International Journal of Education, Vocational and Social Science
https://e-journal.citakonsulindo.or.id/index.php/IJEVSS
E-ISSN : 2963 4954
IJEVSS

Development of Interactive Flipbook Game Media Based on Cheerful Twin Cards to Train the Memory of Students at SMP Negeri 17 Medan

Cindri Madelta
Universitas Islam Negeri Sumatera Utara, Indonesia
Muhammad Putra Dinata Saragi
Universitas Islam Negeri Sumatera Utara, Indonesia

Corresponding Author: cindri0303223073@uinsu.ac.id, putradinatasaragi@uinsu.ac.id

Abstract

Memory is one of the cognitive abilities that plays an important role in the success of the student's learning process. However, many students still have difficulty recalling the material they have learned and easily forget new information. This study aims to develop an Interactive Flipbook game media based on Cheerful Twin Cards to help train the memory of junior high school students and determine the level of feasibility and practicality. This study uses the Research and Development (R&D) method with a 4D development model that includes Define, Design, and Develop stages. The research subjects consisted of 19 students of UPT SMP Negeri 17 Medan. Data collection was carried out through a needs analysis questionnaire, material expert validation, media expert validation, BK Teacher response questionnaire and student practicality questionnaire. The results of the study showed that the developed media obtained a percentage of material expert validation of 89 % with a very feasible category and media expert validation of 80.33% with a feasible category, the results of BK Teacher responses were 89 .33 with a very feasible category. Meanwhile, the practicality test yielded an average score of 89.8%, categorized as very practical. These findings indicate that the interactive flipbook game based on the Cheerful Twin Cards has excellent feasibility and practicality for use in guidance and counseling services and learning activities. Therefore, the developed media can be an alternative learning medium that is engaging, interactive, and can help train students' memory.

Keywords: Memory, Interactive Flipbook, Cheerful Twin Cards

Copyright at authors some right reserved this work is licensed under a Creative Commons Attribution-Share Alike 4.0 International License

INTRODUCTION

Memory is a fundamental cognitive function that plays a crucial role in the success of students' learning process. This ability enables individuals to receive, process, store, and recall learned information when needed. From a cognitive psychology perspective, the memory process occurs through interrelated stages *of encoding, storage*, and *retrieval*, which determine the quality of information retention. If this process is not supported by appropriate learning strategies and media, the information received tends to be quickly forgotten. Therefore, strengthening memory is a crucial aspect in supporting successful learning. (Ermalinda & Nuraeni, 2023) . In line with That is, card-based games, particularly those with *memory-matching card mechanisms*, are effective in training students' visual memory, pattern recognition, and attention (Kristanto et al., 2019). Educational card games can also significantly improve cooperation and cognitive abilities compared to conventional learning (Rosa et al., 2023).

The advancement of digital technology has opened opportunities for the development of more engaging, interactive learning media. One emerging medium is the interactive flipbook, a digital book equipped with animation, audio, video, and interactive features. Various studies have shown that *flipbooks* can increase student interest, understanding, and engagement in learning, thus offering potential as an innovative medium. (Putri et al., 2020). However, study previously about *Flipbooks* generally focuses on improving literacy, understanding of the material, or general learning outcomes (Aini & Kemala, 2021). Game Memory-based cards are more commonly developed in the form of *board games* or *game applications* separate from digital books (Nabila et al., 2020). Thus, the use of *flipbooks* as an interactive medium that specifically integrates *memory matching card mechanisms* to train memory is still relatively limited. This condition indicates a *research gap* in the suboptimal integration of interactive multimedia and memory training mechanisms in a single, integrated medium.

Based on this gap, this study developed an interactive *flipbook game media* based on Cheerful Twin Cards to train students' memory in BK services. This media integrates materials, twin card games, a level system, reinforcement, and direct feedback to support the *encoding*, *storage,* and *retrieval processes. This study aims to develop the media and test its feasibility and practicality using the Research and Development (R&D)* method with the 4D model. Through this development, it is hoped that innovative and adaptive BK media will be available to help train students' memory. (Anggraini et al., 2025).

Memory is an individual's cognitive ability to receive, process, store, and recall acquired information for future use. This ability is closely related to mental processes that allow

Copyright at authors some right reserved this work is licensed under a Creative Commons Attribution-Share Alike 4.0 International License

information to be stored not only temporarily but also retrievably retrieved when needed in learning situations. From a cognitive psychology perspective (Ermalinda & Isna Nuraeni, 2023), the memory process does not occur simply, but rather through systematic stages. One model that explains this mechanism is the memory systems theory proposed by Richard Atkinson and Richard Shiffrin.

According to Atkinson and Shiffrin (1968) in the human memory system consists of three main parts, namely sensory memory*,* short *-term memory,* and long *-term memory.* a. Memory sensory (*sensory memory)*, Sensory memory is the initial stage in the process of storing information. At this stage, information is received through the five senses such as sight and hearing, then stored for a very short time. Information that does not receive attention will soon be lost, while information that is paid attention to will be passed on to the next stage. b. Short *-Term Memory,* Short-term memory functions as a temporary storage place for information that is being processed. Information at this stage can only last for a short time, around 20–30 seconds, unless repeated *(rehearsal)*. In addition to being limited in terms of time, the capacity of short-term memory is also limited. However, information can be more easily remembered if it is grouped into meaningful parts (chunking*).* c. Long-Term Memory, Long -term memory is a more permanent storage place for information. Information that is successfully processed and repeated well can be stored for a long time, even for years. This memory has a very large capacity and a lower forgetting rate compared to short-term memory.

In line with the memory system model described previously, Atkinson et al (2000) in (Ermalinda & Isna Nuraeni, 2023) suggests that the memory process takes place through three main stages, namely *encoding, storage*, and *retrieval*. First, *encoding* is the stage when an individual receives stimuli through the senses and then transforms them into mental representations that can be processed in the memory system. At this stage, information obtained from the environment begins to be organized so that it can be understood and stored. Second, *storage* is the process of retaining encoded information so that it remains in memory for a certain period. This process prevents information from being lost immediately but rather can be retained. both in short-term memory and long-term memory. Third, *retrieval* is an individual's ability to access and reuse stored information when needed. The success of this stage is greatly influenced by the quality of previous encoding and storage.

Related with *the encoding, storage* and *retrieval* processes that have been explained previously, there was some strategies that can used for strengthen Power remember to something information, good meaningful information or those of a nature random. According to Atkinson et

Copyright at authors some right reserved this work is licensed under a Creative Commons Attribution-Share Alike 4.0 International License

al (1994) in (Dina Sukma, 2021), improvement Power remember can done through a number of method as follows : a. Repetition Strategy (*Rehearsal*), Information is repeated verbally or in writing so that it is stored more firmly in memory, b. Elaboration Strategy, New information is connected to existing knowledge or experience so that it is easier to understand and remember, c. Retrieval Practice Strategy , Training the ability to remember information without looking at the source, for example through quizzes, questions and answers, or games that require students to recall information that has been learned , d. Active *Learning* Strategy , Involving students actively in learning activities, such as discussions, problem solving, simulations, or educational games so that the process of remembering becomes more meaningful , e. *Mnemonic* Strategy , Using keywords, abbreviations, acronyms, rhymes, or certain associations to make the process of remembering easier.

Based on the description of the processes and strategies for improving memory, an individual's success in remembering information is greatly influenced by how it is presented. Therefore, in the context of school learning, the use of appropriate media is a crucial factor in optimally supporting the *encoding, storage, and retrieval processes.* With the advancement of educational technology, learning media is no longer limited to print but has evolved into more interactive digital media. One form of digital media widely used in learning is the interactive *flipbook. Flipbook* is a digital media that presents material in the form of an interactive book equipped with various features, such as animation, audio, and video. This combination can strengthen the information encoding process because it involves more than one sensory pathway, so that information is easier to store and recall. (Enni Setyorini et al., 2024). In addition to presenting material visually and interactively, learning that incorporates game elements has also been shown to increase student engagement. One relevant form of games for training memory is the cheerful twin card game.

RESEARCH METHODS

This study uses a *Research and Development* (R&D) approach to develop an interactive *flipbook* game based on Cheerful Twin Cards to help train junior high school students' memory. This research is classified as level 1 R&D because it focuses on the design, development, and validation of the product without conducting effectiveness testing. The research was conducted at the UPT of SMP Negeri 17 Medan. The research subjects consisted of 19 students in grades VIII-7 who were selected using a *purposive sampling technique* based on the recommendations of the guidance and counseling teacher and research criteria, namely students who have difficulty

Copyright at authors some right reserved this work is licensed under a Creative Commons Attribution-Share Alike 4.0 International License

remembering material, easily forget new information, and are willing to participate in media trials. The number of subjects was considered adequate because level 1 R&D research focuses on product development and validation, not generalization of research results.

The development model used is the 4D model *(Define, Design, Develop,* and *Disseminate)* **.** However, this research was only carried out up to the *Develop stage.* because it is included in R&D level 1. The product developed is an interactive Flipbook game media based on Cheerful Twin Cards for Guidance and Counseling services in training students' memory. (Waruwu, 2024) . In addition to students as trial subjects, the research involved one material expert, one media expert, and one guidance and counseling teacher as validators. The material expert and media expert assessed the product's feasibility, while the guidance and counseling teacher assessed the media's practicality and applicability in guidance and counseling services. Student participation is done voluntarily with the approval of the homeroom teacher , Guidance and Counseling Teacher and students. All research procedures were carried out in accordance with the ethical principles of educational research. (Salsabella et al., 2022)

RESULTS AND DISCUSSION

RESULTS

Requirements Test

Following This explained results analysis need student related *Flipbook* media development interactive based card cheerful twins for help participant educate practice Power remember they .

Table 3. Analysis Results Need Student

No.	Dimensions Analysis	Aspect	Indicator	Choice Answer	(%)
1.	Power Remember participant educate	Characteristics Participant Educate	Students often have difficulty remembering material or information that has been studied and easily forget new information.	Strongly agree	15.79
				Agree	49.13
				Disagree Less	33.33
				No Agree	1.75
				Absolutely Not Agree	0

Copyright at authors some right reserved this work is licensed under a Creative Commons Attribution-Share Alike 4.0 International License

2.	Ability Cognitive	Ability Power Remember Participant Educate	Students have difficulty remembering certain terms or information, often forget when doing assignments, and need a long time to memorize something.	Strongly agree	15.79
				Agree	43.85
				Disagree Less	36.85
				No Agree	3.51
				Absolutely Not Agree	0
3.	Media Types	Media Needs	Learners need interesting digital learning media , have good visual appearance , and can increase confidence self in Study.	Strongly agree	49.12
				Agree	38.60
				Disagree Less	10.53
				No Agree	1.75
				Absolutely Not Agree	0
4.	Learning Based Game	Need Service	Students like game-based learning because it makes learning activities more interesting and increases activeness in learning.	Strongly agree	56.14
				Agree	38.60
				Disagree Less	5.26
				No Agree	0
				Absolutely Not Agree	0
5.	Interest Participant Educate	Motivation Participant Educate	Students feel that their memory skills still need to be improved and require more interesting learning so that they don't get bored easily and	Strongly agree	22.80
				Agree	38.60
				Disagree Less	35.09
				No Agree	3.51

Copyright at authors some right reserved this work is licensed under a Creative Commons Attribution-Share Alike 4.0 International License

			forget the material they are studying.	Absolutely Not Agree	0

Based on results analysis need participant educate to game media development *Flipbook* Interactive Based Card Cheerful Twins , some big participant educate give response positive on every aspects that are measured . In this aspect media suitability , as many as 15.79% of participants students strongly agree and 49.13% agree that the media is easy used , instructions use easy understood , and method play can studied with fast . In terms of media design , 15.79% of participants students strongly agree and 43.85% agree that appearance *flipbook* interactive interesting , easy writing read , and images and colors seen clear and interesting .

In this aspect practicality of the media, as many as 49.12% of participants students strongly agree and 38.60% agree that the media can used with easy and comfortable without need teacher assistance in continuously . In this aspect benefits of media, 56.14% of participants students strongly agree and 38.60% agree that the media helps increase focus , power remember , and activity during learning . Furthermore , in the aspect of Power media pull , 22.80% of participants students strongly agree and 38.60% agree that the media provides experience fun , worthwhile learning used in learning , and interesting For used back . Based on findings said , can concluded that participant educate need game media *Flipbook* Interactive Based Card Cheerful Twins as an interesting , practical and useful learning medium For help practice Power remember participant educate during the learning process .

Development Product

Cheerful Twin Card Game was developed by adapting the concept of the *Flip and Match game* **, a** *memory* matching game that requires players to memorize the position of each card before finding the right pair. This game concept inspired the development of the media because it is considered capable of training memory skills through observation, concentration, and information recall.

Although inspired by the *Flip and Match game mechanism* , the Happy Twin Cards media developed in this study has different characteristics. The researcher made modifications to the appearance, content, gameplay, and integrated materials on memory, instructions for use, a gradual level system, and feedback into an interactive *flipbook media* . In addition, this media was specifically designed to support Guidance and Counseling services with the aim of training

Copyright at authors some right reserved this work is licensed under a Creative Commons Attribution-Share Alike 4.0 International License

students' memory. Thus, Happy Twin Cards is not a reproduction of the *Flip and Match game* , but rather the result of media development that adapts the basic mechanism of the card matching game and is adjusted to the research objectives, student characteristics, and the needs of Guidance and Counseling services. This media is in the form of a digital *flipbook* that can be accessed online via the link https://joyful-semolina-92b676.netlify.app/ making it easier for students to use it anytime and anywhere.

Inspired by the game *Flip and Match*	Modified Results into *Flipbook*
	

Copyright at authors some right reserved this work is licensed under a Creative Commons Attribution-Share Alike 4.0 International License

International Journal of Education, Vocational and Social Science
https://e-journal.citakonsulindo.or.id/index.php/IJEVSS
E-ISSN : 2963 4954
IJEVSS

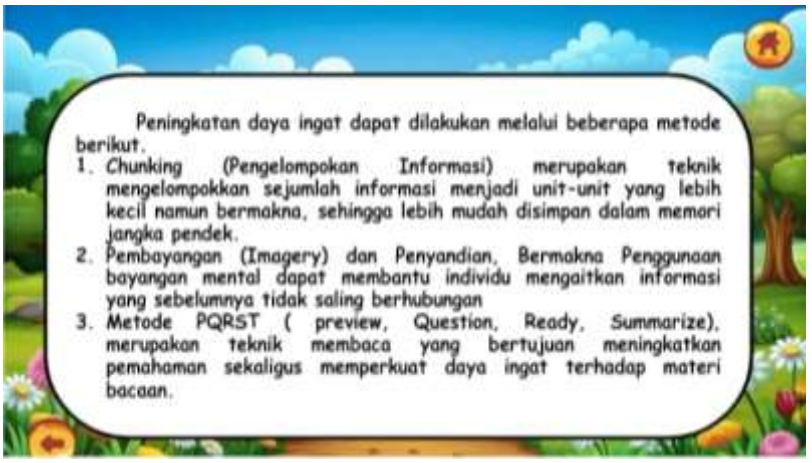
On this page there are four main menus, namely Memory Material , Case Studies , How to Play , and *Game*	
Display of Memory Material, The material section contains an explanation of the concept of memory which is presented concisely and is easy for students to understand.	

Copyright at authors some right reserved this work is licensed under a Creative Commons Attribution-Share Alike 4.0 International License

International Journal of Education, Vocational and Social Science
https://e-journal.citakonsulindo.or.id/index.php/IJEVSS
E-ISSN : 2963 4954
IJEVSS

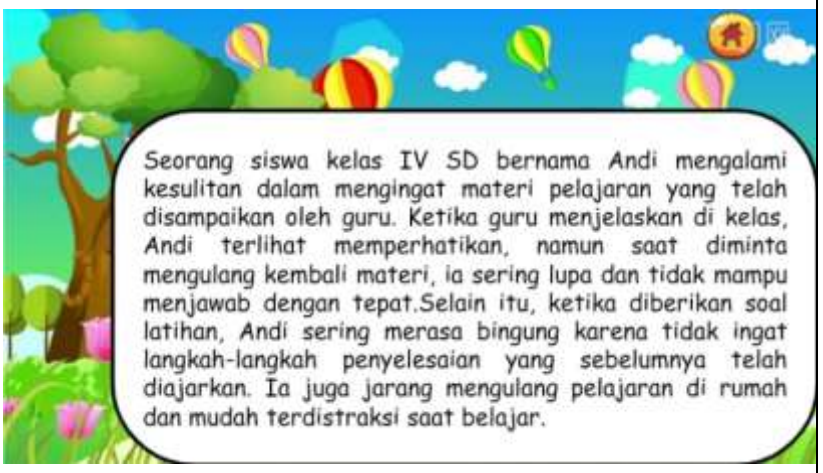






Copyright at authors some right reserved this work is licensed under a Creative Commons Attribution-Share Alike 4.0 International License

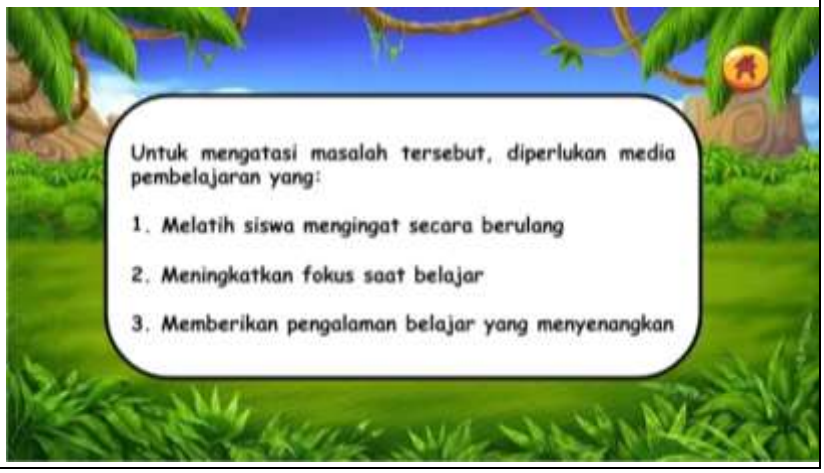
International Journal of Education, Vocational and Social Science
https://e-journal.citakonsulindo.or.id/index.php/IJEVSS
E-ISSN : 2963 4954
IJEVSS

Case Study Display, contains examples of problems related to students' memory abilities in everyday life.	  

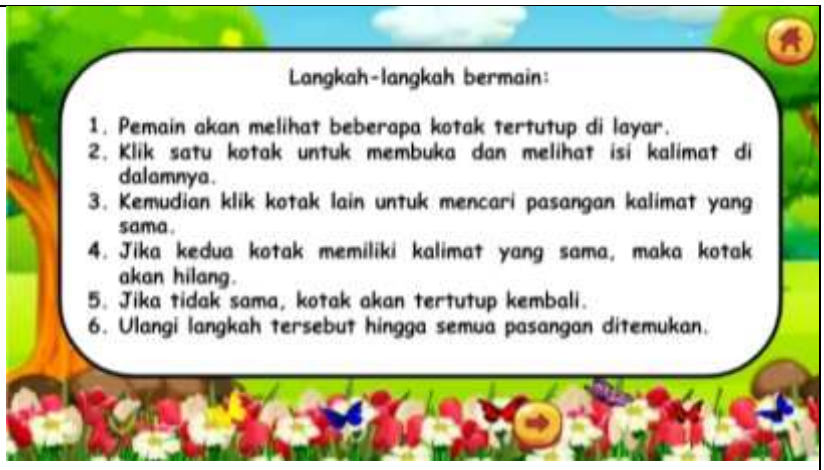
Copyright at authors some right reserved this work is licensed under a Creative Commons Attribution-Share Alike 4.0 International License

International Journal of Education, Vocational and Social Science
https://e-journal.citakonsulindo.or.id/index.php/IJEVSS
E-ISSN : 2963 4954
IJEVSS





Copyright at authors some right reserved this work is licensed under a Creative Commons Attribution-Share Alike 4.0 International License

How to Play Display, The how to play page contains instructions for using the Cheerful Twin Cards game.	 

Copyright at authors some right reserved this work is licensed under a Creative Commons Attribution-Share Alike 4.0 International License

International Journal of Education, Vocational and Social Science
https://e-journal.citakonsulindo.or.id/index.php/IJEVSS
E-ISSN : 2963 4954
IJEVSS

Cheerful Twin Card Game Display , The game page displays three levels of play, namely Level 1, Level 2, and Level 3	
Closed View and Wrong Card View	 

Copyright at authors some right reserved this work is licensed under a Creative Commons Attribution-Share Alike 4.0 International License

Correct Card Display	

Feasibility and Practicality Test

Following is results of the feasibility and practicality test of interactive media based card cheerful twins based on assessment carried out by media experts , experts material , guidance counselors and students .

Validation Material

Validation of material in the game card The cheerful twins involved one expert validator, Ahmad Syarqawi , a lecturer in the Islamic Education Guidance and Counseling Study Program. The results of the expert validation calculations are presented as follows.

Table 4. Results of Material Expert Validation

No.	Aspect	Score	Percentage	Eligibility Category
1.	Content Suitability Aspect	14	93.33 %	Very Worthy
2.	Aspect Presentation	13	8 6.66 %	Very Worthy

Copyright at authors some right reserved this work is licensed under a Creative Commons Attribution-Share Alike 4.0 International License

3.	Benefits Material	13	86.66%	Very Worthy
4.	Aspect Graphics	14	93.33%	Very Worthy
5.	Aspect Linguistics	13	86.66%	Very Worthy
Average Percentage		**67/ 75 x 100%**	**89.33%**	**Very Worthy**

Based on the results of the material feasibility assessment, an average percentage of 89.33 % was obtained, which is included in the "very feasible" category.

Media Validation

Media validation in games card The cheerful twins involved one expert validator, Fitria Umami, who is a lecturer and staff member of the Islamic Education Guidance and Counseling Study Program . The results of the media expert validation calculations are presented as follows.

Table 5. Media Expert Validation Results

No.	Aspect	Score	Percentage	Category Eligibility
1.	Aspect Media View	11	73.33 %	Worthy
2.	Aspects of Media Graphic Design	1 2	80%	Worthy
3.	Media Writing	13	86.66%	Very Worthy
4.	Media Attraction	11	73.33%	Worthy
5.	Media Implementation	13	86.66%	Very Worthy
Average Percentage		**60/75 x 100%**	**80.33%**	**Worthy**

Qualitative data obtained from media experts provides several suggestions for improvement, namely adding material in the *flipbook* . Based on the results of the media feasibility assessment, an average percentage of 80.33 % was obtained, which is included in the "feasible" category.

Guidance and Counseling Teacher Response Questionnaire

The Guidance and Counseling (BK) teacher response questionnaire was given to one BK teacher, namely Mrs. Wirda Selvya Tambunan, to obtain responses to the digital *flipbook game media* based on the Cheerful Twin Cards that had been developed.

Copyright at authors some right reserved this work is licensed under a Creative Commons Attribution-Share Alike 4.0 International License

Table 6. Results of Guidance and Counseling Teacher Responses

No.	Aspect	Score	Percentage	Practicality Category
1.	Compliance Material	14	93.33%	Very Practical
2.	Media Display	14	93.33%	Very Practical
3.	Convenience Use	13	86.66%	Very Practical
4.	Benefits of In-depth Media Service	13	86.66%	Very Practical
5.	Eligibility Use	13	86.66%	Very Practical
Average Percentage		**67 /75 x100**	**89.33%**	**Very Practical**

Based on Table 6 , the results of the Guidance and Counseling (BK) teacher response questionnaire on the digital *flipbook game media* based on the Cheerful Twin Cards obtained an average percentage of 89.33 % with a very appropriate category . These results indicate that the media received a very appropriate response from BK teachers and was considered suitable for use as a supporting media in guidance and counseling services .

Game Practicality Test *Flipbook* Based Card Happy Twins

Test the practicality of the game card Cheerful twins are carried out with the participants educated on the 26th May 2026 at the UPT of SMP Negeri 17 Medan. This trial involved 19 participant Educate as respondents to determine the level of practicality and feasibility of the game card Cheerful twins in helping participants educate practice Power remember .

Table 7. Practicality Test Results Based on Student Responses

No.	Aspect	Score	Percentage	Practicality Category
1.	Convenience Media Usage	13, 63	90.86 %	Very Practical
2.	Media Display	13.84	92.26 %	Very Practical
3.	Practicality In Learning	12.68	85.73%	Very Practical
4.	Benefits of In-depth Media Learning	13.26	88.4%	Very Practical
5.	Media Interest and Feasibility	13.94	92.93%	Very Practical
Average Percentage		**67.35 /75 x100**	**89.8%**	**Very Practical**

Copyright at authors some right reserved this work is licensed under a Creative Commons Attribution-Share Alike 4.0 International License

Based on results of the practicality test of the Card media Happy Twins based on response student show that the media developed own level very high practicality . This is seen from all over aspect assessment obtained "Very Practical " category . In the aspect convenience media use , obtained average score of 13.63 with percentage of 89.8%. The results show that student feel media Card Cheerful Twins easy used and instructions game can understood with good . Aspect media display acquisition average score of 13.84 with percentage of 92.26% which includes in very practical category . This is show that design , color , images , and media presentation are capable interesting attention student during the learning process .

Next , the aspect practicality in learning get average score of 12.68 with percentage of 85.73%. This result show that the media can used with Good in activity learning and helping student follow the learning process with more easy . In terms of benefits of media in learning obtained average score of 13.26 with percentage 88.40%. Findings This indicates that student feel benefits of media in help increase Power remember , concentrate , and understand to material studied . Aspects interest and eligibility of the media to obtain the highest average score , namely of 13.94 with percentage of 92.93% and including in very practical category . The results show that student own high interest to use Card media Cheerful Twins and assess the media worthy used in learning . In a way overall , average percentage media practicality reached 89.8%, which was obtained from a total score of 67.35 from score maximum 75. With Thus , the Card media Cheerful Twins are rated easy used , interesting , useful , and worthy implemented in learning For help increase Power remember participant educate .

DISCUSSION

The results of the needs analysis indicate that students have difficulty recalling material they have learned, easily forget new information, and experience obstacles in retaining information over a certain period of time . This reflected from results analysis needs that indicate that participant educate Still experience various obstacle in ability Power remember as well as requires learning media that is interesting , interactive and involving activity play , with percentage agreement that revolves around between 59.64% to 94.74%. The height level need the indicates that participant educate requires learning media that does not only delivery - oriented material , but also able to involving participant educate in a way active in the process of learning and helping practice ability Power remember through enjoyable and meaningful activities . This finding aligns with research by Ermalinda and Nuraeni (2023) , which states that memory is a crucial skill in the

Copyright at authors some right reserved this work is licensed under a Creative Commons Attribution-Share Alike 4.0 International License

process of receiving, storing, and recalling information acquired by students during learning. Good memory skills will make it easier for students to understand material and retain information for a longer period of time. Furthermore, Hasanah et al. (2023) explain that memory is closely related to learning success because the learning process essentially requires students to be able to recall information they have learned. This condition indicates that students' memory skills still require attention in the learning process. This is important because memory is one of the cognitive abilities that plays a role in students' learning success. Memory is considered a crucial need for students to learn optimally, as measuring learning outcomes in schools is inseparable from the activity of remembering information that has been learned. With good memory, students tend to more easily understand material, retain information, and achieve optimal learning outcomes. This finding aligns with research (Hasanah et al., 2023). which states that memory has an important role in the process of receiving, storing and recalling information needed in learning activities. Memory ability plays an important role in receiving, storing, and recalling information that has been obtained.

Furthermore, the needs analysis results indicate that students require learning media that are engaging, interactive, and involve play. This situation indicates that the use of conventional media is not fully capable of meeting students' learning needs. Therefore, media innovations are needed that can create a fun learning environment while also helping train students' memory skills. These findings align with research findings (Ali et al., 2025). which states that the use of interactive media can increase student interest and motivation in learning. The presence of direct feedback features in the media also helps increase student confidence and active engagement during the learning process .

The media developed in this research is an interactive *flipbook* based on Cheerful Twin Cards, designed to help train students' memory through card-matching activities. The media development was carried out using a 4D model, which includes the stages of *define, design, develop, and disseminate.* (Ade Rahayu, 2025) . The choice of *flipbooks* as a learning medium was based on their ability to present material in an engaging manner through a combination of text, images, color, and interactive elements. Visually engaging presentations can increase student attention, making the information received easier to process and remember. These findings are supported by research by Putri et al. (2020) which states that interactive *flipbook media* can increase student interest through the presentation of material that combines text, images, and visual elements in an engaging manner . Meanwhile, the Cheerful Twin Cards game is designed based on the principle of *memory matching* , requiring students to memorize the position of cards

Copyright at authors some right reserved this work is licensed under a Creative Commons Attribution-Share Alike 4.0 International License

and match them to their corresponding pairs. This activity involves concentration, repetition, and information recall, which play a crucial role in training memory skills. This finding aligns with research by Kristanto et al. (2019), which explains that games with *memory matching mechanics* can help train memory skills through repeated information search and matching activities.

In addition, (Raymond et al., 2018) who developed *the Memory Training Game* and found that repetitive information recall through games can help improve students' short-term memory skills. In these games, students are required to remember and recall information that has been received, so that the memory training process takes place actively and repeatedly . The combination of interactive *flipbooks* and twin card games is one of the advantages of the developed media because it not only presents the material in an interesting way, but also provides an active and enjoyable learning experience for students. Thus, this media is expected to be an alternative learning medium that can help train students' memory more effectively . Purwidiantoro and Hadi (2020) explain that game-based learning can increase students' motivation, active participation, and interest in learning. Therefore, the integration of interactive *flipbooks* with twin card games is expected to create a more meaningful learning experience while supporting the strengthening of students' memory skills .

The results of the validation by material experts show that the content of the material presented in the media achieved a percentage of 89.33 %, categorized as very feasible. This finding aligns with research by Putri et al. (2020), which states that learning media designed based on student needs and learning objectives tend to achieve a high level of feasibility because they are able to more optimally accommodate user characteristics . This percentage indicates that the content presented in the media aligns with development objectives, student needs, and the characteristics of the services provided. A high validation score indicates that the material presented meets the requirements of content suitability, language, graphics, and usability. Furthermore, media expert validation results yielded a percentage of 80.33 % , categorized as adequate. These results indicate that the media meets the requirements for appearance, design, readability, ease of use, and visual appeal.

An attractive media display is one of the One factor that can increase students' interest in using media in the learning process. This finding is supported by research by Pratama (2024), who explained that the use of *flipbooks* with attractive and interactive designs can increase student engagement in the learning process. Furthermore, Setyorini et al. (2024) stated that *flipbooks* are effective as interactive learning media because they can present material in a more engaging manner than conventional media. The validators also provided several suggestions for media

Copyright at authors some right reserved this work is licensed under a Creative Commons Attribution-Share Alike 4.0 International License

improvements, such as adding material to *the flipbook* and improving some aspects of the display. These suggestions were then used as the basis for product revisions, improving the resulting media and meeting user needs. The revision stage is a crucial part of development research and development because it aims to produce a more optimal product before it is used by students .

The results of the guidance and counseling teacher responses showed that the appropriateness of the media content achieved a percentage of 89.33 %, categorized as very appropriate . These results indicate that the material presented is in accordance with development objectives, student characteristics, and the needs of guidance and counseling services. This finding is in line with research by Putri et al. (2020) which states that learning media designed based on student needs and learning objectives tend to achieve a high level of appropriateness because they are able to accommodate user characteristics more optimally.

The results of the practicality test showed that the media obtained an average percentage of 89.8%, with the category of very practical . This in accordance with theory practicality product proposed by Nieveen (1999), who stated that something product it is said practical if can used in a way easy , understandable by users , and capable reach objective its development . The percentage indicates that students responded very positively to the use of the Cheerful Twin Card-based Interactive *Flipbook* . The high level of practicality indicates that the media is easy to use, easy to understand, and can be applied in learning activities. These results indicate that students have a high interest in using the media because the media presents learning in the form of interesting and fun games. The use of games in learning can create a more active learning atmosphere so that students are more motivated to participate in learning activities . In addition to increasing interest, the media is also considered to help students understand and remember the information learned. Through the card matching activity, students are required to pay attention, remember, and find the matching card pairs. This activity indirectly trains students' memory and concentration skills.

Theoretically, the Interactive *Flipbook media* based on Cheerful Twin Cards supports the process of memory formation through the stages of information reception, information storage, and information recall. When students observe the images, text, and information contained in *the flipbook* , they carry out the process of receiving and encoding information into memory . In general, Overall , the results of this study indicate that the developed media is not only suitable for use based on expert assessment, but is also practical for use by students. Thus, the Interactive *Flipbook* based on Cheerful Twin Cards has the potential to be used as a learning medium that helps train students' memory in a more interesting and enjoyable way. Thus , the Cheerful Twin

Copyright at authors some right reserved this work is licensed under a Creative Commons Attribution-Share Alike 4.0 International License

Card media is not only visually attractive, but also has a theoretical basis that supports the development of students' memory abilities.

CONCLUSION

Study This succeed developing game media *Flipbook* Interactive based Card Cheerful Twins for help practice Power remember participant educated at UPT SMP Negeri 17 Medan. Media development was carried out using the 4D model (*Define, Design, Develop, and Disseminate*), but study only implemented until Develop stage according to with characteristics study *Research and Development* (R&D) level 1. Analysis results need show that participant educate experience difficulty in remember return material that has been easy to learn forget information new , and requires interesting and based learning media game . Therefore that , developed *Flipbook* media Interactive based Card Cheerful Twins as alternative learning media For help practice Power remember participant educate .

Validation results expert material get percentage by 89.33% with very suitable category , whereas results validation media experts obtain percentage by 80.33% with category feasible . The results of the BK teacher's response showed that the aspect of the appropriateness of media content obtained a percentage of 89.33 % with a very feasible category . Besides that , the results of a practical test involving 19 participants educate show average percentage of 89.8% with very practical category . Findings the show that *Flipbook* media Interactive based Card Cheerful Twins have level excellent feasibility and practicality For used in service guidance and counseling and activity learning . With Thus , *Flipbook media* Interactive based Card Cheerful Twins is declared very worthy and very practical For used as a medium that can help practice Power remember participant educate as well as support creating a more effective learning process interesting , interactive , and meaningful .

CONCLUSION

Game media *Flipbook* Interactive based Card The Cheerful Twins who have developed stated feasible and practical so that can utilized as supporting media service Guidance and Counseling , especially in practice Power remember participant educate . Guidance and counseling teachers are advised For utilize this media in a way sustainable and adaptable material and level difficulty game with characteristics participant educate.

For researchers next, this media can developed more carry on with add variation material , features interactive , as well as level more games diverse . Besides that , research furthermore

Copyright at authors some right reserved this work is licensed under a Creative Commons Attribution-Share Alike 4.0 International License

recommended For test media effectiveness through design experiment with amount more subjects wide so that obtained proof empirical about the influence of media on improvement Power remember participant educate .

REFERENCE

Aini, K., & Kemala, A. (2021). Development of physical fitness teaching materials e-book using Flipbook Maker. *Champion: Sports Journal, 7* (1), 71–81. https://doi.org/10.33222/juara.v7i1.1375

Amelia Septiani, & Waluya, AI (2024). Training concentration and memory using the memory games method for 3rd grade students at SDN Payungsari 1. Student Community Service Journal, 1 (4).

Anggraini, A., Kurniawan, H., & Junaidi, S. (2025). Development of the Android-based SISKOM Adventure educational game for informatics class X at SMK Negeri 2 Padang Panjang. JATI (Journal of Informatics Engineering Students), 9 (3), 3750–3756. https://doi.org/10.36040/jati.v9i3.13382

Annisa, R., Subali, B., & Heryanto, WP (2018). Improving student memory and learning outcomes with the mind mapping method on dynamic electricity. Journal of Education (Theory and Practice), 3 (1), 19–23. https://doi.org/10.26740/jp.v3n1.p19-23

Ade Rahayu. (2025). Research and Development (R&D) Methods: Definition, Types, and Stages. DIAJAR: Journal of Education and Learning , 4 (3), 459–470. https://doi.org/10.54259/diajar.v4i3.5092

Ali, A., Dea Venica, S., Aini, W., & Faisal Hidayat, A. (2025). The Effectiveness of Interactive Learning Media in Increasing Elementary School Students' Interest and Motivation to Learn. Journal of Information System and Education Development , 3 (1), 1–6. https://doi.org/10.62386/jised.v3i1.115

Cohen, J. (1988). Statistical power analysis for the behavioral sciences (2nd ed.). Lawrence Erlbaum Associates.

Dina Sukma. (2021). General Psychology (Diah Safitri, Ed.). PT RagaGrafindo Persada.

Enni Setyorini, Sukarmin, & Harlita. (2024). The Effectiveness of Using Flipbooks as Interactive Learning Media in Senior High Schools/Vocational High Schools: A Literature Review. Proceedings of the Biology Education Conference , 21 .

Ermalinda, & Nuraeni, I. (2023). Improving students' memory through the quantum quotient strategy in Islamic religious education learning at Tasa XV State Elementary School, Lais

Copyright at authors some right reserved this work is licensed under a Creative Commons Attribution-Share Alike 4.0 International License

District, Musi Banyuasin Regency. Journal of Islamic Education and Studies, 5 (2).

Field, A. (2018). Discovering statistics using IBM SPSS statistics (5th ed.). Sage Publications.

Fraenkel, J.R., Wallen, N.E., & Hyun, H.H. (2012). How to design and evaluate research in education (8th ed.). McGraw-Hill.

Kristanto, L., Prestiliano, J., & Prasida, T. (2019). Designing a card game to introduce plastic for children aged 9–12 years with memory mechanics. Andharupa: Journal of Visual Communication Design & Multimedia, 5 (2), 291–306. https://doi.org/10.33633/andharupa.v5i2.2363

Lestari, N. (2023). Development of interactive educational media based on Flipbook Maker in an effort to prevent stunting. Journal of Information Technology and Vocational Education, 5 (1), 126–135. https://doi.org/10.23960/jptiv.v5i1.27726

Mahadi, G., Ahammad, G., & Abdi, A. (2025). Spot It! A mathematical approach to offline games—Reducing screen time and enhancing cognitive development in children. RA Journal of Applied Research, 11 (3). https://doi.org/10.47191/rajar/v11i3.04

Nabila, A., Armin, A., & Hartono, E. (2020). Tembung Aran educational game using Unity game engine tools. Bina Insani ICT Journal, 7 (2), 135–144. https://doi.org/10.51211/biict.v7i2.1406

Nurazizah, S., Damayanti, M., Ramadhani, M., & Nuraeni, A. (2025). Development of a Canva and Heyzine-based digital flipbook on the appreciation of Asmaul Husna (An-Nafi) in the use of technology in accordance with Islamic law. Jurnal Petisi (Information Technology Education), 6 (2), 95–105. https://doi.org/10.36232/jurnalpetisi.v6i2.2028

Pratama, A. (2024). Development of flipbook learning media as a literacy enhancer in the subject of basic software and game development. Joined Journal (Journal of Informatics Education), 7 (2), 179–188. https://doi.org/10.31331/joined.v7i2.3551

Purwidiantoro, M., & Hadi, W. (2020). Educational board game architecture as an element of learning gamification to build active participation, motivation, and student learning interest. Joined Journal (Journal of Informatics Education), 3 (2), 9–18. https://doi.org/10.31331/joined.v3i2.1420

Putri, R., Uchtiawati, S., Fauziyah, N., & Huda, S. (2020). Development of interactive learning media flip-book using Kvisoft Flipbook Maker based on local cultural arts. Innovation Research Journal, 1 (1), 55–64. https://doi.org/10.30587/innovation.v1i1.1442

Rosa, E., Sundari, S., Ambarwati, E., Suryandari, G., Rochmawati, E., & Suryanto, F. (2023). E-matching card to improve cooperation and cognitive abilities among nursing students.

Copyright at authors some right reserved this work is licensed under a Creative Commons Attribution-Share Alike 4.0 International License

Indonesian Nursing Journal, 26 (2), 89–96. https://doi.org/10.7454/jki.v26i2.1136

Raymond, R., Suhatman, R., & Dewi, M. (2018). Development of a Memory Training Game to Improve Short Term Memory (STM) in Junior High School Students Using Speech Recognition (Case Study: Dharma Loka Junior High School, Pekanbaru). National Journal of Technology and Information Systems , 4 (2), 61–72. https://doi.org/10.25077/teknosi.v4i2.2018.61-72

R ustam aji rochmat, supriadi, voni yandri malelak, listiani dewi hartika, hafizah nur, & merly erlina. (2025). psychology of communication (free dirga dwatra, ed.). get press indonesia

Riduwan. (2008). Measurement scale of research variables (Warsiman, Ed.). Alfabeta.

Risnita, Sofwatillah, Jailani, MS, & Saksitha, DA (2024). Quantitative and Qualitative Data Analysis Techniques in. Genta Mulia Journal , 15 (2), 79–91. https://ejournal.stkipbbm.ac.id/index.php/gm

Sapta, A., Marchi, R., & Gafur, A. (2022). The effectiveness of using the number line hopscotch game in learning. Jurnal Mathematic Paedagogik, 7 (1), 87–92. https://doi.org/10.36294/jmp.v7i1.2818

Salsabella, S., Iriani, T., & Saleh, R. (2022). Journal of Education and Counseling . 4 , 2036–2039.

Sihombing, B. (2024). 4D Development Model (Define, Design, Develop, and Disseminate) in Islamic Education Learning. Journal of Islamic Education El Madani, 4(1), 11-19. 4 , 11–19.

Sugiyono. (2016). Educational research methods: quantitative, qualitative, and R&D approaches . Alfabeta.

Waruwu, M. (2024). Research and Development (R&D) Methods: Concepts, Types, Stages, and Advantages. Scientific Journal of Educational Professions , 9 (2), 1220–1230. https://doi.org/10.29303/jipp.v9i2.2141

Copyright at authors some right reserved this work is licensed under a Creative Commons Attribution-Share Alike 4.0 International License