



The Effect of Cognitive Behavioral Therapy Games on Students' Work Resilience

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Accepted: October 22th 2025. Approved: December 24th 2025. Published: December 31th 2025

ABSTRACT

This study aims to analyze the effect of a Cognitive Behavioral Therapy Game (CBT Game) on the work resilience of vocational high school students. This study used a quantitative approach with a quasi-experimental pretest-posttest control group design. The participants were 16 male Grade X students from the Automotive Engineering Program at SMKN 1 Rejotangan, divided into experimental and control groups. The experimental group received behavioral counseling using a Cognitive Behavioral Therapy Game (CBT Game), whereas the control group received conventional counseling. Data were collected using a work resilience scale, observations, and interviews. The data were analyzed using descriptive and comparative statistics to assess differences in work resilience improvement between the two groups. The results showed that the CBT Game significantly improved students' work resilience. The mean work resilience score in the experimental group increased from 48.8 to 66.25, whereas that in the control group increased from 56.1 to 60.6. In addition, students responded positively to the CBT Game, as indicated by increased motivation, engagement, and self-reflection during the counseling process. These findings indicate that the CBT Game can serve as an effective innovation in guidance and counseling services to help vocational high school students develop work resilience as part of their preparation for entering the workforce.

Keywords: behavioral counseling, students, gamification

INTRODUCTION

Vocational education plays a strategic role in preparing students with competencies that meet workplace demands. In addition to mastering technical skills, students in vocational high schools (*Sekolah Menengah Kejuruan*, SMK) also require adequate psychological readiness to meet various demands during the learning process and upon entering the workforce. One important psychological aspect that should be developed among vocational education students is work resilience, which refers to an individual's ability to persevere, adapt, and remain productive when facing pressure, failure, and various challenges in learning and work activities [16]. Work resilience is essential for supporting students' career readiness because individuals with high resilience tend to manage stress, maintain motivation, and complete tasks effectively in challenging situations. Several studies have shown that psychological resilience is significantly associated with work readiness and career success among vocational education students [10], [17].

However, conditions in vocational schools indicate that some students still struggle to cope with academic pressure and the demands of practice-based learning. Some students show low self-confidence, give up easily when encountering learning difficulties, and

experience anxiety during assessments or practical assignments. These conditions indicate that students' work resilience needs to be strengthened through systematic and targeted interventions [9]. If not properly addressed, these conditions may reduce students' readiness for workplace internships and employment after graduating from vocational school. Previous studies have also shown that students with low resilience tend to experience greater difficulty managing academic stress and to have lower motivation to learn than students with higher resilience [18].

In the educational context, guidance and counseling services play an important role in helping students develop psychological attributes that support academic success and career readiness. Through counseling services, students can be assisted in understanding their potential, managing emotions, and developing adaptive coping strategies to address various academic and career-related problems. One counseling approach widely used to help individuals change maladaptive thought and behavioral patterns is Cognitive Behavioral Therapy (CBT), developed by Beck [1]. This approach emphasizes the interrelationship among thoughts, emotions, and behaviors. Negative automatic thoughts can trigger maladaptive emotional and behavioral responses. Therefore, through cognitive

restructuring and behavioral modification techniques, individuals can learn to identify and replace irrational thought patterns with more constructive ones [19]. Several studies have shown that CBT is effective in improving students' emotional regulation, self-confidence, and coping skills in managing academic pressure [7], [12].

Although CBT has been widely used in counseling practice, its implementation in school counseling services still faces several challenges. One common barrier is students' low engagement in the counseling process because counseling activities are often perceived as monotonous and unappealing [6]. This condition may hinder the self-reflection process that is central to CBT. Therefore, innovative counseling methods are needed to increase students' active participation and create more engaging and meaningful learning experiences. Studies have shown that interactive learning and counseling methods can increase student engagement and strengthen experiential learning [11], [20].

One approach to increasing student engagement in the counseling process is gamification, defined as the application of game elements in non-game contexts to enhance individual motivation and participation [21]. Gamification enables individuals to gain more engaging learning experiences through challenges, rewards, and interactive feedback mechanisms. In counseling services, gamification allows students to learn through direct experience, solve problems, and reflect on their thoughts and behavioral patterns through structured game activities. The integration of CBT and gamification produces an intervention model known as Game Cognitive Behavioral Therapy (Game CBT). Studies have shown that gamification in educational services and psychological interventions can improve learning motivation, student engagement, and learning effectiveness [14].

Several previous studies have shown that CBT is effective in improving students' emotional regulation and self-control [7]. Other studies have also reported that CBT interventions can improve the work readiness of vocational high school students [8]. In addition, game-based counseling has been reported to increase students' motivation and engagement in the counseling process [6], [13]. However, studies that specifically integrate CBT with gamification in guidance and counseling services to improve vocational high school students' work resilience remain relatively limited, particularly in the context of vocational education in Indonesia. Therefore, this study seeks to address this research gap by developing and implementing Game Cognitive Behavioral Therapy (Game CBT) as an innovative counseling approach for vocational high school students.

Based on the preceding discussion, this study aimed to analyze the effect of Game Cognitive Behavioral Therapy on students' work resilience at SMKN 1 Rejotangan and examine students' responses to the implementation of Game CBT during counseling sessions.

RESEARCH METHODS

This study used a quasi-experimental method with a pretest-posttest control group design to compare changes in work resilience between the experimental and control groups. This design allowed the researchers to more objectively assess the intervention's effect by comparing participants' conditions before and after the intervention [3]. The design was used to examine the effect of Game Cognitive Behavioral Therapy (Game CBT) on students' work resilience by comparing pretest and posttest scores in the experimental and control groups. The quasi-experimental approach allowed the researchers to evaluate the intervention's effectiveness in a natural educational setting without fully randomizing participants, thereby accounting for the actual conditions in the school environment [3]. In this design, both groups completed a pretest to determine their initial condition of students' work resilience. Subsequently, the experimental group received counseling using the Game Cognitive Behavioral Therapy approach, whereas the control group received conventional group counseling. After all intervention sessions were completed, both groups took a posttest to assess changes in their work resilience after participating in the counseling sessions.

This study was conducted at SMKN 1 Rejotangan, Tulungagung Regency, East Java, during the second semester of the 2024/2025 academic year. The participants were 16 male Grade XI students in the Automotive Engineering Department, aged 16–17 years. Participants were selected using purposive sampling, a technique based on specific criteria relevant to the research objectives [3]. The participant selection criteria included students with low to moderate levels of work resilience, as determined by an initial assessment using the Connor-Davidson Resilience Scale (CD-RISC). The participants were then divided into two groups: an experimental group of eight students who received counseling using the Game Cognitive Behavioral Therapy (Game CBT) approach and a control group of eight students who received conventional group counseling.

The primary instrument used in this study was the Connor-Davidson Resilience Scale (CD-RISC), developed by Connor and Davidson [2]. This instrument was used to measure individual resilience across several key aspects, including personal competence, adaptability to change, self-control, self-confidence, and the ability to cope with pressure. The CD-RISC consists of 25 statements rated on a five-point Likert scale, ranging from 1 (strongly disagree) to 5 (strongly agree). This instrument has been widely used in psychological and educational research to assess individual resilience. In addition to the scale, this study used observation sheets and interview guidelines to obtain supplementary information on students' responses to the implementation of Game Cognitive Behavioral Therapy during counseling.

The research procedure consisted of several stages: the pretest, intervention, and posttest. In the initial stage, all participants completed a pretest using

the CD-RISC to assess their work resilience before the intervention. Subsequently, the experimental group participated in counseling using the Game Cognitive Behavioral Therapy approach, conducted in four group counseling sessions lasting approximately 60–90 minutes each. This approach integrated Cognitive Behavioral Therapy principles, which emphasize the relationship among thoughts, emotions, and behaviors [1], with game elements designed to increase student engagement in the counseling process [21]. In the first session, the activities focused on introducing the concept of work resilience and the relationship among thoughts, emotions, and behaviors through a situation card game depicting various conditions commonly encountered by students during learning and practical training. The second session focused on identifying negative thoughts that arose when students faced academic challenges, using a reflection game with questions about their learning experiences. The third session aimed to help students engage in cognitive restructuring by replacing negative thought patterns with more rational and constructive ones through a solution-card game featuring alternative problem-solving strategies. The fourth session focused on strengthening students' work resilience through simulations of workplace challenges and group reflection on coping strategies for managing pressure. After all intervention sessions were completed, both groups completed a posttest using the same instrument as the pretest to assess changes in students' work resilience after participating in the counseling sessions.

The research data were analyzed using descriptive and inferential statistics. Descriptive analysis was used to report mean scores and changes in students' work resilience before and after the intervention. Inferential analysis was then performed using a paired-samples t-test to examine differences between the pretest and posttest scores within each group. This statistical test was used to determine whether students' work resilience changed significantly after the intervention. All data analyses were conducted using SPSS version 26. In addition, qualitative data obtained from observations and interviews were analyzed descriptively to support the interpretation of the findings and describe students' responses to the implementation of Game Cognitive Behavioral Therapy during the counseling process.

RESULTS AND DISCUSSION

The Game Cognitive Behavioral Therapy (Game CBT) intervention in this study was conducted through group counseling, allowing students to share

experiences, provide social support, and learn from other group members' perspectives. Interactions during group counseling fostered group dynamics that encouraged self-reflection and helped participants understand the thought and behavioral patterns that emerged when they encountered various problems. Through these discussions and exchanges of experiences, students developed more adaptive perspectives on the situations they faced and constructed more effective coping strategies. Group counseling also provided opportunities for participants to receive feedback from other group members, thereby facilitating more effective behavioral change [15].

The implementation of the intervention through game activities, case discussions, and reflection on experiences in Game CBT was also consistent with the principles of experiential learning, which emphasize that learning is more effective when individuals actively engage in direct experiences and reflect on them [4], [20]. In vocational education, learning approaches involving simulations of real-life situations, problem discussions, and reflection on experiences have been shown to help students develop adaptive thinking skills and strengthen resilience. Previous studies have also shown that participatory and reflective learning experiences can enhance students' ability to cope with academic pressure and workforce-readiness challenges [11].

Based on this framework, this study aimed to analyze the effect of Game Cognitive Behavioral Therapy (Game CBT) on improving vocational high school students' work resilience. The findings were analyzed by comparing the pretest and posttest scores of the experimental group, which received the Game CBT intervention, and the control group, which received conventional counseling. This comparison aimed to determine whether game-based media integrating a cognitive-behavioral approach was more effective at strengthening students' work resilience when facing learning challenges and preparing to enter the workforce.

The study involved 16 Grade XI students from the Automotive Engineering Department at SMKN 1 Rejotangan, divided into two groups: eight students in the experimental group and eight students in the control group. Work resilience was measured using the Connor-Davidson Resilience Scale (CD-RISC) before and after the intervention. The comparison of the mean work resilience scores between the two groups is presented in Table 1.

Table 1. Comparison of Mean Pretest and Posttest Work Resilience Scores

Group	Test	Mean Score
Control	Pretest	56.1
Control	Posttest	60.6
Experimental	Pretest	48.8
Experimental	Posttest	66.25

Based on Table 1, both groups showed increased work resilience scores after participating in the counseling services. However, the increase in the

experimental group was greater than that in the control group. The control group's mean score increased from 56.1 to 60.6, whereas the experimental group's mean

score increased from 48.8 to 66.25. The experimental group therefore achieved a 17.45-point increase, indicating a greater improvement in work resilience after receiving the Game CBT intervention.

The increase in these scores indicates that the use of Game CBT positively affected students' ability to cope with pressure, manage emotions, and maintain motivation when facing challenges in academic and vocational practice. The comparison of the increase in work resilience scores between the experimental and control groups is also presented in Figure 1.

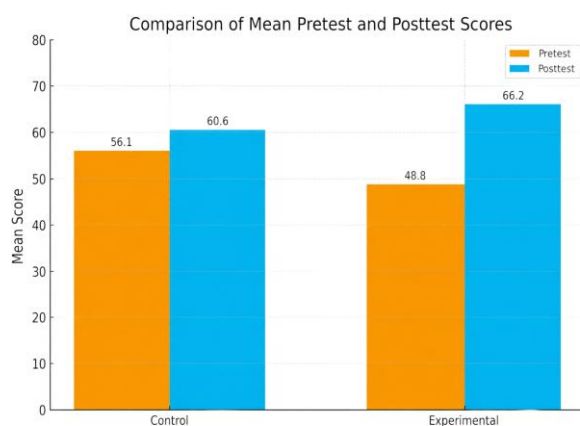


Figure 1. Comparison of Mean Pretest and Posttest Work Resilience Scores in the Control and Experimental Groups

Based on Figure 1, the experimental group showed a steeper increase in scores than the control group. This finding indicates that the Game CBT intervention was more effective than conventional counseling in improving vocational high school students' work resilience.

In addition to quantitative data, qualitative data were collected through observations and interviews to examine students' responses to the implementation of Game Cognitive Behavioral Therapy (Game CBT). The observations showed that students in the experimental group demonstrated higher levels of participation and engagement during the counseling process. Students were more active in discussions, shared personal experiences, and reflected on their thought and behavioral patterns when facing problems in learning and vocational practice.

One student stated:

"Before participating in this activity, I often felt like a failure when my practical work did not go well. After participating in this game, I learned how to change my thoughts so that I would not give up too quickly."

This statement indicates that Game CBT activities helped students identify negative thoughts and replace them with more adaptive thought patterns. This reflective process is central to Cognitive Behavioral Therapy (CBT), which focuses on replacing maladaptive thought patterns with more rational and constructive ones [1].

The findings showed that gamified Game CBT produced a greater improvement in students' work resilience than conventional counseling services. The

experimental group's mean score increased from 48.8 on the pretest to 66.25 on the posttest, whereas the control group's mean score increased only from 56.1 to 60.6. These findings indicate that integrating gamification into CBT-based counseling positively strengthened the psychological resilience of vocational education students.

This improvement in work resilience can be explained by the fundamental principle of CBT, which emphasizes replacing maladaptive thought patterns with more rational and adaptive ones [1]. In vocational education, the ability to manage thoughts, emotions, and behaviors is essential for coping with learning demands and workplace challenges. Work resilience refers to an individual's ability to persevere, adapt, and recover under pressure or in the face of difficulties [2], [16]. Recent studies have also shown that psychological resilience is significantly associated with career readiness and vocational students' ability to adapt to workplace demands [17], [18]. Therefore, interventions that help students recognize and reconstruct negative thought patterns can effectively strengthen psychological resilience.

In addition to CBT, gamification elements also played an important role in increasing student engagement during the counseling process. Gamification uses game elements such as challenges, points, case cards, and reflection activities to create more interactive and meaningful learning experiences. This approach is consistent with Self-Determination Theory, which states that intrinsic motivation can increase when individuals experience engagement, competence, and autonomy in learning activities [5]. Studies have also shown that gamification in educational settings can increase learning motivation, student participation, and cognitive engagement in the learning process [21]. Therefore, the use of game-based media in counseling can encourage students to explore their experiences more actively and reflect on their coping strategies.

These findings are also consistent with previous studies showing that CBT effectively improves various psychological aspects among students. A study by Pratiwi showed that CBT-based counseling significantly improved students' emotional regulation [7]. Another study found that CBT-based interventions increased students' self-efficacy in addressing academic and social challenges [12]. International studies have also reported that school-based CBT interventions can improve coping skills, reduce anxiety, and strengthen psychological resilience among adolescents [19].

In vocational education, the cognitive behavioral approach has also been shown to improve vocational high school students' work readiness [8]. Other studies have indicated that resilience and adaptability are important factors influencing work readiness and the successful transition of vocational education students into the workforce [9], [10]. These findings indicate that strengthening psychological attributes through counseling services is essential for preparing students to face increasingly complex workplace challenges.

In addition, gamification in counseling services has been reported to increase student engagement and strengthen the behavioral change process [6], [13]. Smith and Taylor found that integrating gamification into CBT can improve the effectiveness of the intervention by making the therapeutic process more engaging, participatory, and easier for participants to understand [14]. These findings indicate that innovation in counseling methods can provide more effective psychological learning experiences than conventional approaches.

Considering the characteristics of vocational education, work resilience is an essential competency that students need before entering the workforce. Vocational high school students often face various pressures, including demands of practical training, workplace competition, and the need to adapt to industrial environments. Therefore, developing counseling interventions that strengthen work resilience is highly relevant to vocational education.

Besides its empirical contribution, this study has several strengths. First, it developed an innovative counseling approach that integrates CBT with case-based game media, allowing students to learn through direct experience. This approach is consistent with experiential learning theory, which states that learning is more effective when individuals actively engage in experience and reflection [4], [20]. Second, this study provides a practical contribution to guidance and counseling services in vocational high schools by offering a more engaging and contextually relevant intervention method for students.

However, this study has several limitations. The relatively small sample size and limited intervention period restricted the generalizability of the findings. Furthermore, this study involved students from only one academic program and therefore did not fully represent the diverse characteristics of vocational education students. Future studies should involve larger samples and develop more varied gamification media to expand the implementation of this approach in school counseling services.

Overall, the findings indicate that integrating CBT and gamification through Game CBT is a promising approach to improving vocational education students' work resilience. This approach helps students develop cognitive and emotional skills while increasing their motivation, engagement, and readiness to face workplace challenges.

CONCLUSION

This study concludes that the transformation of Cognitive Behavioral Therapy (CBT) through a gamified approach known as Game CBT is an effective and innovative method for improving vocational education students' work resilience. The findings showed that integrating CBT principles with experiential learning through games significantly improved students' cognitive flexibility, emotional regulation, and adaptive coping skills. This intervention successfully fostered engagement, motivation, and reflective learning,

demonstrating that counseling services can be both educational and therapeutic when delivered in an interactive format.

This study also confirms that resilience is not a fixed personal trait but a psychological capacity that can be developed through structured and experiential interventions. Game CBT has proven to be a transformative model that bridges the gap between psychological theory and vocational practice by aligning therapeutic goals with contextual learning experiences relevant to students' future careers. These findings highlight the potential of gamified counseling as a sustainable innovation in vocational education, offering a strategic tool for guidance and counseling teachers and school counselors to strengthen students' emotional readiness, self-efficacy, and career adaptability in facing the challenges of the modern workplace.

ACKNOWLEDGMENTS

The authors would like to express appreciation to the Graduate School of Universitas Negeri Malang, particularly the Master's Program in Vocational Education, for the academic support and research facilities provided throughout this study. The authors also extend gratitude to Dr. Didik Nurhadi and Prof. Yoto for their guidance, constructive feedback, and continuous direction throughout the research and manuscript preparation. Appreciation is also extended to the principal, guidance and counseling teachers, school counselors, and students of SMKN 1 Rejotangan for their active participation and substantial contributions to the successful implementation of the Game Cognitive Behavioral Therapy intervention.

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