

Cognitive Behavioral Therapy Model of Socratic Dialogue Technique to Improve Critical Thinking Skills of Vocational High School Students

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Abstract

The main capital for vocational high school students to apply theoretical and practical knowledge according to the needs of the world of work is critical thinking skills. Critical thinking is included in the product of psychological-dimensional activities that can be improved through guidance and counseling services Vocational High School (SMK) students face practical challenges in applying the theories learned in school. Some of the problems faced by SMK students include confusion in planning a career, delaying career decisions and negative career thoughts. This study aims to describe the effectiveness of the cognitive behavioral therapy model of the Socratic dialogue technique to improve the critical thinking skills of vocational high school students. The approach to this research is quantitative with a quasi-experimental one group pre-test post-test method. The subjects of the study were 103 students. The sampling technique used was purposive random sampling. The data analysis technique used non-parametric statistical tests with the Wilcoxon Signed-rank test analysis method. The results of the Wilcoxon Signed rank test analysis showed a score of $0.000 < 0.005$, which means that the application of the cognitive behavioral therapy model of the Socratic dialogue technique is effective in improving the critical thinking skills of vocational high school students. The results of the study recommend research on gender differences in students' critical thinking skills. The implications of the research results can be used as material for designing career guidance and counseling services for vocational school students.

Keywords: Socratic dialogue, Cognitive behavioral therapy, Critical thinking.

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Introduction

The development of the world's information technology system has brought education life towards digitalization. The transformation of digital flows presents a major problem, namely the ability of the education system to meet the needs of the labor market (Brunetti et al., 2020). Technology-based learning and the use of internet-connected devices as learning resources ultimately form a new climate in learning for students in vocational schools. The concept of 'competence' in vocational education must be transformed into 'ability' so that graduates can engage with the latest work patterns (Hartanto et al., 2019), including facing the trend of digitalization of vocational education. Students can be identified as drivers of industrial productivity starting from school and the internship period obtained in the field work program (PKL) in grade XI.

Critical thinking is the main capital for a vocational high school student to face the current trend of digitalization of education. A research study conducted on 233 vocational high school students showed that the level of digital technology maturity of students, ranging from awareness, literacy, capability, creativity, and criticality in using digital technology is in the low category (Inderanata & Sukardi, 2023). Critical thinking skills and technological maturity are relevant because developing students' creative potential is an increasingly recognized goal in education for work (Haasler & Barabasch, 2015), while at the next level of education, higher education, it shows that as many as 893 new students have digital maturity. better than vocational high school students. Realizing this condition. The digitalization trend encourages the formation of changes in mindset and action patterns.

Digital learning provides convenience for students in learning activities such as increasing productivity, flexibility and interactivity (Gan et al., 2015). Critical thinking skills carry out the practical function of students to apply knowledge to the needs of the world of work based on educational principles. The rationale that supports this statement is aimed at the position of critical thinking in education, namely critical thinking is an inseparable part of education (Miri et al., 2007). However, this thinking meets the challenge of reality, namely the condition of critical thinking skills of vocational school students who do not meet the criteria of the world of work and industry, even the world of education.

Research related to critical thinking skills of vocational school students in the last 5 years shows varying trends according to the identification method used by researchers. A 2021 study at SMK x of 245 vocational school students showed that students' critical thinking skills were in the low category of assumptions 26.3% and conclusions 33.3% (Kurniawan et al., 2021). The assumption and conclusion aspects are important components in critical thinking skills. The assumption aspect is related to the capacity of vocational school students to respond to knowledge and information appropriately, then the conclusion aspect is related to the thinking energy that emerges and can be observed in students. Critical thinking skills are present as one of the skills needed by individuals to obtain precise and accurate information, including for students.

The impact of students not having critical thinking skills is that students experience confusion in choosing a career. (Kim, 2010, 2011), postpone career decisions (Kurniawan et al., 2024), have negative career thoughts (Paivandy et al., 2008; Piesch et al., 2020), experiencing cognitive dissonance that encourages unhelpful attitudes for the individual such as negative aggressive attitudes (Chabrak & Craig, 2013; Howell et al., 1977; Syasyila et al., 2024). The characteristics of the comprehensive learning situation in schools and the additional hours of practice inside and outside

school also have an impact on students' conditions in critical thinking. (Rönnlund, 2018; Rönnlund et al., 2019). In reality, critical thinking skills are difficult to develop in technical and vocational education and training (such as education in vocational schools), where the acquisition of practical skills is often a priority. (López et al., 2023). A more effective, politically empowering, and epistemically coherent approach to critical thinking enhances students' understanding of the multiple forces that shape contemporary vocational experiences as an urgent matter in school education. (Hyslop-Margison & Armstrong, 2004)

Guidance and counseling support the implementation of comprehensive education for vocational high school students. The educational process is recommended to prepare content that enhances higher level skills such as critical thinking skills (Pithers & Soden, 2000). Important students can make the right judgments, can explain their reasons and can solve unknown problems in the learning process (Sandoval, 2005; Schmidt et al., 2011). The study of critical thinking in guidance and counseling is shown by service orientation, namely optimizing four basic areas of student potential, namely personal, social, learning and career. Critical thinking is included in the potential of the personal field that can provide support in other areas, namely social, learning and career. In addition, gender issues also fill scientific studies as moderators that may influence students.

Critical thinking skills are one of the studies in the perspective of guidance and counseling in schools (Eldeleklioğlu & Özkılıç, 2008). The initial concept of critical thinking developed by ancient philosophers such as Socrates, Plato, Marx, and Aristotle established the key term critical thinking as a deductive ability that allows individuals to understand the objectivity of knowledge. Critical thinking consists of interpretation, analysis, evaluation, synthesis of explanations, inference, and self-regulation (Kitsantas et al., 2019). Students with the right critical thinking skills can help the learning process to support academic and non-academic achievements. Efforts to achieve student achievement need to be carried out through strategic services, namely guidance and counseling with the help of professional counselors. The implementation of guidance and counseling services according to the principles of professional services can facilitate the development of dynamic student needs in schools (Sulistiyan et al., 2019; Suryawati et al., 2024; Yuan, 2017). Given the differences in dimensions of new knowledge, pedagogical practices, and technology that require students' thinking processes, serious steps are needed to maintain optimal student cognitive dimensions (Vincent-Lancrin, 2023).

The essence of critical thinking skills needs to be developed to answer the challenges of the world of education, competition in the flow of information technology, and democratic life. The approach in guidance and counseling services that emphasizes the cognitive dimension is cognitive behavioral therapy (CBT). Cognitive behavioral therapy (CBT) refers to a popular therapeutic approach that has been applied to various problems (Hayes & Hofmann, 2017). The problems that are the target of change emphasize the cognitive aspect, in accordance with the term naming of the counseling approach. Cognitive-Behavioral Therapy or CBT is defined as part of cognitive therapy that focuses on modifying negative thoughts or beliefs into positive thoughts (Diachkova et al., 2024; Lee & Cho, 2021).

Cognitive Behavior Therapy (CBT) counseling is an appropriate alternative to improve students' critical thinking skills with the assumption that counseling is a communication process between counselors and clients that aims to find themselves so that they can make the right decisions in their lives. based on certain relevant theoretical paradigms, models and techniques (J. S. Beck, 2011). Cognitive behavioral therapy (CBT) is designed as a psychotherapy to support client ownership and

trust in the change process (Kazantzis, 2024; Kazantzis et al., 2018). One technique that can be used in implementing the CBT counseling model is Socratic dialogue. This dialogue is an early ancient learning method that is still original and has added value because of its existence in the world of education to this day. The definition of Socratic dialogue refers to Kessels' statement (2009) which states that Socratic dialogue is an agreement obtained from a systematic deliberation process on fundamental questions, not only on theoretical questions. But rather on questions that come from concrete experiences that can be accessed by all participants in the dialogue.

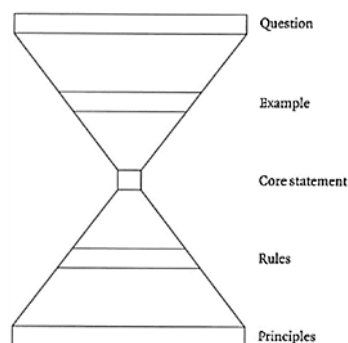


Figure 1 Socrates' Dialogue Process Hour Glass Metaphor (Kessels, 2009)

The CBT counseling approach is effective in helping clients develop and improve critical thinking skills. Critical thinking skills are an absolute necessity for every integral system in the world of education. Realizing this need, school counselors need to provide systematic services that can facilitate student fulfillment, which is related to critical thinking skills. The form of service provision such as treatment or training given to students can ultimately form a variety of critical thinking skills. Apart from the importance of meeting these needs, empirical studies have shown that helping strategies to train students to achieve critical thinking skills is very necessary (Anggraeni et al., 2023).

The CBT counseling model is classified as an evidence-based psychotherapy service and has proven its effectiveness in various individual problem conditions. (A. T. Beck, 1991, 2019; David & Szentagotai, 2006; Leddy et al., 2013; Reese et al., 2013). The use of multicultural principles in the CBT counseling model is one of the advantages that helps counselors reach a diversity of backgrounds, values, communities and beliefs, as can be found in learning situations in vocational school educational environments. (SMK) (Calloway & Creed, 2022). As is known, the academic environment, including vocational schools, has continued to develop consistently and dramatically over the past 20 years. (Malik et al., 2017). The CBT counseling model is relevant as an alternative service that can accommodate student diversity in vocational schools.

Certain dialogue processes can be useful in supporting the way CBT therapists attempt to develop cognitive case conceptualization (or case formulation), structure sessions, or use techniques [34]. Socratic dialogue and CBT counseling have relevance in efforts to improve students' critical thinking skills. The rationale for this statement is based on the idea that CBT is a process of integrating biological, psychological, and social factors into an idiographic structural model used to conceptualize clients' problems and select transdiagnostic, evidence-based procedures for intervention (Ryum & Kazantzis, 2024).

The CBT counseling approach also provides an empowering, client-centered and structured collaborative framework between counselor and client (Mehra et al., 2025). Socratic dialogue in CBT

serves the function of therapeutic dialogue which is characterized by knowledge and insight gained from the client that helps the therapist guide the therapy process.

Method

This study uses a quantitative approach with a quasi-experimental one group pre-test method. The study was conducted on 103 students of class X of private vocational schools in Malang Regency with a ratio of 92 male students and 8 female students. The technique of selecting research subjects used random sampling by considering critical thinking skills in the low and medium categories based on the results of the assessment using a critical thinking ability measurement scale developed by the researcher. The instruments used in assessing students' critical thinking skills have met the requirements of validity and reliability.

The research data analysis technique uses the Wilcoxon Signed-rank test formula with the help of the SPSS ver. 22 for windows application which aims to determine the level of influence of the cognitive behavioral therapy model of the Socratic dialogue technique on the critical thinking skills of vocational high school students.

Results and Discussion

The rapid development of science and technology has caused rapid changes in lifestyle and global order. Education in vocational schools as one of the producers of human resources in the global order aims to prepare students to become superior human resources in practice so that they are able to support the productivity of a business entity or industry in the era of information technology development. Vocational education also facilitates students to find industrial partners, and vice versa, industry also gets competent workers according to industrial needs (Ferm, 2021). Fulfillment of personal, social, learning and career needs for every element of society is certainly an important concern in order to be able to survive physically and psychologically in the digitalization era (Kurniawan, 2020). Digitalization of education has been shown to increase engagement,

Cognitive behavioral counseling has been identified in 269 meta-analytic studies and reviewed a representative sample of 106 meta-analyses examining the effectiveness of CBT in problems at the age level of children and older adults [26]. The implementation of simple counseling has two main tendencies that can be observed: the first is the use of contemplative methods and the second is an approach based on dialogical critical thinking. The implementation of counseling services through the CBT approach is an alternative for schools in improving students' critical thinking skills, because critical thinking skills are designed, built and taught in schools to students. General factors that can determine an individual's disposition to think critically include analytical, open-mindedness, curiosity, self-confidence, seeking truth.



Figure 2 Analysis of Critical Thinking Skills of Grade X Vocational High School Students

Students' uncritical thinking results from heuristic thinking and lack of cognitive effort, consistent with a dispositional approach, rather than a lack of ability to analyze or synthesize (Kaepfel, 2021). Stimulus triggers to encourage critical thinking skills need to be done in a systematic process. The cognitive model provides a comprehensive framework for understanding psychological distress (James et al., 2023; Pacheco et al., 2022). The CBT counseling model has also been extensively proven to be feasible and effective in a variety of settings (Gkintoni et al., 2025). Based on the research results, the following data were obtained.

Table 3 Wilcoxon Signed Rank Test Results

		n	Average Rating	Number of Ratings
Post_A2 - Before_A1	Negative Rating	84a	44.48	3736.50
	Positive Rating	3b	30.50	91.50
	tie	16c		
	Total	103		

a. Post_A2 < Before_A1

B. Post_A2 > Pra_A1

C. Post_A2 = Before_A1

Table 4 Output Statistics Results

Test Statistics

	Post_A2 - Before_A1
Z	-7.856b
asim. Signature (2-tails)	,000

a. Wilcoxon Signed Rank Test

B. Based on positive ratings.

Based on the results of the study, it shows that counseling through the CBT approach is effective in improving students' critical thinking skills. In table 4, the Asymp. Signature score (2-tailed) $0.000 < 0.005$ means that there is a difference before and after the CBT model counseling with the Socrates dialogue technique on the critical thinking skills of vocational school students. Critical thinking skills in the intervention process using CBT counseling have also been empirically proven effective in previous relevant scientific studies (Ryum & Kazantzis, 2024; Williams & Wright, 2021). The cognitive perspective that is the focus of the intervention target in CBT counseling provides opportunities for counselors to be able to provide appropriate services according to the needs of the client,

A total of 143 psychotherapists stated that critical thinking skills are associated with theoretical orientation and reliance on intuition in decision making (Hallo & Nguyen, 2021). Critical thinking skills for students provide realistic logical spaces because they are based on scientific empirical theories that can be proven validly and reliably in scientific principles. CBT counseling encourages students' thinking potential because it is carried out systematically and directed so that counselees can focus on each stage because at each stage there are also tasks that need to be done by counselors and counselees to achieve counseling goals. The results of further research show that

individual and group CBT are effective in reducing psychological symptoms. However, the impact of combined therapy is stronger than individual CBT (Zhao et al., 2024).

The importance of learning from experience in addition to theoretical education, especially in the context of vocational education (SMK), is most recommended using the Socratic dialogue technique. (Knezic et al., 2010). The Cognitive Behavioral Therapy (CBT) model with the Socratic Dialogue technique is an effective approach to improve critical thinking skills of Vocational High School (SMK) students, because it systematically encourages students to evaluate assumptions, reason logically, and reflect on their own views through open-ended questions that provoke deep thinking. This approach not only helps students understand and manage their thoughts and emotions, but also forms the analytical skills needed in solving problems rationally and constructively. (Ho et al., 2023; Suvonov, 2023). Thus, the application of the Socratic Dialogue technique within the CBT framework has been proven to be able to develop critical thinking patterns that are essential for students' readiness to face academic challenges and the world of work for vocational school students.

Conclusion

Critical thinking skills are a basic requirement that must be met by every vocational high school student to be able to adapt to changes in the learning system in the cybergogy era. Critical thinking as a cognitive dimension ability can also provide reinforcement and confidence to students in acting, making decisions and calculating opportunities and challenges that may occur in the future, both related to personal conditions, social relationships, learning experiences and career satisfaction. . Critical thinking skills are taught as a preventive development effort to practice learning objectives as stated in Law Number 20 of 2003 concerning the National Education System by educators, especially school counselors through guidance and counseling service programs.

The implementation of cognitive-centered counseling, or better known by the abbreviation CBT, is one of the real forms of counselors in facilitating the development of students' learning areas, namely critical thinking skills. Critical thinking skills can help students achieve academic and non-academic achievements in school.

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