



The Development of Augmented Reality Based Student Worksheet on Human Respiratory System Course to Improve Critical Thinking Skills of Junior High School

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ABSTRACT

Objective: The development of augmented reality based student is used to improve the critical thinking skills of junior high school science students. This research aims to describe the validity, practicality and effectiveness of augmented reality based student worksheet on Human Respiratory System course. **Method:** This research applies the ADDIE model was carried out at Jember' 12 Junior High School and the data collection instruments used are observation sheets, validation sheets, student response questionnaires, and test assessment sheets. **Results:** The results obtained are the validity of the product is declared valid with a percentage of 92%, the practicality results are classified as practical and the effectiveness results are very positive. N-gain results of 0.55 which is included in the moderate category. **Novelty:** Augmented reality-based student worksheet can be used in science learning as an alternative learning media to improve critical thinking skills of junior high school students.

INTRODUCTION

Indonesian education has reached the fourth industrial revolution century. Science and technology are expanding at a quick pace in this century, bringing about changes in the way people learn, such as curricular revisions, learning media, and changes in the technology used. Science learning is one type of learning that is influenced by the advancement of science and technology. Widyaningsih and Japa (2019) define science learning as an interaction between educators and students that takes place both outdoors and indoors and is focused on nature and its surrounds. Science is a methodical study of nature that includes not only the mastery of facts, concepts, information, or principles, but also the process of discovery, scientific method, and scientific attitude.

Teachers as educators in schools are expected to apply science learning to pupils in order to foster talents in the twenty-first century, particularly among junior high students. Critical thinking is one of the 21st century abilities that is vital to apply and can produce pupils to solve an issue (Rubini et al., 2019). According to Agnafia (2019), critical thinking skills are described as a person's ability to reason deeply and support their claims. Students' critical thinking skills can be shown in their capacity to solve issues effectively and systematically, draw conclusions based on true or incorrect information, fully learn a lesson, and are not easily affected by the opinions of others (Meryastiti et al., 2022). Students have critical thinking abilities if they can master all of the signs that exist in critical thinking during the learning process (Lestari et al., 2021). Learners with high critical thinking skills will be able to review the material provided

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