receive sulit’, ‘switch backdrop to pqpantulis’, ‘switch costume to character2-h’, ‘say *selamat mengerjakan di level sulit* [good luck for hard level quiz] for 2 seconds’, ‘say *langsung saja ya* [let’s begin] for 2 seconds’, and many others which are the same with easy and medium levels that contain questions.

The code block of ‘when I receive sulit’ is located in the ‘event’ code which functions to show difficult level. The code blocks of ‘switch backdrop to pqpantulis’ and ‘switch costume to character2-h’ are located in the ‘looks’ code which have function to change background of green board and the character after choosing hard level. The code block of ‘say *langsung saja ya* for 2 seconds’ is located in the ‘looks’ code which functions to show sentence for 2 seconds. The code block of ‘ask *soal pertama di level sulit* [first question in hard level] and wait’ is located in the ‘sensing’ code. The code block of ‘if then else’ is located in the ‘control’ code which has ‘operators’ code namely ‘= besok’. In the ‘sensing’ code, the word ‘answer’ is submitted. The code block of ‘change’ is in the ‘variables’ code. The code block of ‘broadcast *tanda benar*’ is located in the ‘events’ code. The code block of ‘wait 1 second’ is located in the ‘controls’ code. It can be said that the correct answer obtains one score. The incorrect answer will get no score.

In hard level, there is code block to end the game. It can be viewed in figure 8.



Figure 8. Code block of hard level

The code block in figure 8 contains ‘if *nilai* > 1 then’, ‘switch backdrop to papam’, ‘say join *selamat total nilaimu adalah* [congratulation your score is] for 2 second, and ‘stop all’. The code block of ‘if *nilai* > 1 then’ is located in the ‘control’ code. The code block of ‘*nilai* [score]’ is located in the ‘variable’ code which is included in the code block of ‘> 1’ in the ‘operator’ code. The code blocks of ‘switch backdrop to papam’ is located in the ‘looks’ code. The code block of ‘say join *selamat total nilaimu adalah* for 2 second’ is located in the ‘operator’ code. The code block of ‘stop all’ is located in the ‘control’ code which has function to finish the quiz. Moreover, the score will be shown and the game ends.

Tick Sprite

Tick sprite utilizes the code block which can be viewed in figure 9.

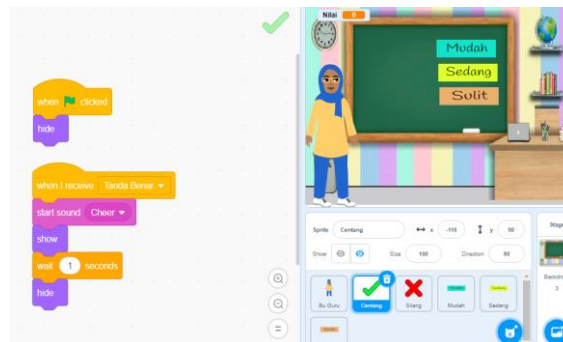


Figure 9. Tick sprite

Tick sprite in figure 9 contains ‘when green flag clicked’, ‘hide’, ‘when I receive *tanda benar* [correct signal]’, ‘start sound cheer’, ‘show’, ‘wait 1 second’, and ‘hide’. The code block of ‘when green flag clicked’ is located in the ‘event’ code. The code block of ‘hide’ is located in the ‘looks’ code which has function to hide the tick when the game is started. The code block of ‘when I receive *tanda benar*’ is located in the ‘events’ code. The code block of ‘start sound’ is located in the ‘sound’ code. The code blocks of ‘show’ and ‘hide’ are located in the ‘looks’ code. The code block of ‘wait 1 second’ is located in

the ‘control’ code which has function to provide cheer sounds and tick mark in one second when the answer is correct.

Cross Sprite

Cross sprite which is utilized in this media can be viewed in figure 10.

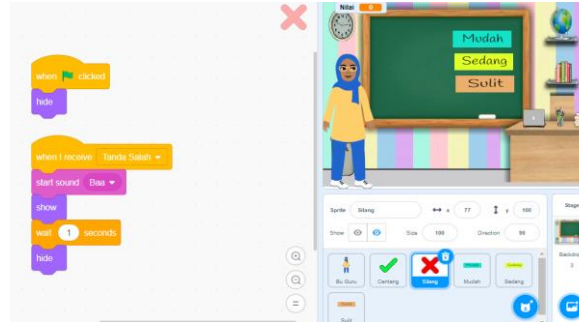


Figure 10. Cross sprite

In figure 10, the cross sprite contains ‘when green flag clicked’, ‘hide’, ‘when I receive *tanda salah* [false mark]’, ‘start sound *baa*’, ‘show’, ‘wait 1 second’, and ‘hide’. The code block of ‘when green flag clicked’ is located in the ‘event’ code. The code block of ‘hide’ is located in the ‘looks’ code which has function to hide tick mark when the game is started. The code block of ‘start sound’ is in the ‘sound’ code. The code blocks of ‘show’ and ‘hide’ are located in the ‘looks’ code. The code block of ‘wait 1 second’ is located in the ‘control’ code which has function to provide laughing sound and cross mark in one second when the answer is false.

Easy Sprite

The easy sprite utilizes code block that can be viewed in figure 11.

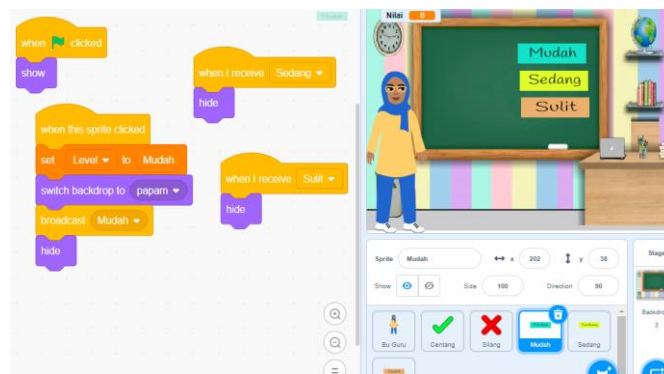


Figure 11. Easy sprite

In figure 11, easy sprite contains ‘when green flag clicked’, ‘show’, ‘when this sprite clicked’, ‘set level to *mudah* [easy]’, ‘switch backdrop to *papam*’, ‘broadcast *mudah* [easy]’, ‘hide’, ‘when I receive *sedang* [medium]’, ‘hide’, ‘when I receive *sulit* [hard]’, and ‘hide’.

The code block of 'when green flag clicked' is located in the 'events' code. The code block of 'show' is in the 'looks' code. Both of code blocks have function to show easy writing. The code block of 'when this sprite clicked' is located in the 'events' code. The code block of 'set level to *mudah*' is in the 'variable' code. The code block of 'switch backdrop to papam' is located in the 'looks' code. The code block of 'broadcast *mudah*' is located in the 'events' code. The code block of 'hide' is in the 'looks' code which has function to move into easy level when it is clicked and the background will be changed.

The code blocks of 'when I receive *sedang*' and 'when i receive *sulit*' are in the 'events' code. The code block of 'hide' is in the 'looks' code. It can eliminate the text '*sedang* [medium]' and '*sulit* [hard]' when '*mudah* [easy]' button is clicked.

Medium Sprite

The code block of medium sprite can be viewed in figure 12.

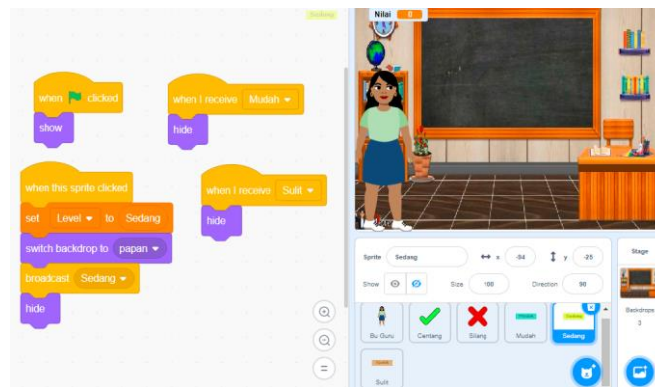


Figure 12. Medium sprite

In figure 12, medium sprite contains 'when green flag clicked', 'show', 'when this sprite clicked', 'set level to *sedang* [medium]', 'switch backdrop to papan', 'broadcast *sedang*', 'hide', 'when I receive *mudah*', 'hide', 'when I receive *sulit*', and 'hide'.

The code blocks of 'when green flag clicked', 'when this sprite clicked', and 'broadcast *sedang*' are located in the 'events' code. The code blocks of 'show', 'switch backdrop to papan', and 'hide' are in the 'looks' code. The code block of 'set level to *sedang*' is in the 'variable' code. The 'hide' code block is utilized to move into medium level and change background.

The code block of 'when I receive *mudah*' is in the 'events' code. The code block of 'hide' is in the 'looks' code. Moreover, the code block of 'when I receive *sulit*' is also in the 'events' code. The 'hide' code block is in the 'looks' code. It can eliminate the word '*mudah* [easy]' and '*sulit* [hard]' when it is clicked.

Hard Sprite

The block code of hard sprite can be viewed in figure 13.

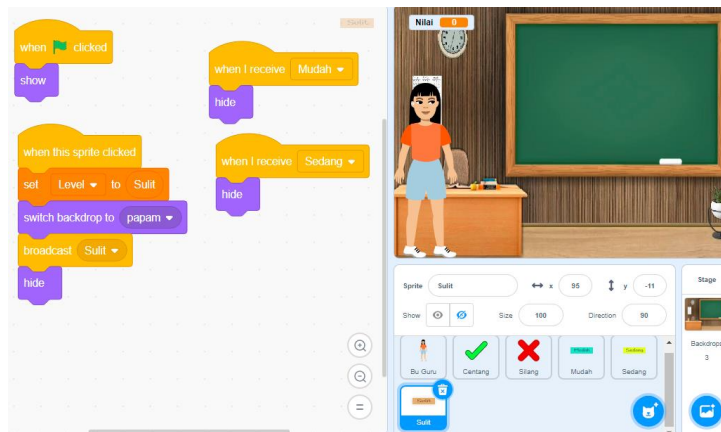


Figure 13. Hard sprite

In figure 13, hard sprite contains ‘when green flag clicked’, ‘show’, ‘when this sprite clicked’, ‘set level to *sulit* [hard]’, ‘switch backdrop to papam’, ‘broadcast *sulit*’, ‘hide’, ‘when I receive *mudah* [easy]’, ‘hide’, ‘when I receive *sedang* [medium]’, and ‘hide’.

The code block of ‘when green flag clicked’ is located in the ‘events’ code. The code block of ‘show’ is in the ‘looks’ code. Both of them are used to show the word ‘*sulit*’. The code block of ‘when this sprite clicked’ is in the ‘events’ code. The code block of ‘set level to *sulit*’ is in the ‘variable’ code. The code block of ‘switch backdrop to papam’ is in the ‘looks’ code. The code block of ‘broadcast *sulit*’ is in the ‘events’ code. The code block of ‘hide’ is in the ‘looks’ code to move into hard level and change background.

The code block of ‘when I receive *mudah*’ is in the ‘events’ code. The code block of ‘hide’ is in the ‘looks’ code. The code block of ‘when I receive *sedang*’ is also in the ‘events’ code while ‘hide’ is in the ‘looks’ code. It is used to eliminate *mudah* [easy] and *sedang* [medium] texts when *sulit* [hard] button is clicked.

5. DISCUSSION

Scratch is a programming site which is utilized for various usages as in creating simple game. According to Bukhari (2023), scratch-based game design can be created in various concepts of puzzles, questions, mazes, etc. Jannah et.al. (2021) explain that teacher can create learning application using scratch website. By creating interesting game design for learning process, the users will enjoy their own games because it is not boring. Moreover, scratch drives students to learn the materials using fun way (Sufyan, 2024).

Scratch is very useful in creating educational quiz game. It focuses on improving student's ability in distinguishing formal words and increasing student's literacy.

CONCLUSION

Scratch-based game design of *KaKu (kata baku)* to improve students' ability to distinguish formal words in primary school has code blocks on 1) Teacher's sprite, 2) Easy quiz, 3) Medium quiz, 4) Hard quiz, 5) Tick sprite, 6) Cross sprite, 7) Easy sprite, 8) Medium sprite, and 9) Hard sprite.

LIMITATION

This study is limited on the development of scratch-based game design which focuses on students' ability in distinguishing formal and informal words in primary school level especially in the fourth grade and sixth grade. The game is designed to be simple using interactive features in form of multiple choice quizzes which are in line with students' cognitive skill. The learning materials include formal and informal words based on Indonesian Language Dictionary. The main purpose of this game is to increase students' understanding on the concept of formal words without covering other language skills such as writing or speaking.

REFERENCES

- Afniola, S., Ruslan, R., & Artika, W. (2020). Intelegensi dan bakat pada prestasi siswa. *Al-Din: Jurnal Dakwah dan Sosial Keagamaan*, 6(1), 20–35. <https://doi.org/10.35673/ajdsk.v6i1.844>
- Andini, D. W. (2016). Differentiated instruction: Solusi pembelajaran dalam keberagaman siswa di kelas inklusif. *Trihayu: Jurnal Pendidikan Ke-SD-An*, 2(3), 23–33. <https://doi.org/10.30738/trihayu.v2i3.725>
- Angga, A., & Iskandar, S. (2022). Kepemimpinan kepala sekolah dalam mewujudkan merdeka belajar di sekolah dasar. *Jurnal Basicedu*, 6(3), 5295–5301. <https://doi.org/10.31004/basicedu.v6i3.2918>
- Apriliani, S. P., & Radia, E. H. (2020). Pengembangan media pembelajaran buku cerita bergambar untuk meningkatkan minat membaca siswa sekolah dasar. *Jurnal Basicedu*, 4(4), 994–1003. <https://doi.org/10.31004/basicedu.v4i4.492>
- Budi, D. S., & Abijono, H. (2016). Analisis pemilihan penerapan proyek metodologi pengembangan rekayasa perangkat lunak. *Teknika*, 5(1), 24–31. <https://doi.org/10.34148/teknika.v5i1.48>

- Bukhari, A. (2023). Pengembangan game edukasi pengenalan aksara lontara menggunakan metode game development life cycle. *Jurnal Minfo Polgan*, 12(1), 411–423. <https://doi.org/10.33395/jmp.v12i1.12413>
- Chaerunnisa, N. A., & Bernard, M. (2021). Analisis minat belajar siswa sekolah dasar pada pembelajaran matematika dengan menggunakan media Scratch. *JPMI (Jurnal Pembelajaran Matematika Inovatif)*, 4(6), 1577–1584. <https://doi.org/10.22460/jpmi.v4i6.p%25p>
- Dawis, A. M., Putra, Y. W. S., Fitria, F., Hamidin, D., Yutia, S. N., Maniah, M., & Natsir, F. (2023). Rekayasa perangkat lunak panduan praktis untuk pengembangan aplikasi berkualitas. Bandung: Penerbit Widina.
- Devianty, R. (2021). Penggunaan kata baku dan tidak baku dalam bahasa Indonesia. *EUNOIA: Jurnal Pendidikan Bahasa Indonesia*, 1(2), 121–132. <https://doi.org/10.30821/eunoia.v1i2.1136>
- Elpira, N., & Ghufron, A. (2015). Pengaruh penggunaan media PowerPoint terhadap minat dan hasil belajar IPA siswa kelas IV SD. *Jurnal Inovasi Teknologi Pendidikan*, 2(1), 94–104. <https://doi.org/10.21831/tp.v2i1.5207>
- Faqumala, D. A., & Pranoto, Y. K. S. (2020). Kesiapan anak masuk sekolah dasar. Pekalongan: Penerbit NEM.
- Hadiprakoso, R. B. (2020). Rekayasa perangkat lunak. Yogyakarta: Rbh.
- Handayani, F., Desyandri, D., & Mayar, F. (2022). Implementasi seni musik terhadap konsentrasi belajar siswa dan pembentukan karakter di kelas IV sekolah dasar. *Jurnal Pendidikan Tambusai*, 6(2), 11370–11378. <https://doi.org/10.31004/jptam.v6i2.4245>
- Hasanah, F. N., & Untari, R. S. (2020). Buku ajar rekayasa perangkat lunak. Umsida Press. <https://doi.org/10.21070/2020/978-623-6833-89-6>