Analyze students' critical thinking skills using Googlesite's web-assisted problem-based learning

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Abstract

The ability to think critically is the ability to think well, reflecting on the thought process is part of thinking well. This study aims to analyze students' critical thinking skills through problem-based learning assisted by the web googlesite. Critical thinking skills learned include providing simple explanations (*elementary clarification*), building basic skills (*basic support*), making inferences (*inferring*), making Advanced *clarification*, managing strategies and tactics. This study used quasi-experimental research methods with 30 students. The instruments used are critical thinking skills tests, googlesite web assessments, and observation sheets. The results showed that 1) students' critical thinking skills improved after implementing problem-based learning assisted by googlesite, with the acquisition of the followingnormalized by 51.60% (moderate); 2) critical thinking skills that have improved best are the ability to provide simple explanations (*elementary clarification*), constructive Basic Support, Inferring, Advanced *Clarification*, Strategy and *Tactics*).

Keywords: *problem-based learning assisted googlesite; critical thinking* skills

INTRODUCTION

Education is the process of developing reason, skills, and living morals from the potential of all human beings. The progress of Science and Technology is determined by the level of education of the population. Education is considered a successful endeavor if it leads to improving the quality of education, and this is achieved through an effective educational process with the use of growing technology (Adan et al., 2020; (Putri &; Jatmiko, 2018). The development of technology significantly affects the educational process, resulting in several changes, especially those caused by the application of information technology that accelerates the transfer of knowledge (Hayat &; Yusuf, 2010; Aspriyani &; Suzana, 2020)[1]. Mathematics is a branch of science that is taught at all levels of education. In the world of education, mathematics plays an important role because it is related to other fields of science (Putri &; Jatmiko, 2018; Adan et al., 2022). One of the mathematical comprehension abilities of students is the ability to think critically.

Critical thinking is one indicator of higher order thinking (HOTS). Critical thinking is the ability to think well, thinking about the thought process is part of thinking well. Critical thinking is widely used in mental activities such as problem solving, decision making, analyzing assumptions and conducting scientific research. The purpose of critical thinking is to get rid of the truth by getting rid of all that is wrong so that the truth is visible to students (Sari &; Wijaya, 2017; Pidarta, 2014)[2]. One side of being a critical person, his mind must be open, clear, and every decision taken must be accompanied by reasoning based on facts and he must also be open to differences of opinion. A person can see his critical thinking ability based on critical thinking indicators, namely: 1) providing simple explanations (elementary clarification), 2) building basic skills (*basic support*), 3) making inference (*inferring*), 4) making further explanations (*advanced clarification*), 5) managing strategies and tactics (strategies and *tactics*). Thus, critical thinking skills are very important to have, but this ability is not easy to develop if there is no great desire to solve problems (Pharisees, 2017; Adan et al., 2022).

In learning activities, it is necessary to use learning media. Various types of android-based teaching materials that have developed but tend to be less attractive to students. For this reason, innovative solutions are offered by developing Android-based teaching materials assisted by Tik-Tok social media which is currently in great demand by everyone. Where in this case learning activities will be carried out with the *Problem Based Learning* model to improve students' critical thinking skills. Google Site is a product of Google that functions as a website builder for personal or group purposes. With Google Site, teachers can assign course materials, assignments, and more. In addition, this Google Site is very accessible, students only need gadgets/laptops that are connected to an internet connection (Jubaidah &; Zulkarnain, 2020; Bahri et al, 2022)[3].

Learning activities will also be carried out with the *Problem Based Learning* (PBL) model. Problem Based Learning is learning that uses real-world problems as a context for students to learn about critical thinking and problem-solving skills, as well as to acquire essential knowledge and concepts from the subject matter. Student involvement in PBL learning activities can help develop students' critical thinking skills, because students are fully involved in the learning process activities through problem solving. They can develop critical thinking skills as a step in solving problems and can draw conclusions based on what they understand (Fatimah, 2018; Bahri et al, 2022)[4]. With this, analyze students' critical thinking skills using googlesite-assisted problem-based learning.

RESEARCH METHODS

The research method used was a quasi-experimental method with research subjects conducted on 30 students and field trials carried out on 50 students of the University mathematics education study program Jambi. Data collection in the study was carried out using observation guidelines, questionnaires and tests. Data on critical thinking skills were collected through tests and using problem-based learning assessment rubrics.

The test is made in the form of an essay with critical thinking skills which are divided into 5 indicators of critical thinking ability, namely providing simple explanations (*elementary clarification*), building skills Basic *support*, making *inference*, making further explanations (*advanced clarification*), managing strategies and tactics. The tests made have gone through assessments from expert lecturers and trials have also been carried out for each question item. Tests are given before and after study.

In this study, in addition to tests of critical thinking skills, assessments were also carried out on googlesite which provided several questions that had been made when problem-based learning was implemented. This is done to find out the extent to which students understand and explore the ability to think critically, this assessment is carried out 4 times according to the treatment given to students in 4 meetings.

To support research, observations were also made on lecturers and students. In this case, research acts as a lecturer so that it can minimize errors in using the PBL learning model.Observations were made by 2 observer lecturers who had been given observation sheets by researchers, consisting of lecturer and student observation sheets, in addition , video recorders were also carried out on each lesson so that researchers can observe again through videos that have been made.

RESULTS AND DISCUSSION

Critical thinking skills learned include the ability to provide simple explanations (*elementary clarification*), build *basic skills (basic support*), make inferences (*inferring*), make explanations Advanced *clarification*, managing strategies and tactics.

Critical thinking skills

The critical thinking ability of students in this study was obtained from critical thinking ability test scores before and after learning. The average score of students' critical thinking skills before and after learning along with normalized gains can be seen in

Figure 1.

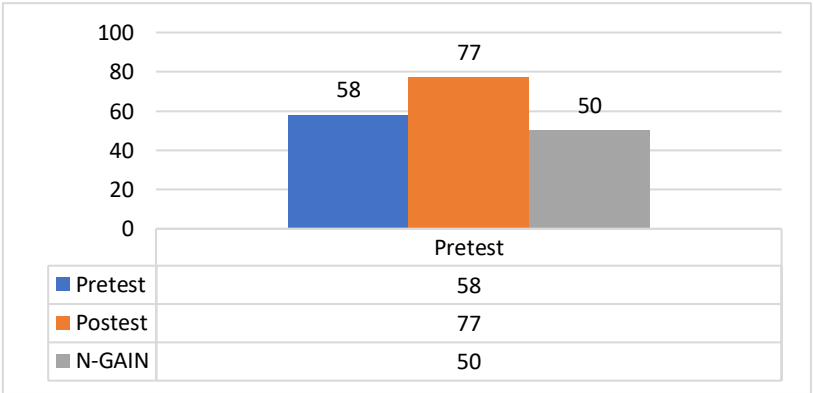

Figure 1. Graph of average pretest, posttest, and N-Gain scores for critical thinking skills

Based on Figure 1, it can be seen that there was an improvement in students' critical thinking skills before and after being given problem-based learning assisted by googlesite web books. This increase can be seen from the results of the previous average value of 58.18, increasing to 77.94 with a normalization gain of 50.60%, and this increase is included in the moderate category.

Based on this, it shows that problem-based learning with the help of the Googlesite web can improve critical thinking skills which include the ability to provide simple explanations (*elementary clarification*), build basic skills (*basic support*), make *inference*, make further explanations (*advanced clarification*), organize strategies and tactics. Problem-based learning is an approach and model of learning where students are taught authentic learning to structure their knowledge, develop inquiry and high-level thinking skills, develop independence and confidence.

In table 1. Googlesite web Assessment Results Recap

No.	Googlesite web assessment categories	Percentage of students
1	Very good	18,18%
2	Good	42,42%
3	Pretty good	39,30%

Providingproblems implemented in this problem-based learning model encourages students to be more active, can increase student learning motivation, improve student learning motivation skills, can improve student skills in managing various resources, students are more active in learning, natural collaboration occurs between students, indirectly improves student communication skills, trains students in organizing a problem. This will have an impact on the development of students' critical thinking skills. This critical thinking ability can be developed and optimized through problem-based learning in mathematics learning in the classroom. In addition, the help of the googlesite web as a learning medium helps studentsto be more creative and bring up ideas and thoughts.

Based on the findings of web googlesite assignments made by students, it was found that students who have high critical thinking ability scores can answer questions on the web googlesite correctly. Students respond very positively to the use of the web googlesite as a math learning tool in the classroom. During the learning process they are actively involved in steps such as identifying surrounding problems relevant to the subject matter, conducting experiments appropriate to the material, and being guided to analyze

data based on existing evidence and sources, then generate their own conclusions. This is in accordance with the definition of critical thinking, namely the ability to think well, reflect on the thought process is part of thinking well.

Critical thinking is widely used in mental activities such as problem solving, decision making, analyzing assumptions and conducting scientific research. It includes an in-depth understanding of written language, including text comprehension, grammar rules, spelling, and writing skills. In addition, critical thinking also includes the ability to interpret, evaluate, and use information found in texts or other media to solve problems, make decisions, and actively participate. Critical thinking skills are not limited to mastering written language but also include digital literacy, which is the ability to operate in the digital world, assess and manage information found on the internet, and use digital devices intelligently. Critical thinking skills have great relevance in a person's daily life, education, and career. It helps individuals become proficient readers, critical thinkers, and efficient communicators .

CONCLUSION

The results showed that the critical thinking ability of Jambi University students through problem-based learning increased after the implementation of problem-based learning assisted by web googlesite with a normalization gain of 50.60% which was in the medium category. The indicator that experienced the best improvement was the ability to use concepts, facts, procedures, and mathematical reasoning compared to other indicators. Students' critical thinking skills can be developed and optimized through problem-based learning in mathematics learning with the help of the googlesite web.

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