ABSTRACT

Fitria Ningrum, Vita. 2021. "Development of Augmented Reality-Based Learning Media on Hydrocarbon Materials to Improve Multi-representation Ability". Thesis. Natural Science Education Study Program. Postgraduate. Semarang State University. Advisor I Prof. Dr. Edy Cahyono, M.Si., Advisor II Dr. Woro Sumarni, M.Si.

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Advances digital technology in the current learning era can help improve students' understanding of the material. Augmented reality technology enhances students' multi-representation abilities, which are indispensable in solving various learning problems, especially abstract hydrocarbon material. This study aims to design and develop learning media based on augmented reality on hydrocarbon material and its effectiveness by increasing students' multi-representation abilities. This research is a type of development research using Design Research and Development (R&D). Two material experts carried out the product validity test phase and three media experts. The implementation phase of learning is carried out in class X TKJ 2 SMK Gondang Pekalongan with 32 students with random sampling technique. The data analysis technique used quantitative analysis and descriptive statistical tests. The results of this study are: 1) a product in the form of an Android application accompanied by nine molecular cards; 2) validity assessment by material experts with an average score of 85 in the "very valid" category, and validity assessment by media experts with an average score of 94 in the "very valid" category; and 3) the effectiveness of the media in the implementation of learning obtained increase in multirepresentation abilities is shown by increasing learning outcomes using multirepresentation questions. It increased by 27.5%, submicroscopic increased by 36.7%, and the symbolic level increased by 33.3%. So that augmented reality-based learning media on hydrocarbon material is very feasible to use in learning that can increase the multi-representation ability of students at each level.