

ANALYSIS OF THINKING ABILITY AMONG HIGHER VOCATIONAL SCHOOL STUDENTS IN ACEH

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ABSTRAK

Berpikir adalah aktivitas mental yang terjadi ketika seseorang menghadapi masalah atau skenario yang harus diselesaikan. Pemikiran analitis adalah kemampuan untuk memecahkan masalah dengan menggunakan informasi. Informasi yang kompleks atau luas menjadi informasi prinsip dasar yang menciptakan informasi rinci untuk membantu individu dalam merumuskan jawaban. Tujuan penelitian ini adalah untuk memeriksa kemampuan berpikir analitis siswa di SMK Muhammadiyah Banda Aceh. Para peneliti menggunakan metode deskriptif kualitatif. Peneliti menggunakan tes instrumen dalam bentuk pertanyaan tes esai. Penelitian ini melibatkan tujuh siswa dari SMK Muhammadiyah Banda Aceh. Temuan penelitian ini mengungkapkan kemampuan berpikir analitis siswa SMK Muhammadiyah Banda Aceh, dengan empat dari tujuh siswa mampu berpikir secara analitis. Menurut temuan penelitian ini, siswa SMK Muhammadiyah Banda Aceh didominasi oleh bakat analitis. Melalui analisis kemampuan berpikir siswa di Aceh. Penelitian ini dapat memberikan wawasan tentang bagaimana pendidikan di Aceh berkinerja, serta identifikasi tantangan yang mungkin dihadapi siswa SMK dalam mengembangkan kemampuan berpikir. Hasil dari penelitian ini akan menjadi landasan untuk penelitian lanjutan mengenai kemampuan berpikir siswa SMK atau faktor-faktor yang mempengaruhinya.

Keywords: *Berfikir Analisis, Pemecahan Masalah, Siswa*

ABSTRACT

Thinking is the mental activity that occurs when a person faces a problem or a scenario that needs to be solved. Analytical thinking is the ability to solve problems using information. Complex or extensive information becomes basic principle information that creates detailed information to help individuals formulate answers. The purpose of this study is to examine the analytical thinking ability of students at Muhammadiyah Banda Aceh SMK. The researchers used qualitative descriptive methods. The researchers used the instrumental test in the form of an essay test question. The study involves seven students from the SMK Muhammadiyah Banda Aceh. The findings reveal the ability

to think analytically of the students of SMK Mohammediya Banda Aceh, with four of the seven students being able to think Analytically. According to the findings of this study, the students of SMK Muhammadiyah Banda Aceh were dominated by analytical talents. Through the analysis of students' thinking abilities in Aceh. This research can provide insight into how education in Aceh works, as well as identifying the challenges that SMK students may face in developing thinking skills. The results of this research will be the basis for further research on the thinking abilities of SMK students or the factors that influence them.

Keywords: *Analytical Thinking, Solving Problems, Students*

Introduction

Education is the primary key to shaping the human character and changing a person to gain the opportunity to develop the potential that exists within him. The education sector demands students to respond to the problems that will be faced in the life of students. Education is believed to be able to form the student into an individual who has a broad and strong knowledge base, can think independently in solving problems, is capable of criticizing, and can develop themselves and adapt to the development of science, technology and art. The Indonesian government has put into place a number of education policies intended to raise the standard of the educational system there. Implementing the 2013 curriculum revision, which intends to help students acquire 21st century skills including teamwork, creativity, and critical thinking, is one such policy.

According to the Strategic Plan of the General Directorate of Vocations 2020-2024, the philosophy of education is divided into four aspects: Metaphysics, Epistemology, Axiology, and Logic. Metaphysics deals with real nature; this metaphysical education relates to concepts of reality, practical activities and skills in the curriculum. Epistemology deals with knowledge and what is known/understood (knowing), which is closely related to methods in the learning process of teaching. Axiological aspects relate to values associated with morality, beauty and art. Logic relates to the ability to answer and explain correctly. It results from thinking and is part of a thought process that includes dialectical, argumentative and intellectual relatively straight.

Thinking is a process of mental activity experienced and possessed by an individual if they are faced with a problem or situation to be solved. Thinking can be categorized as a unique learning style because thinking occurs in everyone's mental activity, which serves to formulate or solve problems, make decisions, as well as seek understanding of something. Numerous studies' findings indicate a close connection between students' ability to solve problems creatively and their ability to think critically (Lutfin & Mutmainna, 2022). For vocational students (SMK), analytical thinking

abilities are crucial in terms of their success in the workplace and future careers. However, analytical thinking is crucial for vocational students for a number of reasons:

1. Identifying issues, analyzing data, and developing original solutions are part of analytical thinking aspects. Students at SMK will be able to tackle challenges methodically and organizationally.
2. Analytical thinking aids SMK students in the analysis of pertinent data, the consideration of choices' outcomes, and the formulation of logically sound judgments. Making wise decisions will be possible for vocational students with the capacity for analytical thought.
3. Analytical thinking also aids vocational students in recognizing available options. Students can identify chances for innovation, improvement, or progress in their future workplaces by developing accurate and careful analytical skills.
4. Students at SMK that possess analytical thinking abilities are able to solve problems creatively, incorporate novel concepts, and think beyond the box. It gives them a competitive edge in a workplace that encourages creativity and constantly evolving.

However, analytical-thinking SMK pupils can efficiently gather, evaluate, and understand data. As a result, students will learn important lessons and aid in making wiser decisions. Students are required to learn various subjects and important lessons throughout their education. Learning important lessons encourages students to think critically and analytically. They learn to evaluate information, make connections between ideas, and develop problem-solving skills. Many lessons taught in schools are directly related to future career opportunities. Students learn subjects and skills that are relevant to their chosen career paths, which can lead to better job prospects.

An analyst is an activity of thinking to decompose a whole into easily recognizable components or relationships of each other and functions of each in one integrated whole. Analytical thinking is the ability to solve a problem based on information. Such information is complex or comprehensive, subsequently broken down into basic information and generates detailed information to help formulate solutions to the problem. Learning encountered issues such as student disengagement and trivial exercises that did not impact on creative output (Marzuki, et al., 2023). As the name implies, this thinking prioritizes a rather significant analysis process.

Electronics is one of the productive subjects at SMK that uses process thinking skills. Through these subjects, learners are required not only to have mathematical (analytical) abilities, but also to have mathematics concepts. It is because the science closer to the calculation formula is much

related to the role of intuition, especially in drawing up a plan picture, solving problems in detail and implementing such a plan image.

Puguh Darmawan's (2016) research explained that analytical thinking is a step-by-step thinking system to solve a problem that connects one to the other. He explains that analytical thinking includes paying attention to the influence between variables accompanied by considering evidence and the challenge of ambiguous situations. The problem faced is an unstructured, incomplete problem or information, so students should consider choosing essential and relevant information based on the problem. There are four levels of analytical thinking: pre-analytical, analytic-partial, semi-analysis, and analytical (complete analytics). Furthermore, Puguh Darmawan (2016) describes analytical thinking processes that include cognitive processes: differentiating, organizing, and giving attributes (attributing).

The characteristics of Analytical Thinking, involved: (1) Ability to identify problems, (2) Recognition of Assumption, (3) Logic and Deduction Capacity and (4) Ability to conclude (interpretation). In addition, according to Marini (2014), based on her research, mentioned some analytical characteristics are (1) Thinking systematically, (2) Having high discipline, (3) Appreciating the logically expressed facts, (4) Loving organized things, (5) Being careful and focus on the details of the problem, (6) Tendered and (7) Need long time to decide.

According to Bloom in Krethwohl, et al., (2017), in his book "Framework for Teaching Learning and Assessment", explained several stages of analytical thinking indicators are:

1. Analysis of elements/elements (analysis of material parts). At this stage, the teacher ask questions about everyday life problems, the student is assigned to solve the elements. This aspect aims to make student easier to understand the material used in the next stage.

2. Relationship analysis (relationship identification). At this stage, the student must analyze the relationships of each existing element and analyze whether those relationships whether they are qualifying, affecting, inhibiting, and others.

3. Analysis of organizational principles (identification of organizations). At this stage, the indicator lies between the principles that have been drawn by the students at the previous stage with the relevant theoretical concepts.

Methods

This research is field research that used qualitative methods. As part of qualitative methods, descriptive research is chosen to a social phenomenon with direct observation variables that are

clearly and precisely defined. The research emphasizes the theory's intolerant authenticity rather than the facts. In other words, this study emphasizes the realities that occur and decrypts the ability to think analytically, specifically on the primary subjects of electronics.

The research was located at SMK Muhammadiyah Banda Aceh in Jalan Ujung Batee, Gampong Seutui Banda Aceh, Indonesia. In this study, the subject involved were the students of class X and XI of Audio Video Engineering (TAV). Four students chose the sampling from each class. However, one student was absent when the research run, so the total number of subjects in this study was seven.

The instrument used was a set of test which obtain a detailed description of the comparison of the student's thinking ability in solving problems. The researchers performed an analytical test on the student with a total of five analytical questions. The test used was kind of essay based on the theory. The students studied the subject matter of "Measurement materials on the grid or Kirchoff's law", and the material of electronic components. In addition to providing tests, researchers conducted some documentation to obtain additional data to strengthen the research results.

Result and Discussion

The thinking process of SMK Muhammadiyah Banda Aceh students, related to the electronic primary subject of solving problems, indicates that the student's analytical thinking level has dominated. It could be seen from the way they solve structured problem, they can answer correctly. In addition, high rigor makes understanding the problem slow. Thus, they are more dominated in thinking analytically. Table 1 presents the outcomes of the students' analytical tests and their conclusions or interpretations of their answers. The subject in the first column is an initialed Muhammadiyah Vocational School student.

Table.1

Analysis of Respondents' Answers on Analytical Questions

Subject	Analytical Test Analysis Results	Interpretation
AR	Answer in an organized manner, make known, enter known stress and resistance values, and then conclude.	Think systematically, be able to detect difficulties, create formulas, and predict from relevant information, be able to conclude, and be comprehensive in solving questions.

AJ	Answer directly by calculating current values and units without taking any systematic procedures.	Facts are valued, assumptions are recognized, previous experience is used, and conclusions can be drawn.
AA	Answer by calculating the outcomes of the existing values and units without first going through a thorough process of stages and explanations.	Values facts, draws conclusions based on experience, is aware of assumptions, and values facts.
WS	Answer solely by jotting down the computations' outcomes without providing any justification or processes at all.	Spontaneous, not formulaic, fast in taking action and not systematic.
MS	It is possible to see how to apply formulae by looking at how to take the first steps by grouping or evaluating the difficulties included in the questions in order to make conclusions.	Very disciplined, thorough and focused, employing mathematics, being organized and meticulous, spotting issues, and being able to examine topics.
HF	Making the initial steps by examining the difficulties intended in the questions can be considered as preparation for answering questions in a systematic manner and employing formulas with specifics.	Organized, specific when utilizing formulas, able to recognize difficulties, evaluate questions, highly disciplined, laser-focused on challenges, and able to develop appropriate conclusions.
MR	Based on formula rules, provide thorough, methodical answers to problems. Also, develop formulas and input values with accurate details and unit symbols.	Employing formulae, recognizing issues, having strong self-control, thinking critically, concentrating on issues, and drawing accurate conclusions.

Conclusion

It can be concluded that students in classes X and XI at Muhammadiyah Vocational Schools have a dominant level of analytical thinking ability based on data analysis of students' test answers concerning the characteristics and indicators, and analytical thinking factors that have been put forward in the discussion systematically, completely, and formally. Four of the seven participants

were capable of critical thought. It concludes that analytical skills predominate among SMK Muhammadiyah Banda Aceh students.

Suggestion

The research could investigate various factors that may influence the thinking ability of higher vocational school students in Aceh. The research could compare the thinking abilities of higher vocational school students in Aceh with those in other regions or countries. Based on the result, the research might recommend teacher training programs aimed on enhancing educators' ability to nurture critical thinking and problem-solving skills. It is suggested to encourage collaboration with other researchers or institutions to conduct a broader study that includes multiple regions or types of higher vocational schools, potentially yielding more comprehensive results.

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