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# The Validity of Story Media Equipped with Pictures to Improve Critical Thinking Skills and Student Learning Outcomes

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**ABSTRACT**
This research aims to test the validity of story media equipped with pictures to improve students' critical thinking skills and learning outcomes. This research is the research and development of the four-dimensional development model by Thiagarajan et al. (1974). Based on data analysis, the average assessment of the three validators on the material/content feasibility aspect was 95%, linguistics 96%, technical quality and design quality 93%, and development feasibility 91%. The average validation result for story media with images is 94%, which is in the very valid category. The average validation results of research validation instruments and the average validation results of learning tools are in the very valid category. The story media is equipped with images of the human respiratory system to improve critical thinking skills, and the student learning outcomes developed meet very valid criteria so they can be used in learning research to test their effectiveness and practicality.



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## 1. INTRODUCTION

A good education is one that can meet the standards of nature and student age so that it can impress students who are able to respond to the challenges of the time. Education should continue to develop with the times in order to provide students with knowledge and thinking skills for a better life (Ni'mah & Suminar, 2021). Education has the task of preparing human resources for development in accordance with the development of the times and its challenges (Ulfah & Okyranida, 2021). Learning in the 21st century requires students to master 21st-century learning skills such as critical thinking, communication, collaboration, and creativity (Indarta et al., 2021). Education that corresponds to the conditions of nature and the times of students is an education that enables students to master the learning skills of the 21st century in order to respond to the challenges of the time. One of the 21st century learning skills that students need to master is critical thinking.

Teachers must innovate by enriching and updating knowledge and skills in order to be able to present interesting and interactive learning activities. Stated that in teaching the student generation of the 21st century, teachers must be able to adapt strategies, models, and teaching methods to the characteristics of this generation (Puspitarini, 2022). This will be achieved well when the natural science learning process uses various learning components, one of which is the learning medium. Several efforts to optimize natural science learning have been made, where the learning process involves student activity and requires learning media that is tailored to student characteristics in order to improve student learning outcomes and motivation (Pratama et al., 2019).The feeling of boredom and saturation of students in the learning process can be overcome with the creativity of teachers when teaching can be done with the use of learning media or learning models so that the process of learning can run effectively (Tanjung & Namora, 2022). Thus, it is necessary to create an alternative solution that is considered effective to solve these problems in the learning process.

Education in Indonesia is currently experiencing a decline in quality. One of the causes of students' low critical thinking skills is that teaching and learning activities in the classroom are less effective; namely, learning activities still rely on textbooks alone, and library book collections are still dominated by textbooks, which causes students to lose interest in reading (Azmi et al., 2021). The results of the average analysis of critical thinking skills in Natural Science subjects overall are in the low category (Murwanto, 2020). The ability to think critically is important, but reality is not as expected (Safitri et al., 2021). PISA defines science literacy as the ability to be interested in scientific ideas and topics, to explain an event scientifically by evaluating and designing scientific

methods, and to interpret data and evidence included in the critical thinking indicators and PISA results released in December 2019. Indonesia ranked 70th out of 78 countries for scientific literacy competence; the ranking is lower than the PISA result in 2015, which indicates a decline in student thinking skills (*Publications - PISA*, n.d.).

The fact that students' critical thinking skills are low is also derived from the research that has been conducted. The critical thinking ability of high school students in Jember District was in a very low category (Suroso et al., 2022). The results of the analysis of the average critical thinking ability in the lessons of Natural Sciences overall are in the low category (Ridho et al., 2020). Thus, further research is needed to improve students' critical thinking skills.

The human respiratory system is one of the lessons in science class VIII junior high school. The material on the respiratory system deals with several sub-chapters, including the structure and function of respiration; respiratory organs that include the pharynx, larynx, trachea, bronchioli, lungs, and alveoli, and sub-Chapter disorders of the breathing system that students find difficult because there is a connection with everyday life (Mufidah & Habibi, 2022). The respiratory system is considered quite difficult by the students because the organs and respiratory processes in the human body cannot be observed effectively (Dewi et al., 2021). The respiratory system is one of the materials that is considered difficult to understand because its constituent organs and respiratory processes cannot be seen directly (Panjaitan et al., 2020).

Based on the descriptions that have been made, the development of media stories equipped with images of the material of the respiratory system in humans that are able to accommodate the critical thinking skills of students was carried out, and students obtained learning that has the potential to improve their understanding and critical thinking skills.

## 2. RESEARCH METHOD

This research is research and development (research and development). The research and development model used in this study was adapted from the four-D development model developed by Thiagarajan et al., (1974). The stages in the 4-D development model include (1) defining, (2) designing, (3) developing (developing), and (4) disseminating (disseminating). This study aims to describe the validity of the results of developing story media with pictures for science learning in junior high schools.

## 3. RESULT AND DISCUSSION

Story media is equipped with pictures of the human respiratory system to improve critical thinking skills, and the learning outcomes of junior high school students are categorized as very valid. This is based on the results of the average overall score from expert validation and user validation of 94%, with a very valid category on the eligibility criteria from the aspects of material or content, language, technical quality, design quality, and development. The average validation results can be seen in table 1 below:

Table 1. Data from Media Validation Results with Pictures

| Assessment Aspects | Validator assessment (%) | | | Average | Category |
|---|---|---|---|---|---|
| | 1 | 2 | 3 | | |
| Feasibility of Material or Content | 95 | 93 | 100 | 96 | Very valid |
| Language | 88 | 100 | 100 | 96 | Very valid |
| Technical Quality and Design Quality | 88 | 96 | 100 | 95 | Very valid |
| Development Feasibility | 92 | 89 | 100 | 94 | Very valid |
| Average Percentage of Assessment (%) | 91 | 95 | 100 | 95 | Very valid |

Validation was carried out by two lecturers as expert validators and one teacher as a practitioner. The validation carried out included story media validation with pictures, learning device validation, and research instrument validation. The results of the research instrument validation are in the very valid category. This means that research instruments can be used to validate research instruments. Data from research instrument validation results can be seen in Table 2 below:

Table 2. Results of Research Validation Instrument Validation

| Validity | Validator assessment (%) | | | Average (%) | Category |
|---|---|---|---|---|---|
| | 1 | 2 | 3 | | |
| Syllabus validation instrument | 96 | 100 | 100 | 99 | Very valid |
| Learning implementation plan validation instrument | 90 | 100 | 100 | 97 | Very valid |
| Story media validation instrument with pictures | 92 | 100 | 100 | 97 | Very valid |
| Critical thinking test validation instrument | 92 | 100 | 100 | 98 | Very valid |
| The validation instrument for pre-test-post-test questions | 92 | 100 | 100 | 96 | Very valid |
| Learning implementation validation instrument | 92 | 100 | 100 | 97 | Very valid |
| Teacher response validation instrument | 93 | 100 | 100 | 98 | Very valid |
| Student response validation instrument | 90 | 100 | 100 | 93 | Very valid |

The research validation instrument that has been validated with a minimum valid category is then used to validate the learning device. The results of learning device validation can be seen in Table 3 below:

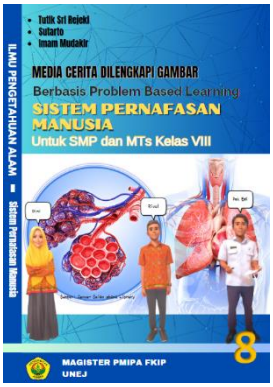
Table 3 Data from learning device validation results

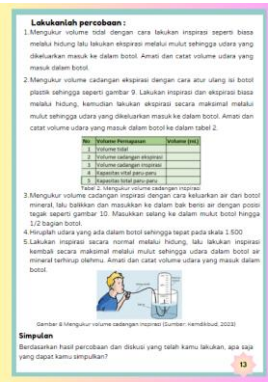
| Validity | Validator assessment (%) | | | Average (%) | Category |
|---|---|---|---|---|---|
| | 1 | 2 | 3 | | |
| Syllabus | 97 | 93 | 100 | 97 | Very valid |
| Learning implementation plan | 97 | 95 | 100 | 97 | Very valid |
| Critical thinking test | 94 | 100 | 100 | 98 | Very valid |
| Pre-test-post-test questions | 88 | 100 | 100 | 96 | Very valid |

The results of the validation of research validation instruments are in the very valid category. This means that learning tools can be used in research.

The results of the validation, in addition to being in the form of quantitative data, are also in the form of qualitative data, namely input and suggestions from the validator. Criticisms and suggestions from the validator are then used as a reference for researchers to make revisions. The revision of Story Media Equipped with Pictures can be seen in Table 4 below:

Table 4 Revision of Story Media with Pictures Based on the Validator's Suggestions

| Revised components | Before Revision | After Revision |
|---|---|---|
| Please adjust the uniforms used by teachers and students |  |  |

| Revised components | Before Revision | After Revision |
|---|---|---|
| Writing indented |  |  |
| Adding page numbers |  |  |

## 4. CONCLUSION

The validity of story media equipped with images from the aspects of assessing material suitability, language, technical quality, and design and development quality is very valid, with an average assessment of 95%. The results of the validation of the validation instruments and learning tools are in the very valid category, so the story media is equipped with images of the human respiratory system to improve critical thinking skills, and the student learning outcomes that are developed meet the very valid criteria and can be used in learning research to examine its effectiveness and practicality.

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