ATLANTIS
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Melius Cras: Game-Based Learning Methods to Reduce Anxiety for Students

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Abstract—**Introduction: Anxiety is a mental health problem that often occurs in students and can cause serious problems. Inadequate handling of anxiety will interfere with academic performance, which impacts students' mental health deterioration. Aim of Study: This study aims to develop a game-based learning program to reduce anxiety in students. Method: This study uses a quasi-experimental pre-and post-test design. This study involved 40 students from universities throughout Indonesia, with a balanced proportion between men and women. This program is held for six days in August 2021 online using the messenger application. This game consists of 5 parts: grounding, unhooking, making a room, being kind and acting on your value, and reflecting and resharing the journey. In this activity, the researcher will give narration to mediate participants in completing each challenge in each activity. Results: The results of the pre and post-tests show that participants feel happy to follow the game and can reduce the participant's anxiety. Conclusion Online gamification development can be alternative activities at home or anywhere to reduce stress and anxiety in students**

Keywords—*anxiety, game-based learning, mental health, student*

I. INTRODUCTION

Anxiety is a mental health problem that often occurs in students and can cause serious problems [1]. The prevalence and severity of mental health in students increase over time. The incidence of anxiety in students in the world varies from 15% to 64.3% [2]. The prevalence of anxiety in *Low and Middle-income countries,* including Indonesia, is often *under-reporting* caused by stigma, socioeconomic status, and ways to express psychological difficulties that are different from *high-income countries* [3].

Students are a period of transition from adolescence to adulthood and can be one of the most stressful times in a person's life [4,5]. The transition period is accompanied by intense psychological distress, such as changes in academic pressure, financial deprivation, and living independently for the first time that can trigger anxiety [3]. Student anxiety often does not get adequate treatment, interfering with academic performance and worsening students' mental health [6].

Anxiety in students requires severe treatment; they need treatment to prevent and reduce their anxiety [6]. One solution to reduce anxiety is to do activities together through games. Playing and socializing with others can help to express feelings of fear and sadness positively. Sharing feelings with others and forming social support can help reduce negative emotions [7].

In previous studies, researchers have developed *a game-based learning* method named Melius Cras to reduce anxiety in students undergoing Study From Home (SFH) during the Covid-19 pandemic. The results showed that Melius Cras could be an alternative solution to reduce student anxiety during SFH.

Currently, Indonesia is entering a new chapter that is a period of adaptation to the new normal. The Minister of Education and Culture stated that schools could carry out face-to-face learning by meeting certain conditions in the even semester of the 2020/2021 school year [8]. The decision raises pro and contra considering that the condition of the Covid-19 pandemic in Indonesia is still not handled properly. Students will be facing a transition from SFH to face-to-face learning and the uncertainty of being free from Covid 19. A period of adaptation accompanied by academic tension and pressure can be a source of anxiety for students. So researchers intend to perfect game-based *Game* Melius Cras to help reduce anxiety in students undergoing learning in the period of adaptation to new normal.

II. METHODS

This research design is a quasi-experiment with pre and post-test design. The population in this study is students from all over Indonesia. The selection of samples using the purposive sampling method with the number of participants who participated in this study was 40 people. The entire participant was divided into five small groups randomly. The inclusion criteria in the study consisted of active students, not having psychotic mental disorders, and not taking drugs that could affect mental health conditions. The study was conducted in July – August 2021.

The game figures in the Melius Cras phase 02 program have been modified and updated based on WHO guidelines.

The game used an instant messaging service application, and during the study, both participants and researcher only interacted using chat or voice chat. Researchers work with third parties to become game masters whose job is to guide the game. This activity consists of 5 stages:

A. Grounding

In this session, participants learn to stay safe when difficulties come or feel a storm of emotions (evil thoughts and feelings).

B. Unhooking

Participants learn to rid their bad feelings and thoughts of connecting with the world around them and focusing on their activities.

C. Make a Room

Participants are making room in their minds to accommodate bad feelings and thoughts because trying to remove them does not always work to overcome the problem.

D. Being Kind and Acting on Your Value

Participants learn to be aware of the pain in themselves and others and then respond to it with kindness. In addition, participants learn how to face difficult decisions, leave things that cannot change, focus on things that can change, and focus on the values they possess.

E. Reflect and Re-share the Journey

Participants can reflect on the experiences gained while at Melius Cras and spread a positive message to others.

Participants must complete the challenges in the game to achieve the goals of each activity. The game master will provide a narration to mediate the participants to complete each challenge in the game. Table 1 shows the activities series of Melius Cras Phase 02.

TABLE I.   ACTIVITY SERIES OF MELIUS CRAS PHASE 02

No	Day	Type of Activity	Purpose of activities	Activities carried out
1	Sunday	Prolog *Melius Cras*	Get acquainted with all participants Explain the outline of the program, especially to build the commitment of participants Socialize the technical implementation of activities (schedule, *messenger apps* used) Discussion to	Create *ground rules* with participants through the telegram voice *chat* app
			answer all forms of questions from the participant	
2	Monday	*Grounding*	Pay attention to the surroundings *(noticing)* Take a short break from the activities carried out *(Slowdown)*, Pay attention to the world around *(Connecting)*, Refocusing on their activity *(Refocusing)*, Participants connect with the world around *(engaging)*	Find – Share – tell
3	Tuesday	*Unhooking*	Recognizing the evil thoughts and feelings inside *(Noticing)* Give a name to the bad thoughts and feelings that exist within *(naming)* Refocusing on their activity and the of their environment *(refocusing)*	Choosing two words – Expressing feelings – sharing (Pick2 *words – Express Feel – Share)*
4	Wednesday	*Make a Room*	Describe and visualize bad thoughts such as anxiety and stress and supported by simple suitable activities to reduce the negative impact of bad thoughts on paper *(draw)* Tell the bad thoughts that are in the mind	Draw five circles – share and tell stories (Draw five circles – share and tell)
5	Thursday	*Being Kind and Acting on Your Value*	Living with our values and doing simple good to ourselves, others, and the world around us	*Plan – (simple act) - report*
6	Friday	*Reflect and re-share the journey*	Have full attention to their activities *(engaging)* Retelling the experience felt *(Tell)* Fully aware of their actions *(Noticing)*	Share (kindness story) – plan – do – report (next day)

Table 1. Cont.

7	Saturday	Epilog *Melius Cras*	Officially close activities Get feedback directly from participants	Provide some announcements and rewards to the most active participants and groups during the activity

III. RESULTS AND DISCUSSION

The things that most of the participants' minds over the past one month were family and finances. Pandemic conditions for 1.5 years have a significant impact on the family's situation, especially family finances. Many experiences the loss of family members, and some experienced worsening of the family economy. Most participants felt guilty because they could not help much with the family condition and family finances. The most felt feelings by participants over the past month were fear and worry. Participants feel afraid of pandemic conditions that do not provide certainty to participants. They also feel anxiety and worry about disappointing families because they cannot adapt to changes in educational activities and do not get optimal academic results over the past year. In addition to these negative thoughts and feelings, some feel optimistic because they have Allah and believe Allah will give great wisdom to all the events in their lives.

By being aware, mapping out the negative feelings and thoughts, and sharing stories with others, participants feel calm and get additional positive energy to get through their difficulties. *Grounding* and *Unhooking* techniques may not solve existing problems, but at least give them space to take shelter and see things better.

The majority of the sources of anxiety participants at this time were uncertainty, health conditions, and family. Uncertainty about the future, uncertainty about when a pandemic will end, and other uncertainties in life cause stress that impacts anxiety. In addition, the experience of losing a family member or closest friend due to a pandemic raises concerns for the health of themself, family members, and closest people. Participants are worried that health problems experienced due to pandemics will result in death. The difficulties faced by families at the pandemic due to health, financial and other problems caused stress and anxiety for most participants.

Active discussion and sharing of positive thoughts and solutions to problems between participants create a positive atmosphere that can help reduce the impact of negative reviews. This activity also found that simple positive actions that can reduce the adverse effects of anxiety are worshiping Allah, being productive, positive thinking, and interacting with others. Worshiping Allah, such as praying, sholat, and reading the Quran, can reduce the negative thoughts and feelings in the mind. Positive thinking, such as being optimistic and believing in themselves, can reduce the negative impact of bad feelings and thoughts. In addition, being inning with family and closest

people can make participants happy and reduce the adverse effects of bad feelings and thoughts.

Doing simple kindness to others can escape or take refuge from the "whirlwind" of negative thoughts. In addition, participants also learn to act by their values. They shared stories about good deeds and feelings when doing goods transmits positive energy to all telegram group members.

During the Melius Cras activity phase 02, the participants felt happy, excited, and grateful. Participants feel delighted to take on any given challenge, interact with new people, and share the common good. Some participants were initially embarrassed to express their opinion either directly through voice chat or chat. Still, the positive atmosphere built during the game made participants feels happy to interact in the game. This positive atmosphere also adds a positive spirit in working on every given challenge and impacts optimism in dealing with obstacles that occur in real life. Participants are basically in the same age range, so they have the same grammar, culture, and jokes. This condition gives happiness to participants who interact in the game because it can express their longing to interact with other people, especially peers. Meeting positive people, sharing stories, sharing feelings without judging each other, and the sense of kinship created between participants made the participants feel grateful to have been involved in this program. In addition, participants also thought that this activity was helpful to be applied in university life.

The schedule and challenges provided teach discipline and responsibility to participants. Participants learned to be able to complete challenges on time and be responsible for each task given. The group scoring system in this game invites cooperation between participants. Another lesson that participants learned during this game was managing stress, visualizing, and mapping negative feelings experienced by participants. This ability also teaches participants to be able to reduce the anxiety experienced by participants. Discussion sessions between participants taught participants to be able to see problems from various perspectives. When combined with stress management, it indirectly enabled participants to solve problems they were facing in real life. In addition, reflection and discussion sessions in each session broaden participants' insight and knowledge in managing the mental health problems they experience. The group assessment system teaches participants to interact more intensely with each other so that it automatically adds and expands the relationships of each participant.

They were sharing problems, views, and feelings during the game to foster a sense of kinship between participants shortly. At the end of the activity, each participant left messages to maintain communication and friendship even though the Melius Cras activity was over. This activity also provides fun and good memories for participants.

IV. CONCLUSION

Online gamification development can be an alternative to activities done at home or anywhere to reduce stress and anxiety in students.

V. CONFLICT OF INTEREST

The authors declare no conflict of interest

ACKNOWLEDGMENT

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