

DESIGNING BOARD GAMES AS AN ENHANCER OF A SENSE OF COMMUNITY AND COGNITION FOR THE ELDERLY OF TRESNA WERDHA BUDI PERTIWI SOCIAL CARE

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Abstract

The elderly population often experiences a decline in social interaction and cognitive function, especially in institutional settings such as the Tresna Werdha Budi Pertiwi Social Home in Bandung. Residents frequently face isolation and reduced mental stimulation, which impairs their emotional well-being and independence. This study aims to design a board game that enhances social togetherness and improves cognitive ability among older women in the institution. Using a Design Thinking methodology, researchers engaged in five stages: empathize (through interviews and observations), define (via SWOT analysis and crossover), ideate (sketching concepts and mind mapping), prototype (creating physical mock-ups), and test (evaluating usability with real users). The final product, titled "ABC Brain Teaser," features bright, high-contrast visuals and simple but challenging rules tailored to older people's preferences and cognitive capabilities. Testing revealed that participants found the game engaging, easy to use, and beneficial for memory stimulation and interaction. The board game effectively addressed the lack of communal activity and provided an inclusive tool for cognitive exercise. This research offers a replicable model for elderly care institutions seeking non-pharmacological interventions to enhance life quality, demonstrating that board games can be both therapeutic and socially empowering when designed with empathy and local context in mind.

Keywords: Elderly; Nursing Home; Board Game; Togetherness; Cognitive; Facility

Introduction

Humans go through life phases from childhood to the old age phase (elderly) (Ananda, 2018; Harahap, 2019; K et al., 2020; Nurdin, 2021a, 2021b). According to Law of the Republic of Indonesia Number 13 of 1998 concerning Elderly Welfare, the elderly are 60 or older. Generally, a person is referred to as an older adult if he is 65 or older. Aging is not a disease but a progressive stage in life where the body's ability to adapt to environmental pressures has decreased (Ratnawati, 2017). The percentage of the elderly population in Indonesia is 11.75% or around 29 million people (Indonesian Population Census, 2023). In the city of Bandung, currently older people in the city of Bandung number 880,000 people (Diskominfo Bandung City, 2024).

Elderly shelters, namely nursing homes, are present as facilities to help the families of older people overcome social welfare problems in the elderly (Haq, 2017). Nursing homes have another term, namely, Nursing Home. Social service places for older people who are included in foster care are known as Nursing Home or Tresna Werdha Social Home (Triwanti et al., 2014). Nursing homes have a role to ensure the lives of older people in the context of social services. Nursing homes have a role to ensure the lives of older people in the context of social services. Four service guarantees can be carried out for older people who live in orphanages, namely physical needs services (dormitory and food), health services, educational psychosocial services, and spiritual services (Sangaji, 2017)

There are 6 nursing homes in Bandung, one of which is the Tresna Werdha Budi Pertiwi Social Home. Tresna Werdha Social Home is located on Jl. Sancang No.2, Burangrang, Lengkong District, Bandung City. In December 2024, it was recorded that there were 19 residents. This home accepts elderly Muslim women with free treatment fees. The Tresna Werdha Budi Pertiwi Social Home was established by one of the associations in the city of Bandung, namely the Budi Istri Association. The Budi Istri Association was established on December 19, 1947. This orphanage is located in the city, so it is easy to visit by organizations such as Voluntrip, Lentera Pijar Kebajikan, Persib, and various universities and social activities. So, this is an advantage for the Tresna Werdha Budi Pertiwi Social Home.

Various phenomena occur at the Tresna Werdha Budi Pertiwi Social Home, one of which is the difficulty of creating a "sense of togetherness or family" between the residents of the Tresna Werdha Budi Pertiwi Social Home. Older people begin to detach themselves from social life as they age, resulting in a reduction in interaction and activities with fellow elderly people (Andesty & Syahrul, 2018). In addition, the decline in cognitive function in the elderly also causes several disorders, such as memory function disorders and disorientation of time, place, and new things, so that there are problems such as decreased physical mobility, decreased independence, and difficulties in carrying out daily activities and interacting with fellow elders (Titanic & Rumawas, 2022).

One example of group activities that can improve the cognitive function of older people and can be done together is to play together. Play has benefits that can be felt in the cognitive functions of older people, such as attention, memory, reaction speed, and problem-solving (Kaufman et al., 2016). Games played in groups have various benefits, such as increasing social engagement due to the involvement of connections with others so that that interaction can occur. Thus, play can also play a role in reducing social isolation and loneliness in the elderly (Kaufman, 2017) So, playing can increase a sense of unity, togetherness, and kinship, and have a cognitive function for older people.

Several games have been played by older people, one of which is board games. There is a significant influence on cognitive function before and after being given Board Game play therapy. This is due to the average increase in cognitive function in older people; thus, Board Game play therapy helps improve cognitive function in the elderly

(Ayuni et al., 2022). It can be concluded that board games have advantages for improving the cognitive function of older people.

To answer the existing problems, namely the difficulty of creating a sense of "sense of togetherness or kinship" between residents and improving cognitive function, the urgency of this research aims to produce solutions that focus on designing media in the form of board games that can bring residents of the orphanage closer together, and can prevent dementia by considering the needs of the elderly at the Tresna Werdha Budi Pertiwi Social Home.

In this research and design, a design thinking approach is applied to identify the problems and needs of older people in the orphanage. The implementation of the design thinking method is emphatic, involving observation and interviews, definition with data analysis, ideation with solution ideation in the form of design, prototyping with design in the form of design, and testing with testing carried out on potential users.

Older people often face a decline in social function and cognitive abilities, which affects their quality of life and independence (Manafe & Berhimpon, 2022; Noviyanti et al., 2023; Pranata et al., 2020; Situngkir et al., 2022; Sulistyarini et al., 2022). In institutions such as the Tresna Werdha Budi Pertiwi Social Home in Bandung, elderly residents are increasingly detached from social interaction, which can lead to feelings of isolation and cognitive deterioration, such as memory loss and disorientation. This situation undermines the goal of creating a warm and inclusive environment within the institution.

Furthermore, although adequate, the facilities are not supported by engaging and inclusive media that foster interaction and mental stimulation. Traditional activities like knitting or playing *angklong* are limited in their reach and do not necessarily foster a sense of community among all residents. Therefore, there is a need to introduce new, meaningful activities tailored to the cognitive and emotional needs of older people that encourage group participation and foster a sense of togetherness.

In light of Indonesia's rapidly aging population and increasing number of institutionalized elderly, it is urgent to implement accessible, affordable, and effective interventions to promote social cohesion and cognitive health. Designing appropriate board games for this demographic can serve as a non-pharmacological solution to mitigate cognitive decline and support emotional well-being in institutional settings, especially where resources and personnel are limited.

Kaufman et al. (2016) and Kaufman (2017) showed that digital and analog games can enhance social connectedness and improve cognitive functions such as memory and attention among older adults. Their studies emphasized that game-based interventions offer more than entertainment; they are therapeutic tools that support social and emotional engagement.

Ayuni et al. (2022) found a significant improvement in cognitive function among elderly participants who engaged in board game therapy. Their study in PSTW Sabai Nan Aluih highlighted that structured, repetitive, and interactive play leads to improved mental alertness and reduced signs of dementia, reinforcing the role of play as cognitive exercise.

Andesty & Syahrul (2018) and Titanic & Rumawas (2022) stressed the correlation between social interaction and quality of life in older people. Their research in multiple Indonesian elderly care institutions demonstrated that group-based activities significantly increase older adults' emotional well-being, sense of belonging, and mental health resilience.

While previous studies confirm the benefits of games on elderly cognitive health and social engagement, limited research has explored the specific design process of games tailored to the local cultural context and preferences of the Indonesian elderly. Moreover, few studies apply user-centered methodologies like design thinking to develop these interventions, leaving a methodological and contextual gap that this study aims to fill.

This study is novel in its application of the design thinking methodology to co-create a board game specifically for older women in an Indonesian social care institution. By involving the users in every stage—from empathy to testing—the design process ensures that the final product meets their cognitive abilities, interests, and social needs. Additionally, the study introduces "ABC Brain Teaser," a culturally relevant and mentally stimulating board game based on Indonesian preferences.

This study aims to design and test a board game that enhances social interaction and improves cognitive functioning among elderly residents of the Tresna Werdha Budi Pertiwi Social Home. The study uses a design thinking approach to develop a user-centered solution that addresses emotional and cognitive needs through collaborative play.

This research offers practical benefits for elderly care institutions seeking non-pharmacological interventions to improve residents' quality of life. The board game developed can serve as a model for similar facilities across Indonesia, encouraging the use of engaging, culturally appropriate tools to foster a sense of community and stimulate mental function. It also provides a framework for designers, therapists, and policymakers interested in elderly well-being through interactive design.

RESEARCH METHODS

This study employs a Design Thinking methodology, a user-centered design approach widely used in creative problem-solving and product development. The five stages of Design Thinking—Empathize, Define, Ideate, Prototype, and Test—were fully implemented to design a board game that enhances social interaction and cognitive function among elderly residents at the Tresna Werdha Budi Pertiwi Social Home (Soewardikoen, 2021). During the Empathize phase, researchers conducted direct observations and in-depth interviews with caregivers and elderly residents to understand their daily routines, preferences, challenges, and cognitive conditions. This phase helped identify the users' emotional and functional needs, which informed the problem definition process.

In the Define stage, a SWOT analysis and SWOT crossover were used to pinpoint the core issues, specifically, residents' lack of a strong sense of community and cognitive

decline. Based on these findings, the Ideate phase generated various design ideas, leading to the selection of a board game concept. This idea was developed into a Prototype, which included physical mock-ups of the game board, cards, and packaging. The Testing stage involved elderly residents playing the prototype to assess usability, enjoyment, and engagement. Feedback was used to refine the game, resulting in the final product titled “ABC Brain Teaser,” which met the cognitive and emotional needs of the users. The iterative and participatory nature of Design Thinking ensured the final product was both meaningful and accessible to its intended audience.

Results and Discussion

Emphatize

1. Observethus

Table 1. Observation Results

No.	Location	Object
1.	Yard	<ul style="list-style-type: none"> • Ironboard name orphanage • Motorbike and car parking • Plant
2.	The front of the orphanage	<ul style="list-style-type: none"> • Living room • Administrative office
3.	Lobby	<ul style="list-style-type: none"> • Chairs and tables for chatting • A storefront to display the knitted products of elderly orphanage residents for sale
4.	Hall	<ul style="list-style-type: none"> • Signage of the name of the orphanage in the middle • Long chairs for older people to sit on during events • Squirt
5.	Garden	Vines
6.	Room	<ul style="list-style-type: none"> • Mattress • Pillow • Bolster • Table
7.	Mosque	<ul style="list-style-type: none"> • Fan • Prayer Rug • Delete
8.	Washing Area	<ul style="list-style-type: none"> • Water faucet • Bucket • Washing machine • Soap
9.	Kitchen	Stoves, etc
10.	Drying area	Iron clothesline

Source: Personal Analysis

The observation results show adequate facilities. However, there is also a lack of interaction and familiarity among residents. The media used for hobbies are only the angklung and knitting.

2. Interviews

The first interview was conducted with the Tresna Werdha Budi Pertiwi Social Institution Coordinator, Cecep Tosin Maulana, on October 14, 2024. The results of the interview are as follows:

1. This orphanage, built on December 19, 1947, contained Muslim women and had 19 residents. It did not charge any fees from the families of older people (it was free).
2. Facilities include bedrooms, bathrooms, halls/halls, prayer rooms, gardens, railings, and areas for caregivers, such as kitchens, clotheslines, and guests.
3. The weekly activities are recitation on Thursday and Friday, gymnastics, health check-ups, and hobby distribution in the form of playing angklung and knitting.
4. There are 10 administrators in the orphanage (5 administrators, 5 caregivers), 1 doctor during weekly check-ups, and 1 ustadz to fill out religious studies 2 times per week.
5. Caregivers are given 4 days off in 1 month, while administrators work Monday through Friday with working hours of 07.00-15.00 WIB.
6. The long-term plan is to make the orphanage comfortable and safe, like a home. It wants togetherness and inner attachment between older people, administrators, and the elderly. This happens because the interaction between residents still seems to lack prioritizing family.
7. This orphanage's policy is not restrictive, making it a free place where older people feel at home.
8. The existing technology for staff is Wi-Fi and computers, while for caregivers, it is washing machines and irons.
9. The environmental conditions of this orphanage are in a city with quite crowded street conditions, but it feels calm when in the orphanage.
10. The intermediaries of this orphanage are only through word of mouth, Instagram, and websites that are not well-maintained, so there is no information media for the existence of the orphanage and public education media on how to take care of older people, and how people can donate to this orphanage.
11. Competitors from this orphanage include PSTW Senjarawi, Laswi, etc.

The End User in this context is the elderly residents of the Tresna Werdha Budi Pertiwi Social Home who are no longer active with technological developments

The following interview was with the elderly residents of the Tresna Werdha Budi Pertiwi Social Home, namely Asni, Wati, Kurtinah, and Sukasih, on October 21, 2024. The results of the interviews show that:

1. Seniors love games that are challenging but not difficult.
2. Older people also love charade games with questions about general knowledge and government, quick fixes, dancing, singing, and games that are easy but challenging to sharpen their brains.

3. The elderly residents of the orphanage once played a game to entertain themselves, sharpen their brains, prevent senility, train their memory, and test their brain skills.
4. The games that have been played are shellfish balls, playing cards, snake ladders, jumping rope, crossword puzzles, chess, marbles, balloons, casts, stilts, dakon, guessing, cards, throwing balls, and sit-down songs.

Activities in games that older people do not like involve physicality, require thinking hard, have no challenges, and are boring.

Define

1. SWOT Analysis

Table 1. SWOT Analysis

Strength	Weakness
<ul style="list-style-type: none"> • It has a long history and has been visited by the First President of Indonesia, Mr. Ir. Soekarno • It has bathrooms equipped with railings, prayer rooms, gardens, halls, and a clean and tidy living room and kitchen. • qualified human resources, some caregivers work full-time to serve older people, as well as administrators who manage operations • Donations from the community allow the nursing home to operate at no cost to the elderly • Focus on elderly Muslim women and free services, differentiating from other nursing homes in Bandung 	<ul style="list-style-type: none"> • There is still a lack of attention to digital media for awareness, causing information about these orphanages to be limited to word-of-mouth marketing. • Limited health services, because doctors are only available once a week, while the health needs of older people can arise at any time. • It is still difficult to create a sense of unity or kinship between residents and administrators due to the differences in the character and background of older people and the lack of interaction. • Some older adults have difficulty moving and need full help from a caregiver • The elderly experience decreased cognitive function, such as dementia.
Opportunities	Threats
<ul style="list-style-type: none"> • Expand the reach of information through social media and websites to get more donations and awareness from the public • Opening cooperation opportunities (universities or hospitals in Bandung) • Development of programs that support the emotional and cognitive well-being of the elderly • Implementing adaptive items for the elderly to make it easier for caregivers and reduce the risk of injury • Utilize donations to improve or expand facilities that support the comfort of the elderly 	<ul style="list-style-type: none"> • Competition with other nursing homes, 6 other nursing homes in Bandung, can be an option for prospective residents • High physical needs of the elderly, such as vulnerable health conditions of the elderly, including the risk of falls and limited mobility • Inconsistent donations and dependent on funders to fund daily needs

[Source: Personal Analysis]

a. Positioning

PSTW Budi Pertiwi has a long history, providing complete facilities and quality human resources and operating free of charge from donations. Its special focus on elderly Muslim women in Bandung has become a strength. Meanwhile, the weakness is the lack of attention to digital media, resulting in information in this orphanage limited to word-of-mouth marketing, there are difficulties in building togetherness due to differences in the character of residents, and some older adults need the full assistance of caregivers for daily activities.

b. Identification

Due to the many limitations of nursing homes in information, education, and the high physical needs of older people, it is hoped that it can increase public awareness, develop elderly welfare programs, provide adaptive goods, and improve facilities for the comfort of the elderly

c. Threats

The Budi Pertiwi PSTW faces competition from six other orphanages in Bandung, with older people having high physical needs and relying on inconsistent donations for daily needs

2. SWOT crossovers

Table 2. SWOT Crossover

Strength-Weakness	Weakness-Opportunities
This orphanage has a long history and was visited by the First President of Indonesia, Mr. Ir. Soekarno. Even so, the lack of attention from digital media for awareness has limited information about this orphanage.	Creating a sense of unity or kinship between residents is still difficult. Therefore, the development of programs and media that unite older people to support their emotional well-being, interaction, sense of community, and cognitive abilities is urgently needed.
Threats-Opportunities	Strength-Threats
The elderly's high physical needs and vulnerable health conditions, including the risk of falls and limited mobility, urgently need adaptive items that are easy for them to wear. These items would make it easier for caregivers to care for them and reduce the risk of injury.	Donations from the community allow nursing homes to operate at no cost to older people, making contributions inconsistent and dependent on financiers to fund daily needs

[Source: Personal Analysis]

The crossover of weakness-opportunities was chosen as a big idea, namely the difficulty of creating a "sense of unity or family" between residents, with the solution of designing activity programs and media supporting older people's emotional and cognitive well-being.

Ideate

1. Mind Map



Figure 4. Mindmapping Ideasi
[Source: Personal Data]

Mindmap is used to map data obtained from older people of PSTW Budi Pertiwi, such as what games have been played, the purpose of playing, the games they like, the non-physical games, and the physical games. Based on the mind map, it can be seen that the purpose of older people is to sharpen their brains, prevent senility, etc. In addition, older people also have experience playing board games such as cards, snakes and ladders, crossword puzzles, chess, and guessing.

2. Mood Board

This mood board displays the type of game reference to be made, the concept, and the color. The board game that will be made for older people will use colors such as red, yellow, green, and blue. The board game will also use game boards, cards, dice, pawns, and shakers.



Gambar 5. Mood Board Perancangan Board Game
[Sumber : Internet]

3. Sketsa

Here are 10 sketch ideas based on mood boards. Each sketch has a different concept of playmaking and a different size. The sketch has also been adapted into an easy game, but older people still face challenges in honed thinking skills.

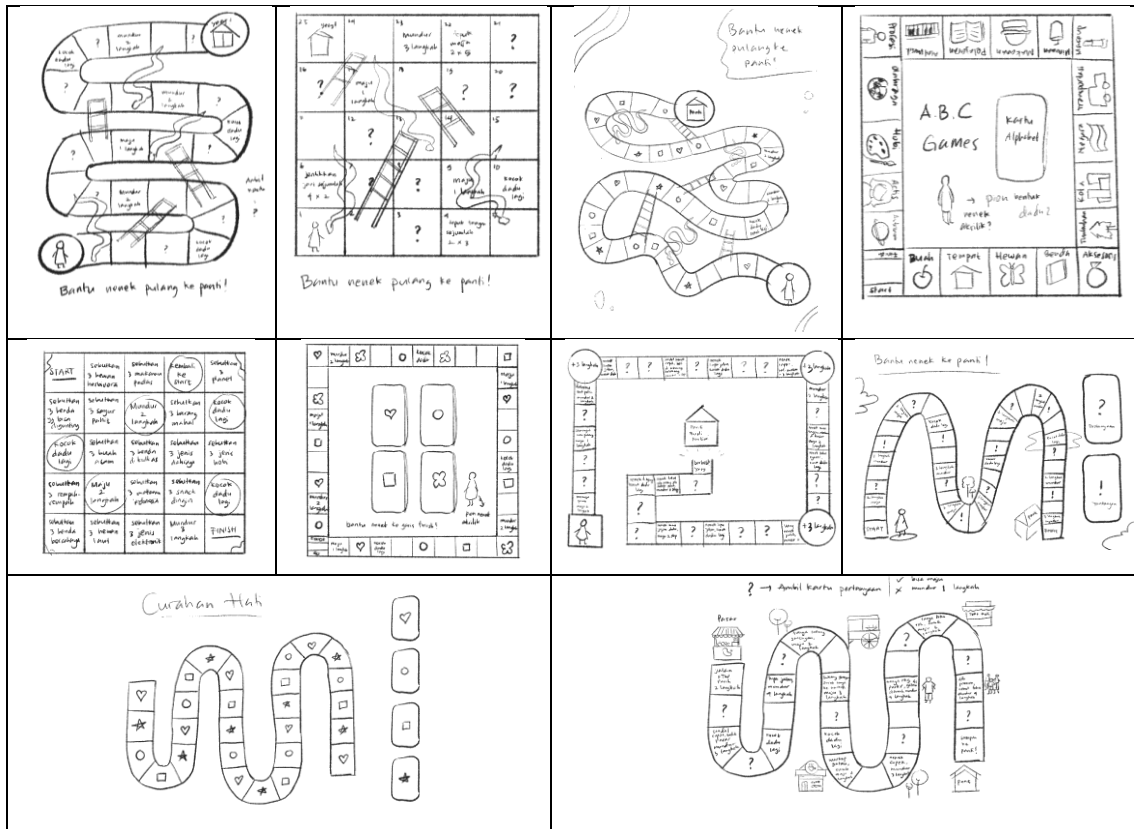


Figure 6. Alternative Sketch of Ideasi

[Source: Personal Data]

Based on the sketches made, scoring is carried out with 6 criteria: can be played together, difficulty level, visual design friendly to older people, level of attractiveness, can be played repeatedly, and the possibility of adding a sense of family. Based on the scoring results, three sketches are the most superior in their assessment. After that, a presentation was made to the client, namely the coordinator of PSTW Budi Pertiwi, regarding the three sketches, so that one could be chosen that was the most superior and in accordance with the needs of the elderly PSTW Budi Pertiwi.

Designing Board Games as an Enhancer of A Sense of Community and Cognition for The Elderly of Tresna Werdha Budi Pertiwi Social Care

Skema 1	Kriteria	Skema 1	Skema 2	Skema 3	Skema 4	Skema 5	Skema 6	Skema 7	Skema 8	Skema 9	Skema 10
1) Sangat baik 4) Baik 3) Cukup baik 2) Tidak baik 1) Sangat tidak baik	Bisa dimainkan bersama-sama	4	4	4	5	4	4	3	5	4	4
1) Sangat mudah dimainkan 4) Mudah dimainkan 3) Cukup mudah dimainkan 2) Tidak mudah dimainkan 1) Sangat sulit dimainkan	Tingkat kesulitan	4	4	3	5	3	4	3	4	3	4
1) Sangat menarik 4) Menarik 3) Cukup menarik 2) Tidak menarik 1) Sangat tidak menarik	Desain visual ramah lansia	4	3	2	4	2	3	3	4	4	4
1) Sangat menarik 4) Menarik 3) Cukup menarik 2) Tidak menarik 1) Sangat tidak menarik	Tingkat kemenarikan	4	3	3	4	3	3	4	4	3	4
1) Sangat baik 4) Baik 3) Cukup baik 2) Tidak baik 1) Sangat tidak baik	Bisa dimainkan berulang	5	5	4	5	4	4	3	4	3	3
1) Sangat menguntungkan 4) Menguntungkan 3) Cukup menguntungkan 2) Tidak menguntungkan 1) Sangat tidak menguntungkan	Kemungkinan menambah rasa kekeluargaan	4	4	4	5	3	4	3	3	5	3
Total		25	23	22	28	19	22	19	24	22	22

Figure 7. Scoring the 3 Best Sketches [Source: Personal Data]

Based on the scoring results, it was found that sketches 1, 4, and 8 occupied the top 3 sketches. Then, after making a presentation to the client, the selected sketch is a sketch of the game "ABC Games," which has a concept like ABC 5 Basic, but is packaged in the form of a board game with its category of objects. The cards' initials must be drawn after each player's pawn lands in the category according to the dice shake obtained. If they cannot answer, the player must take 2 steps back, and if they can answer, they are allowed to continue to reach the finish line first.



Figure 8. Selected Final Sketch [Source: Personal Data]

Prototype

The prototype was carried out after determining the final sketch. It was created using the Adobe Illustrator application. The purpose of making a prototype is to give users a realistic picture of the design of this ABC Games board game.



Figure 1. ABC Games Prototype With 4 Different Color Alternatives [Source: Personal Data]

The following is an implementation of the prototype made as an original illustration in the form of a mock-up. The mock-up consists of board games, box packaging, and cards.



Gambar 2. Mock Up Board Game ABC Games
[Sumber : Data Pribadi]



Gambar 3. Mock Up Box Packaging Board Game ABC Games
[Sumber : Data Pribadi]



Figure 4. Mock Up Board Game ABC Games
[Source: Personal Data]

Testing

The results of the prototype are tested on users at the testing stage. At this stage, users provide feedback as evaluation material for the development of this board game. Testing was carried out with 3 older adults as samples, namely Asni, Hani, and Kurtinah, which was carried out on December 17, 2024. The following is the data from the test results:

1. The dominant user chooses bright, contrasting colors.
2. Users can play this game simulation from explanation to understanding, and play smoothly with an average time of 5 minutes
3. Renamed to "ABC Brain Teaser" (not using English "games")

4. Enlarged size

Users' feedback suggests that it is difficult to get a category for letters that do not exist. The solution is to make a guide, such as a dictionary of the answer key for each category with the letters A-Z, if there is none, given the opportunity to repeat the dice shuffle.

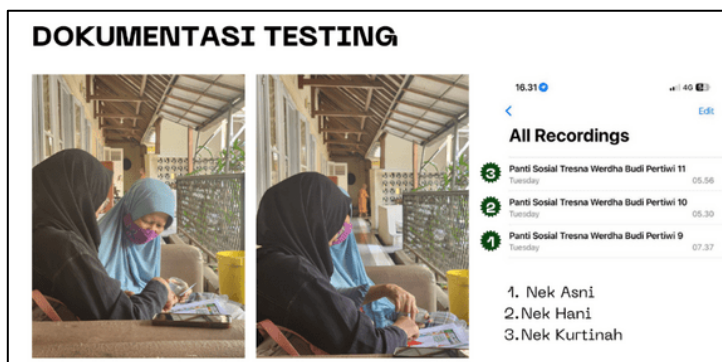


Figure 13. Testing Documentation

[Source: Personal Data]

CONCLUSION

The problem of the difficulty of creating a sense of unity or kinship between residents and the need to improve the cognitive function of the elderly residents of the Tresna Werdha Budi Pertiwi Social Home can be overcome by designing a media in the form of board games as a solution. With a design thinking approach, this research starts from the empathize stage, which is carried out through observation and interviews with coordinators and users. This is done so that the solutions offered are in accordance with the needs of older people as users. In addition, at the define stage, SWOT analyses are carried out to determine the root of the problem to be worked on, which will later be ideated at the Ideate stage through several alternative board game sketches. After that, a prototype was designed as the final result of a board game for older people. In the design of this board game, it was concluded through testing activities that older people tend to choose contrasting and bright colors in the board game design. In addition, the size of the board game must also be considered. Reducing the use of foreign languages such as English can also help older people understand board games. The creation of an answer key as a guide can also be used to make the gameplay easier. All of these things are evaluated for designers and will be further developed with the aim of making it easier and more comfortable for older people to play. So, the design of this board game can be a maximum solution to increase togetherness and improve the cognitive abilities of the elderly residents of the Tresna Werdha Budi Pertiwi Social Home.

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