

THE EFFECTIVENESS OF PROBLEM-SOLVING-BASED INFORMATION SERVICES IN IMPROVING THE HIGH ORDER THINKING SKILLS OF ADOLESCENTS AT TANJUNG GUNDAP

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Abstract.

In entering the 21st century, adolescents need to master various skills known as “The 4C Skills”: critical thinking and problem solving skills, creativity and innovation, communication, and collaboration so that the need to improve HOTS abilities among adolescents. This study aims to improve the ability to think analytically and critically through the provision of classical guidance services based on problem solving for adolescents conducted in Tanjung Gundap. This research was conducted using quantitative method with quasi experiment. Gelther and Clark argued that the main component of classical guidance is considered the most effective to identify adolescents who need help. This activity is carried out in several stages, namely: 1). Needs assessment, 2). Pre-test, 3). Provision of problem solving-based classical services for three meetings, 4). Implementation of post-test, 5). Data collection, 6). Data analysis. The sampling technique used total sampling of 25 teenagers in Tanjung Gundap. The results of this study showed an increase in HOTS by 44%, with all participants initially in the low category. Based on the results of the t-test analysis of 5,551, the hypothesis of the independent sample t-test test proves that there is a difference seen from the lower and upper, each of which is positive, namely lower 1,143 and Upper 2,457. While Sig (2-tailed) is worth .000, it is said from the output data that H_0 is rejected and H_a is accepted, which means that there is a difference in increasing the ability of high order thinking skills of adolescents in Tanjung Gundap, there is a significant change in results, namely 55.11% and these findings indicate that classical guidance services are effective problem-based in improving High Order Thinking Skills and are able to help adolescents in finding problem solving or Problem Solving on existing issues.

Keywords : High Order Thinking Skill, Adolescents, Classical Guidance, Problem Solving

INTRODUCTION

Indonesia is adapting to enter a new period known as the industrial revolution 4.0 era. In the ongoing industrial revolution 4.0 era, Indonesian society and even the whole world are faced with increasingly rapid and rapid changes in various fields, such as education, industry, communication, technology, economy, and socio-culture. These changes can influence and give rise to challenges that must be faced by individuals wisely, and also encourage individuals to be able to adapt and adjust to the changes that have occurred. So it is necessary to master relevant skills in facing the industrial revolution 4.0 that occurred in the 21st century.

(Binkley et al., 2012) stated that to be able to exist in the 21st century, ten skills are needed that must be possessed by a teenager. These skills are such as creative thinking skills, critical thinking skills, metacognitive thinking skills, communication, collaboration, computer literacy, citizenship, work and career. As well as individual and social responsibility skills, namely learning and innovation skills which include creative thinking skills and problem solving skills, communication and collaboration skills, and the ability to be creative and innovative. The current generation, especially teenagers, should start getting used to training and developing various skills

to face the 21st century. These skills can be started and integrated in the learning process. A set of thinking and learning skills that are important for life in the 21st century are known as "The 4c skills" which are formulated by the partnership framework of 21st century skills which are formed by (Suryana, 2023): (1). Critical thinking and problem solving skills, having the ability to think critically, systematically, and laterally to solve a problem; (2). Creativity and innovation skills, can utilize creativity to create something that has never existed before and be innovative; (3). Communication skills, able to communicate effectively about something with various parties; and (4). Collaborations skills, able to work well with individuals or groups to achieve common goals. These skills are closely related to High Order Thinking Skills or known as HOTS.

High Order Thinking Skill (HOTS) is an important ability that can accommodate adolescents to be able to exist in the 21st century, where a person can learn not only to remember and understand, but also to be able to analyze, evaluate, and create (Tulljanah & Amini, 2021). HOTS was developed from Krulik and Rudnick's problem solving method, Bloom's cognitive taxonomy, and the revised Bloom's taxonomy by Anderson and Krathwohl, so that the revised Bloom's theory is considered a reference in high-level thinking. The six levels of thinking skills are divided by Bloom, three levels in the cognitive process dimension as part of high-level thinking skills are analyzing, evaluating, and creating (Raiha M, 2021). The characteristics of HOTS questions are explained by (Widana, 2017) as follows: (1) Measuring high-level thinking skills High-level thinking skills are how to analyze, reflect, state reasons, use concepts in different situations. (2) Based on contextual problems HOTS questions are assessments based on real life situations, where students are expected to be able to instill learning concepts in the classroom in order to solve problems. (3) Using various question formats Various types of questions on a test file. Some types of questions used to write HOTS questions are: multiple choice, complex multiple choice, short answers, short answers, essays. In the field of education, there are two levels of thinking skills, namely Low Order Thinking Skills (LOTS) and High Order Thinking Skills (HOTS). LOTS and HOTS are elements included in the cognitive process. LOTS is the ability of students in terms of lower knowledge aspects while HOTS is the ability of students that requires analytical, critical, and creative power (Nurjanah et al., 2021). However, currently HOTS is the main focus of discussion, because it provides many real benefits, one of which is HOTS in developing Problem Solving skills, namely choosing and making wise decisions in living life. Problem solving aspects consist of thinking positively about problems, thinking systematically, finding problem solving ideas, and selecting the best implementation of ideas.

(Saputra, 2016) Says the main goal of High Order Thinking Skills is how to improve

students' thinking skills at a higher level, especially those related to the ability to think critically in receiving various types of information, think creatively in solving a problem using the knowledge they have and making decisions in complex situations. (Andayani & Lathifah, 2019) Mentioning HOTS is also interpreted as the ability of a more complex thinking process consisting of the ability to present known material, criticize, and create solutions to problem solving. it can be concluded that high-level thinking skills are more complex and continuous thinking skills in solving problems that must be faced by adolescents in facing the 21st century.

According to Crow & Crow (in Sholichah, 2021) guidance is assistance given by a man or woman who is considered to have the appropriate character and is well experienced to a person or group at each age to provide assistance in managing their personal lives, recognizing their own personality, making decisions, and being responsible for their own burdens.

Gelther and Clark (in Sholichah, 2021) argue that classical guidance is a component that is considered the main one to be given in the guidance curriculum, which is approximately 25% to 35%. Classical guidance services are considered the most successful in identifying students who need help. In addition, classical guidance is considered the most appropriate step for guidance and counseling teachers or counselors in conveying information to students regarding programs available at schools, such as continuing education programs and learning skills.

Classical guidance makes students active and creative in participating in activities. (Ainur Rosidah, 2014). According to (Rahma, 2017) The implementation of classical guidance services including basic service components that tend to be preventive in nature is structured to achieve the objectives of the service, classical guidance services including services that are very important as one form of service that will guide students in developing, so classical guidance services need to be presented as well as possible by involving student participation in the interaction process. The purpose of this study was to determine the Effectiveness of Classical Guidance Services based on Problem Solving in improving High Order Thinking Skills (HOTS) of Tanjung Gundap adolescents so that increasing high-level thinking skills or High Order Thinking Skills (HOTS) in adolescents can be interpreted as the success of information services based on Problem Solving carried out on Tanjung Gundap adolescents.

High Order Thinking Skill

Based on Bloom's taxonomy, thinking skills are arranged in a hierarchy consisting of six levels, namely knowledge, comprehension, application, analysis, synthesis, and evaluation. Anderson & Krathwohl, (2001) developed Bloom's taxonomy into remembering, understanding, applying, analyzing, evaluating, and creating. Remembering, understanding and applying skills are

skills that are included in recalling, while evaluating is included in critical thinking skills and creating is included in creative thinking. Cognitive processes according to Bloom's cognitive levels are presented in the following table.

Table 1 Cognitive Processes according to Bloom's cognitive levels

Proses Kognitif			Definisi
LOTS	C1	Mengingat	Mengambil pengetahuan yang relevan dari ingatan.
	C2	Memahami	Membangun arti dari proses pembelajaran, termasuk komunikasi lisan, tertulis, dan gambar.
	C3	Menerapkan/mengaplikasikan	Melakukan atau menggunakan prosedur di dalam situasi yang tidak biasa.
HOTS	C4	Menganalisis	Memecah materi ke dalam bagian-bagiannya dan menentukan bagaimana bagian-bagian itu berhubungan antarbagian dan ke struktur atau tujuan keseluruhan.
	C5	Menilai/mengevaluasi	Membuat pertimbangan berdasarkan kriteria atau standar.
	C6	Mengkreasi/mencipta	Menempatkan unsur-unsur secara bersama-sama untuk membentuk keseluruhan secara koheren atau fungsional; menyusun kembali unsur-unsur ke dalam pola atau struktur baru.

Classical Guidance

According to Gysber & Henderson (1998) stated that classical guidance is a form of activity carried out in guidance curriculum or basic services. Classical guidance activities (classroom guidance) are carried out with a portion of 25% -35% given to basic services (Geltner and Clark, 2005). This can be interpreted that classical guidance activities are the process of providing assistance given to students in a class or group setting. This classical guidance service can be used as an initial step to develop students' self-adjustment skills and abilities by providing certain material topics that support students' lives. Classical guidance activities as screening for students who need help. In this case, if students are found to have problems during the implementation of classical guidance services, they can be followed up with other services, for example, group counseling or individual counseling (Heru Sri Suryanti, 2021).

Classical Guidance Based on Problem Solving

Classical guidance based on problem solving is an approach in guidance services that prioritizes problem solving as the main method to help a group of students. The main focus is to develop students' critical and creative thinking skills in dealing with real issues in everyday life. This is in line with Prayitno's work, explaining that classical guidance is a systematic approach to

helping students overcome general problems. This approach integrates problem-solving techniques to improve students' critical and creative thinking skills.

METGHODOLOGY

Sugiyono (2018) stated that "Quantitative methods can be interpreted as research methods based on the philosophy of positivism, used to research certain populations or samples, with the aim of describing and testing predetermined hypotheses. The approach method in the research is to use a quantitative approach with a Pre-Experiment One Group Pretest-Posttest Design design. The use of this design focuses on one group with no comparison group, therefore a comparison of the results of the pretest and posttest will be carried out. So that the treatment results can be seen precisely. The research design of one group pretest posttest design according to Sugiyono (2019) is as in the following table.

Table 2. One Group Pretest-Posttest Research Design

O ₁	X	O ₂
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Research Design Description:

O1: Initial condition before being given classical guidance based on Problem Solving

X: Provision of classical guidance based on Problem Solving

O2: Final condition after being given classical guidance based on Problem Solving

According to (sugiyono, 2018) the experimental method is a quantitative research method used to determine the effect of independent variables (treatment) on dependent variables (outcomes) under controlled conditions ". In this case, the experiment was carried out to determine or measure how much influence the variables to be tested have.

Before the researcher carried out the treatment through classical guidance services based on problem solving, the researcher prepared a framework for implementing the research on the Effectiveness of Classical Guidance Based on Problem Solving in Improving High Order Thinking Skills of Tanjung

Gundap Adolescents, as follows:

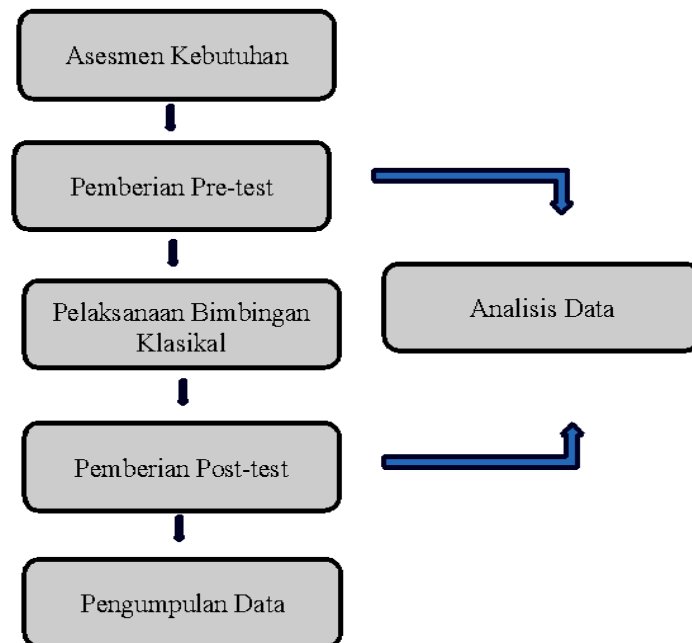


Figure 1 Research Framework Diagram

RESULT AND DISCUSSION

This research was conducted in Tanjung Gundap which is one of the coastal areas and has been inaugurated by the Batam city government as Kampung Tua, Tembesi Village, Sagung District, Batam City, Riau Islands. The target of this community service is 25 Tanjung Gundap teenagers who are junior high and high school students. Based on the results of the HOTS (High Order Thinking Skill) Pretest given to Tanjung Gundap teenagers, it was found that the level of critical thinking was low, namely the High Order Thinking Skill ability of Tanjung Gundap teenagers was in the low category, then there were teenagers who dropped out of school due to economic factors, social support especially parents, relationships, poor thinking patterns towards the future, lack of critical thinking and career. Where this thinking pattern is very much needed by teenagers when entering the 21st century. So that treatment is given through classical guidance services based on Problem Solving in Improving High Order Thinking Skills for Teenagers in Tanjung Gundap. The number of teenagers who were samples in this study was 25 teenagers. The treatment was carried out in 4 (four) sessions, namely: needs assessment, provision of HOTS pre-test, Implementation of Classical Guidance Services, and Provision of Post-test.

Needs Assessment

Needs assessment is a process that involves collecting, processing and evaluating information related to the abilities, knowledge, skills, attitudes or other characteristics of individuals, groups or organizations. Assessment is able to describe and provide accurate information that is useful in helping to identify the conditions and needs of the subject being evaluated. Needs assessment is an activity that aims to find the real conditions of students which will be used as a basis for planning guidance and counseling programs (KEMDIKBUD, 2016). Based on the explanation above regarding needs assessment, researchers conduct needs assessments by collecting information through observation.

HOTS pre-test administration

The pre-test was given in the form of HOTS case analysis questions which aimed to determine the level of HOTS abilities of Tanjung Gundap adolescents before being given treatment in the form of classical guidance services.

Implementation of Classical Guidance Services

At this stage, teenagers are given some informational materials, video content about the problems they will face at their age such as topics of technological developments, the impact of technology, juvenile delinquency, promiscuity, and getting to know careers. After the material is delivered, participants, namely Tanjung Gundap teenagers, are invited to ask questions if there is anything they do not understand regarding the material that has been delivered. Then researchers and teenagers share ideas and experiences through Forum Group Discussions (FGD) discussing problems that occur on the themes that have been presented by researchers, namely technological developments, the impact of technology, juvenile delinquency, promiscuity, and careers. From the results of the FGD Session, some teenagers already have creative ideas in analyzing problems, are able to dare to try to talk about the ideas in their heads. However, there are also some teenagers who still need guidance to get how to analyze cases so that the objectives of this activity can be achieved, namely increasing the High Order Thinking Skill of Tanjung Gundap teenagers through classical guidance based on Problem Solving.

Post-test Administration

The Post-test was given in the form of HOTS case analysis questions which aimed to determine whether there was a change or not in the improvement of HOTS Adolescents' Ability in Tanjung Gundap after being given treatment in the form of classical guidance services. The implementation of classical guidance services based on problem solving in improving high order thinking skills was carried out in 3 meetings, then 1 meeting for the initial needs assessment, and 2

meetings for the pretest and posttest. The following are the results of the HOTS Pre-test and Post-test of Tanjung Gundap Adolescents.

Table 3, HOTS Instrument Pretest-Posttest Results

No	Intial Name	Pre-test		Post-Test	
		Score	Category	Score	Category
1	AN	3	low	5	Sedang
2	CI	2	low	3	low
3	TA	3	low	2	low
4	NA	4	low	6	High
5	IA	4	low	8	Very high
6	AK	4	low	3	low
7	IZ	3	low	6	low
8	RD	3	low	3	low
9	ST	3	low	4	low
10	RH	3	low	3	low
11	AL	3	low	5	High
12	IN	3	low	4	low
13	FA	4	low	7	High
14	KL	4	low	6	Mid
15	MN	3	low	5	High
16	PW	3	low	5	High
17	RX	2	low	5	High
18	CK	3	low	6	Mid
19	MI	3	low	5	High
20	WK	4	low	5	High
21	LO	2	low	4	low
22	RP	3	low	5	High
23	SX	3	low	6	Mid
24	FM	4	low	7	High
25	PA	4	low	7	High
Average		3,2	low	5	High

The sampling technique used total sampling of 25 teenagers in Tanjung Gundap experienced a change in the increase in the High Order Thinking Skill abilities of Tanjung Gundap teenagers after being given Classical Guidance based on Problem Solving. Which can be seen from before being given treatment, the average pretest score was 3.2 which was in the Low category. Furthermore, after being given Classical Guidance Services based on Problem Solving, the average treatment score increased to 5 which was in the High category.

Table 4 Pretest-Posttest Comparison Frequency

Category	Pre-test Experiment		Post-Test Experiment	
	Frequency	Percentage	Frequency	Percentage
Vey High	0.	0.0%	1	4%

High	0.	0.0%	11	44%
Mid	0.	0.0%	5	20%
Low	25	100%	8	32%
Very Low	0.	0.0%	0.	0.0%
Total	25	100%	25	100%

Based on the table above, it can be seen that there was a change in the increase in the ability of High Order Thinking Skill of Tanjung Gundap teenagers in the experiment before (Pretest) and after (Posttest) given Classical Guidance treatment based on Problem Solving in improving High Order Thinking Skill. Before being given treatment, there were 25 teenagers in the low category with a percentage of 100%. Then there was a change after being given treatment (Posttest), namely 1 student in the Very High category with a percentage of 4%, 11 teenagers in the high category with a percentage of 44%, 5 teenagers in the medium category with a percentage of 20%, and 8 teenagers in the Low category with a percentage of 32%.

Table 5 t-test

Independent Samples Test									
		Levene's Test for Equality of Variances		t-test for Equality of Means					
		F	Sig.	t	df	Sig. (2-tailed)	Mean Difference	Std. Error Difference	95% Confidence Interval of the Difference Lower Upper
Hots	Equal variances assumed	8.502	.005	5.511	48	.000	1.800	.327	1.143 2.457
	Equal variances not assumed			5.511	32.594	.000	1.800	.327	1.135 2.465

Furthermore, based on the results of the t-test analysis, namely 5.551, with the hypothesis of the independent sample t-test proving that there is a difference seen from the lower and upper, each with a positive value, namely lower 1.143 and Upper 2.457. While Sig (2-tailed) has a value of .000, it is said that the output data shows that Ho is rejected and Ha is accepted, which means that there is a difference in increasing the ability of high order thinking skills in adolescents in Tanjung Gundap. This study is supported by findings from previous studies showing that the classical guidance approach based on problem solving is effective in improving high-level thinking skills (HOTS) among adolescents, thus strengthening the argument that this method can help students overcome problems that are relevant to their daily lives. As found in the study (Zulfa, 2024) entitled The Effectiveness of Group Guidance with Problem Solving Techniques on Critical Thinking Skills of Class XI MIPA 3 Students of SMA Negeri Colomadu in the 2021/2022 Academic Year, presenting the results of his research shows that by providing group guidance treatment with problem solving techniques, it has a significant effect on students' critical thinking skills to be better. Students who previously had low critical thinking skills or seemed indifferent to the problems around them began to be critical and showed changes little by little. So this study is still relevant as

a reference for the author's research, because group guidance is a component of classical services.

Furthermore, it was found in the research of Extrikna, C. S., & Hartanto, D. (2020) entitled Effectiveness of Classical Guidance Services Using Problem Based Learning Techniques to Improve Problem Solving Skills in Class VIII FU Students of Muhammadiyah 1 Moyudan Middle School. Describing the results of the analysis showed that out of 28 samples of class VIII FU students of Muhammadiyah 1 Moyudan Middle School, there were 26 students who experienced an increase in problem solving skills scores, and based on the average score on the pretest assessment of 79.57, an increase of 2.64 points to 82.21 on the posttest assessment. In the study (Inggrit, 2024) entitled Effectiveness of Classical Guidance Using the Problem Based Learning Approach to Improve Critical Reasoning Skills in Class VIII Students of Smp 37 Medan. Providing results that the use of Classical Guidance using the Problem Based Learning approach to improve students' critical reasoning skills helps students gain new knowledge about students' critical reasoning skills, and students can find solutions to the problems faced and know the impact and how to learn and think critically and make decisions that are like what and in an independent way. In the study (Novirahayu, 2024) entitled The Effect of Problem Solving Methods on Students' High Order Thinking Skills in Social Studies Subjects at Smpn 2 Rupat, Bengkalis Regency, it provides research results and data analysis which can be concluded that the problem solving method can affect students' high-order thinking skills in Social Studies subjects at SMPN 2 Rupat. This can be proven by the results of the t-count t-table calculation which obtained $t\text{-count} > t\text{-table}$ or $4,828 > 1,673$ which means H_a is accepted and H_o is rejected. The percentage of the influence of the problem solving method on high-order thinking skills from the results of the N-Gain calculation obtained a value of 53.84% or 53.8%. This shows that the independent variable has an influence on the dependent variable of 53.8% with a moderate category, while the other 46.2% is influenced by variables not examined in this study.

CONCLUSION AND SUGGESTIONS

In this study, it has been proven that the provision of classical guidance services based on problem solving significantly improves the ability of High Order Thinking Skills (HOTS) among adolescents in Tanjung Gundap. Through an approach that focuses on real issues, participants showed an increase in HOTS of 44%, indicating that this method is effective in developing critical, creative, and analytical thinking skills.

The results of the t-test analysis indicate that there is a significant difference between the pre-test and post-test scores, with a Sig (2-tailed) value of 0.000, which rejects the null hypothesis

(Ho) and accepts the alternative hypothesis (Ha). This shows that classical guidance interventions are not only successful in improving high-order thinking skills, but also provide a strong foundation for adolescents to face challenges in the 21st century. Thus, this program can be recommended as a model for efforts to improve HOTS in a wider educational environment.

As for suggestions for further researchers, namely, to involve a larger number of students or adolescents from several different classes, groups, or regions to obtain more generalizable results, increase the references that are the subject of the Library study in the study, develop materials in the implementation of classical guidance in a more innovative way, and relevant to current issues, and involve parents, teachers, and other stakeholders in implementing the sustainability of the guidance program in order to increase its effectiveness through support for adolescents. By following these suggestions, future research is expected to provide deeper and more useful insights into the development of high-level thinking skills / HOTS among adolescents.

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