

## Mental Barrier Detection Application Using Digital Media Android-Based Game Board Integrated CBT

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### Abstract

*Mental health challenges and obstacles in children are frequently encountered but often detected too late, particularly among children with hearing impairments who experience communication restrictions. The purpose of this project is to develop a prototype CBT android application, the E-KONTROL game board, which integrates cognitive behavioral therapy techniques to identify any emotional or mental disorders or obstacles that may impact the learning needs of deaf students at UNU NTB. E-KONTROL offers users an initial screening feature that can identify mental disorders and obstacles. In addition, educational resources provide further information and recommendations on overcoming these challenges. This service was made possible through a special education grant from the Ministry of Education and Culture. The steps for implementing this service include: (1) analyzing the significance of early detection of mental disorders in students to ensure the continuity of learning; (2) collaborating with psychology experts to utilize CBT tools; and (3) partnering with application developers to create the E-KONTROL platform design. (1) analyzing the significance of early detection of mental disorders in students to ensure the continuity of learning; (2) collaborating with psychology experts to utilize CBT tools; and (3) partnering with application developers to create the E-KONTROL platform design. The service has achieved two objectives: (1) designing the E-KONTROL app prototype for initial screening of mental disorders and obstacles in UNU NTB students, particularly those with hearing impairments; and (2) enabling students to identify mental disorders and obstacles at an early stage without visiting the hospital.*

**Keywords:** Digital Board Game, E-Kontrol, CBT, Mental Health Obstacles, Hearing Impairment

### Abstrak

Permasalahan dan atau hambatan mental pada anak banyak terjadi, namun terkadang terlambat disadari. Terlebih pada anak yang berkebutuhan khusus tunarungu yang memiliki keterbatasan dalam berkomunikasi. Tujuan pengabdian ini adalah untuk membuat prototype aplikasi game board berbasis android terintegrasi CBT dengan akronim E-KONTROL sebagai sarana screening awal untuk mengetahui hambatan dan atau gangguan mental dan emosi mahasiswa berkebutuhan khusus (tunarungu) di UNU NTB. E-KONTROL memiliki fitur screening awal yang dapat mendeteksi gangguan dan hambatan mental pada penggunaannya, disamping itu terdapat juga fitur edukasi berupa informasi lanjutan berupa rekomendasi cara mengatasi gangguan dan hambatan mental. Pengabdian ini terlaksana melalui hibah pendidikan khusus kemdibud. Adapun metode pelaksanaan pengabdian ini adalah (1) analisis kebutuhan akan pentingnya deteksi dini gangguan mental mahasiswa agar di dalam pelaksanaan pembelajaran tidak terganggu. (2) Melakukan koordinasi dengan pakar psikologi terkait dengan instrument CBT. (3) melakukan koordinasi dengan mitra pembuat aplikasi terkait dengan desain aplikasi E-KONTROL. Hasil dari pengabdian ini adalah (1) terealisasinya prototype aplikasi E-KONTROL sebagai sarana screening awal mendeteksi gangguan dan atau hambatan mental pada mahasiswa UNU NTB terutama mahasiswa berkebutuhan khusus tunarungu; (2) memberikan kemudahan kepada mahasiswa untuk melakukan deteksi dini gangguan dan atau hambatan mental tanpa harus pergi ke biro psikologi; (3) memberikan edukasi kepada mahasiswa terkait pentingnya mendeteksi dini gangguan dan atau hambatan mental sebagai upaya pencegahan.

**Kata Kunci:** Media Digital Board Game, E-Kontrol, CBT, Hambatan Mental, Tunarungu

### INTRODUCTION

The stipulation of Law Number 8 of 2016 concerning Persons with Disabilities is a strong foundation which regulates the right of persons with disabilities to obtain quality education in all types, pathways and levels of education, as well as the right to get equal opportunities (*equity*). In line with this, in 2014, in accordance with Permendikbud Number 46 of 2014 concerning special education and special service education in universities, it was affirmed about government

guarantees and recognition of the right of persons with disabilities to attend education at the tertiary level in Indonesia.

As a form of seriousness, then in 2020, the Government of Indonesia issued PP Number 13/2020 concerning Decent Accommodation of Students which regulates the obligation of educational institutions to provide access to education for people with disabilities with the establishment of a Disability Service Unit (ULD) to support inclusive education providers.

On the other hand, access to higher education for people with disabilities – not to say none – remains minimal. Based on Higher Education Statistics (2019: 19) there are only at least 17 Higher Education institutions that have disability services resulting in only about 5% of the 10.8 million people with disabilities of working age completing higher education. Meanwhile, Afrianty (2019) stated that out of a total of 5.7 million higher education students, there are only 401 students with disabilities.

In the context of student services people with disabilities are students who experience impairments, difficulties or obstacles in carrying out certain activities as people who are blind, deaf, disabled, hearing impaired, autism spectrum disorder, specific learning disability and others, so they need special aids, environmental modifications or certain alternative techniques to be able to learn and participate in the learning process that In the end, it is also able to be a provision in participating in community life later.

In this activity, one type of disability that will be discussed is students with mental and emotional disorders and / or barriers. emotionally handicapped or behavioral disorder as defined by Eli M Bower (Bandi Delphie, 2006: 17) that children with emotional barriers or behavioral disorders, if they show the presence of one or more of the following five components: inability to learn is not caused by intellectual, sensory or health factors; unable to have good relations with friends and teachers; behaving or feeling not on Place; in general they are always in a state of unhappiness or depression; and tendency towards physical symptoms such as feeling pain or fear related to people or problems at school (campus).

On the other hand, other students also need to do initial screening as a form of counter for themselves. Regular initial mental health screening needs to be done, especially if there is a risk for experiencing mental disorders. This cannot be underestimated because mental health problems that are detected too late can lead to poor quality of life, even suicide. There are still many people who think that screening or initial examination of mental health only needs to be done on people who have experienced symptoms

of mental health disorders. This assumption is certainly wrong, because this screening can be done by anyone without having to wait for symptoms to appear. Especially for deaf students who have limited communication.

In addition, early examination or mental health screening is important as one part of a healthy life, not only physically but also psychologically. The benefit of mental health screening is basically to detect or determine a person's risk for mental disorders, such as anxiety disorders, depression, bipolar disorder, eating disorders, or post-traumatic stress disorder (PTSD). Especially for students with all forms of very dense activities.

The sooner it is detected, the better the effectiveness of handling mental health problems that can be provided by psychologists and psychiatrists. That way, the risk of complications or greater problems due to mental disorders, such as drug use or suicidal ideation can be prevented. In addition, early screening or early screening of mental health is also important for people who experience the following symptoms: Often feel excessive anxiety, worry, or fear, Mood (mood) quickly changes and extremes, Fast sad and easy emotions, Lack of energy or fatigue, Feeling worthless or low self-esteem, Difficulty concentrating, Difficulty coping with stress, Often avoids social situations or communication with others, Have or are at risk of self-harm, Have thought or even tried to commit suicide.

Through this program we develop Assistive Technology in the form of an education-based Digital Board Game on the Android Platform integrated with CBT with the acronym E-KONTROL (Communication and Interaction with Others). The implementation of the CONTROL application as a form of initial screening to detect mental and emotional disorders in students. This application also provides educational features, namely information on how to anticipate mental disorders in deaf children. The screening feature is also presented in the form of self-assessment. That way, learning is expected to be able to support the educational process of students who have mental and emotional disorders which then the impact of increased self-efficacy and resilience in achieving their goals. Students with

mental and emotional disorders have the opportunity to compete with other normal students in realizing equality in all aspects of social life, education and work, thus minimizing discrimination, bullying or bullying (Nugroho, F.A.: 2020).

The objectives of this activity program are First, Compile a prototype of the E-KONTROL application (Android-based digital board game integrated with Cognitive Behavior Therapy) as a form of initial screening of symptoms of disorders and / or mental and emotional barriers.; Second, implement the use of E-CONTROL (Android-based digital board game integrated with Cognitive Behavior Therapy). Especially for deaf students who have limited communication. Third, as a basis for decision making by stakeholders in the establishment of a Disability Service Unit (ULD) at Nahdlatul Ulama University of West Nusa Tenggara to realize equal rights and opportunities for persons with disabilities towards a prosperous, independent, and non-discriminatory life as an inclusive Higher Education provider.

## METHOD

The implementation methods in this activity are:

### 1. Needs Analysis

Technology is something that has been friendly and integrated with human life, and its existence to help ease human daily activities. One important component in the context of Special Education is the *Use of Adaptive Equipment* or the presence of aids / media in helping the needs of people with disabilities.

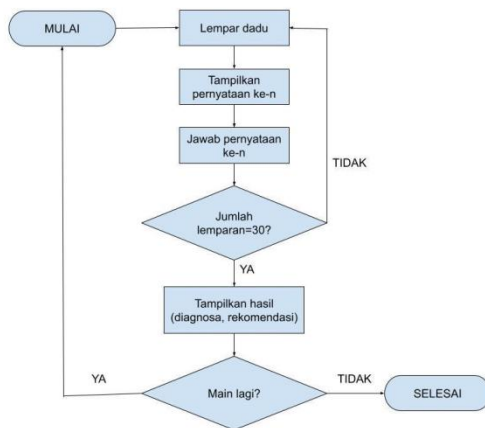
With the existence of assistive technology for children with special needs, it can help improve life skills so that they can carry out daily activities independently without continuing to depend on others. Not only that, it can also maintain functional so that it can complete tasks that should be done, not only in everyday life but also can develop the learning ability of students with special needs who face difficulties in learning. On the other hand, other students also need to do initial screening as a form of counter for themselves. Regular initial mental health

screening needs to be done, especially if there is a risk for experiencing mental disorders. This cannot be underestimated because mental health problems that are detected too late can lead to poor quality of life, even suicide.

There are still many people who think that screening or initial examination of mental health only needs to be done on people who have experienced symptoms of mental health disorders. This assumption is certainly wrong, because this screening can be done by anyone without having to wait for symptoms to appear. In addition, early examination or mental health screening is important as one part of a healthy life, not only physically but also psychologically. The benefit of mental health screening is basically to detect or determine a person's risk for mental disorders, such as anxiety disorders, depression, bipolar disorder, eating disorders, or post-traumatic stress disorder (PTSD). Especially for students with all forms of very dense activities. The sooner it is detected, the better the effectiveness of handling mental health problems that can be provided by psychologists and psychiatrists. That way, the risk of complications or greater problems due to mental disorders, such as drug use or suicidal ideation can be prevented. In addition, early screening or early screening of mental health is also important for people who experience the following symptoms: Often feel excessive anxiety, worry, or fear, Mood (mood) quickly changes and extremes, Fast sad and easy emotions, Lack of energy or fatigue, Feeling worthless or low self-esteem, Difficulty concentrating, Difficulty coping with stress, Often avoids social situations or communication with others, Have or are at risk of self-harm, Have thought or even tried to commit suicide.

### 2. Blue print Design Design

DIAGRAM ALIR(FLOWCHART) PERMAINAN E-KONTROL



Game view

### 3. Coordination and Consultation with IT specialists and Psychologists

At this stage, coordination and consultation with related parties are carried out for the process of making application prototypes. This is done in accordance with what is the purpose of this service program. At this stage, a CBT statement instrument is also prepared based on the need to determine the mental and emotional barriers of children.

## RESULTS AND DISCUSSION

### Implementation and Testing

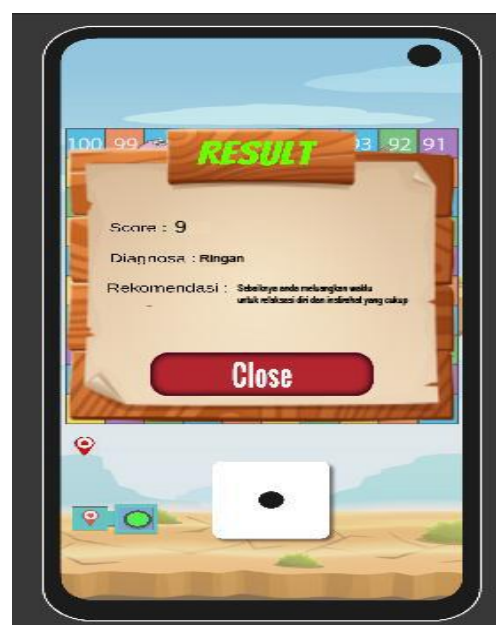
The interface of the E-KONTROL application consists of several pages, namely the login page, and the game page and the diagnosis and recommendation results page.



CBT Statement Display



Start page filter



Recommendations page view



In the process of testing this application, namely testing the system in the form of functional testing (alpha testing and beta testing) Alpha testing is functional testing held in a builder environment by a group of users who will use the software. The builder assists and records errors and problems felt by users. Alpha testing conducted on this application is divided into three parts, namely the test scenario, test cases and results, and test conclusions. The test scenario is as below:

Table 1. Testing

Test Class	Detail Uji	Conclusion
Initial View	Filling in Data	Accepted
Detection	Answering Questions	Accepted
Value.recommendation	View recommendation results and scores	Accepted

Based on the results of the application testing carried out, it can be concluded that this application that was built has run as expected, both in terms of validation and error handling processes.

Furthermore, beta testing is carried out in a user environment without the presence of the application developer. This test is a test that is hands-on in the actual environment. Users assess the application using questionnaire media. From the results of the questionnaire, conclusions can be drawn whether the application built is in accordance with the purpose or not

## CONCLUSION

Based on the results and discussion, it can be concluded:

1. CBT-based android game media board based on testing has met the eligibility standards to be applied.
2. This E-Control application makes it easy for users to detect mental disorders faced independently, especially for deaf people with limited communication

## SUGGESTION

In making this application is far from perfect, therefore the author hopes that someone will add other features or functions so that this

application can help in real life. As for some suggestions, namely:

1. Complete the features contained in the application such as the entire history menu of the application and complete the google map feature for the nearest hospital search list menu.
2. Improve application performance by adding login features with authentication, database access with the cloud.

## THANK YOU SPEECH

Our gratitude is conveyed to the Directorate of the Ministry of Education and Culture, research and technology, the Learning and Student Affairs Section, the Academic Community of Nahdlatul Ulama University, West Nusa Tenggara, IT Developers and our Psychology Experts who have helped a lot so that this program is realized to the end.

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