



## Effectiveness of Learning Tools On Guided Inquiry To Improve Critical Thinking and Awareness Maintaining Respiratory Health

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### Abstract

The study aims to describe the effectiveness of learning tools applied in the learning process to improve critical thinking skills and awareness of maintaining respiratory health organs. This is a development research (research and development) using trial design of one-group pre-test-post-test design. The whole eighth grade students of Pangia State Junior High School in academic year 2021/2022 were selected as the research subjects. The method used in data collection was a test of critical thinking skills and awareness response to maintain the health of respiratory organs. The posttest results showed that there was an increase of pretest as much 61.11% and the percentage of students' awareness in maintaining health according to the questionnaire results obtained 87.45% which were included in the very good category. According to the results, it can be concluded that learning activities with guided inquiry model of human respiratory system material effectively improve the critical thinking skills and awareness of maintaining the respiratory organs health.

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## INTRODUCTION

Encounter the challenges of the 21<sup>st</sup> century, critical thinking skill is one of the really needed skills, especially for students. The bad effect of this wide scope accessing information is that not all information can be trusted or utilized in daily life. Therefore, students must be equipped with the critical thinking skills.

The students' learning outcomes on some basic competencies (*KD*) classically do not reach the minimum completeness criteria (*KKM*), one of them on the basic competencies of the human respiratory system. In 2 consecutive years, in the even semester academic year of 2019/2020 and 2020/2021, the completeness of classical learning in this material was only around 36% and 41%. In the last 2 years, in 2020 and 2021, the school exams results percentage of the students who answered correctly on the respiratory system material was only 43%. Besides, a very important issue found in junior high school is the students' habit of smoking. Nuryanti, et al (2018) stated that the low critical thinking skills of students is caused by not familiar presented an active learning that maximizes the potential of students' critical thinking.

Prasojo (2016), expressed the opinion that the guided inquiry learning model is feasible to be implemented and able to improve critical thinking skills of the students. Amijaya, et al (2018) argue that the guided inquiry learning model has a positive influence on the learning outcomes and students' critical thinking skills. In addition, the students need to be taught the awareness of maintaining the health of respiratory organs. It is because of the phenomenon that occurs in the current condition found that many students in Junior High School are usually smoking without knowing its impact on health, especially in the respiratory organs. This is in line with Sinaga's opinion (2017) who explained that smoking is a difficult problem to be solved. So, it is necessary to have mature knowledge and self-loving behaviour.

Based on this thought, research and development was carried out with the aim of describing the effectiveness of guided inquiry-based learning tools. Learning is carried out on the material of the human respiratory system to improve critical thinking skills and awareness of maintaining the health of the respiratory organs.

## RESEARCH METHOD

This research was carried out at Pangia State Junior High School in the even semester of the 2021/2022 academic year with 18 research subjects for eighth grade students of Pangia State junior high school. This research and development used the R & D model with simplified stages into 7 stages, namely 1) needs analysis, 2) planning, 3) initial product, 4) validation, 5) initial product revision, 6) limited scale trials, and 7) final revision .

The data collected was the effectiveness of the product. The effectiveness of the learning device was measured through a critical thinking test using a one-group pretest posttest design. Then, it was analyzed using the N-gain formula, and analysis of the awareness response to maintain the health of respiratory organs.

## RESULTS AND DISCUSSION

This study develops learning tools, namely Learning Implementation Plans, Student Activity Sheets and Critical Thinking Test Instruments. The steps in learning using the Guided Inquiry learning model with 6 characteristics, namely: (1) Students learn actively and think about things based on experience, (2) Students learn to actively build what they already know, (3) Students develop their power higher thinking through instructions or guidance in the learning process, (4) the development of students occurs in a series of stages, (5) students have different ways of learning from each other and (6) students learn through social interaction with others. The critical thinking test according to Facione 2013 consists of 6 indicators, namely: interpretation, analysis, conclusion, evaluation, explanation and self-regulation.

### Critical Thinking Test

Effectiveness data were obtained from the analysis of critical thinking skills test instrument, in the form of critical thinking questions according to Facione (2013), which was tested before learning process began (pretest and after the learning process (post-test). 12 items were questioned and tested on 18 students of Eighth grade of SMP Negeri Pangia. On the pretest results, there were only 3 students who completed the test based on the minimum completeness criteria (KKM) so that the percentage obtained was classically only 16,66%. On posttest, the results obtained as many as 14 students so that the percentage of classical completeness was 77,77%. The increase in percentage between pretest and post-test can be seen in the following graphs.

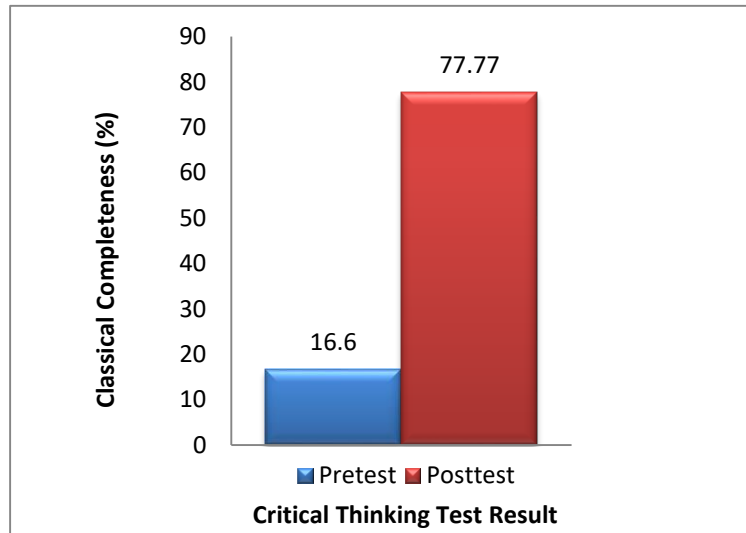


Figure 1. Critical Thinking Skills Assessment Results (*Pretest*)

Data was normalized by the *N-Gain* formula (Hake, 1999) and obtained results of 0,52 with the medium criteria. The increase in the percentage of students' completeness was because students already followed the learning process using guided inquiry-based learning device development products. So, their critical thinking skills increased.

Based on the critical thinking test results data on a limited scale, it can be concluded that the learning device of the guided inquiry-based model of the human respiratory system is effective. This is in line with the research by Nisa, et al (2018) who argue that guided inquiry learning is effective for improving critical thinking skills.

### **Awareness of Maintaining the Health of Respiratory Organs**

The students' response data about the awareness of maintaining the health of respiratory organs were analyzed to obtain the effectiveness values of the learning tools. The students percentage (respondents) who answered "yes" from 17 question indicators was 87,45%. Comparison of students with the "Yes/No" answer can be seen in the graph below.

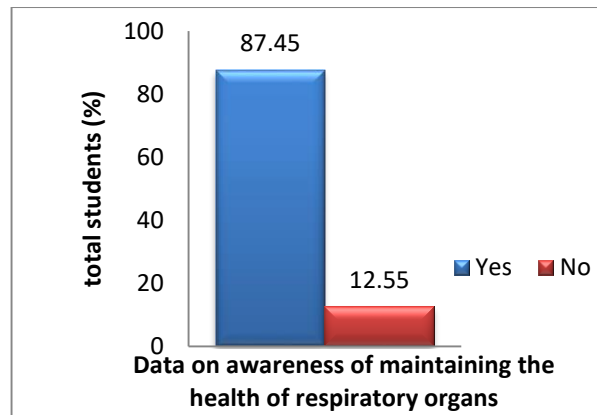


Figure 2. The Awareness of Maintaining The Health of Respiratory Organs Data Results

According to these data, it can be seen that the learning tools developed effectively increase the awareness of maintaining the health of the respiratory organs. This is in line with Hamza's research (2020) which shows the influence of the inquiry learning model on changes in students' knowledge and behaviour about the dangers of smoking, in which smoking behaviour is the main cause of respiratory organ disorders, particularly the lungs.

Awareness indicators of maintaining the health of respiratory organs in this study are regular exercise behaviour (3 questions), behaviour towards environmental hygiene (4 questions), smoking habits that damage health (3 questions), and health protocol compliance behaviour (4 questions).

The highest percentage with the " Yes " answer was in the behavioural indicators of health protocol compliance. It was caused due to the Covid-19 pandemic which requires every people to obey with health protocols. This is in line with the opinion by Purwaningrum, et al (2021) which states that Covid-19 causes the diseases that attack the human respiratory system, so one of the mandatory health protocols is wearing a mask. According to the opinion of Januarista, et al (2022) in her research, it stated that public counseling about one of the ways to prevent Covid-19 in daily life is wearing a mask. In line with that opinion, Yang, L, et al (2020) suggested that Covid-19 prevention is mainly influenced by the moral level of the community which includes behaviour awareness of health protocols and competent cadres in this regard including educators.

Indicators of smoking habits that damage health sowed varied results. An action strategy in learning is used to increase awareness of maintaining the health of respiratory organs, especially not actively and passively smoking which are very important among students. This is in accordance with the research by Puspawati, et al (2019) who suggested that the number of premature deaths due to cancer disease are caused by smoking. In 2018, Indonesia was 284,858.9 YLL (Years of Life Lost), so there needs to be a consideration from the government in making policies related to smoking with a scientific basis.

## CONCLUSION

Based on the critical thinking test (posttest) results, it indicates that the average completeness on a limited scale trial is 77.7%. It shows that the completeness of students ' learning is categorized as moderate level. Awareness of maintaining the health of respiratory organs found in the students' percentage (respondents) with the "yes" answers among 17 question indicators on a limited scale is 87.45%. Based on these data, it can be seen that the learning tools developed effectively improve the critical thinking skills and awareness of maintaining the health of the respiratory organs.

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