PENGEMBANGAN BAHAN AJAR TEORI KINETIK GAS MENGGUNAKAN MULTIMODUS VISUALISASI UNTUK IMPLEMENTASI *INTERACTIVE LECTURE DEMONSTRATIONS* BERORIENTASI PENINGKATAN PEMAHAMAN KONSEP

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ABSTRAK

Telah dilakukan penelitian pengembangan bahan ajar Teori Kinetik Gas (TKG) menggunakan multi modus visualisasi untuk implementasi *Interactive Lecture Demonstrations* (ILD) berorientasi peningkatan pemahaman konsep. Bahan ajar digunakan untuk memvisualisasikan karakteristik gas di ruangan tertutup. Metode penelitian yang digunakan adalah *Research and Development* (*R&D)* Borg and Gall. Tahapan penelitian yang dilakukan yaitu: 1) *Research and information collecting*, yang terdiri dari kegiatan studi lapangan dan kajian literatur*; 2) Planning; 3) Develop preliminary form of product* dengan menggunakan metode *Representational Approach Learning to Write*; 4) *Preliminary field testing* yang dilakukan kepada 68 orang siswa kelas 2 SMA di salah satu SMA di Kota Bandung dengan; dan 5)*Main product revision.* Teknik pengambilan sampel yang digunakan adalah teknik acak kelas. Kedua kelas yang terpilih menjadi sampel penelitian dibagi menjadi kelas eksperimen dan kelas kontrol. Pengumpulan data menggunakan tes awal dan tes akhir untuk mengukur pemahaman konsep dan level pemahaman, skala sikap untuk mengetahui persepsi siswa terhadap implementasi bahan ajar dan lembar observasi untuk mengamati keterlaksanaan pembelajaran. Data peningkatan pemahaman konsep dianalisis menggunakan statistik nonparametrik dengan uji Mann-Whitney bahwa ada perbedaan peningkatan pemahaman konsep yang signifikan antara kelompok siswa yang mendapatkan pembelajaran fisika dengan model ILD menggunakan bahan ajar TKG yang didukung multi modus visualisasi dibandingkan siswa yang mendapatkan pembelajaran fisika dengan model ILD menggunakan bahan ajar yang tidak didukung multi modus visualisasi. Selain itu, bahan ajar TKG menggunakan multi modus visualisasi untuk implementasi ILD berpengaruh besar terhadap pemahaman konsep (d = 1,19)

Kata Kunci: *interactive lecture demonstrations*, level pemahaman, pengembangan bahan ajar, pemahaman konsep, teori kinetik gas

THE DEVELOPMENT OF TEACHING MATERIALS ON KINETIC THEORY OF GASES USING MULTIMODE VISUALISATION FOR THE IMPLEMENTATION OF INTERACTIVE LECTURE DEMONSTRATIONS ORIENTED ON THE IMPROVEMENT OF CONCEPTUAL UNDERSTANDING

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ABSTRACT

It has been conducted, a study on the development of teaching materials on kinetic theory of gases or *Teori Kinetik Gas (TKG)* using multimode visualisation for the implementation of Interactive Lecture Demonstration (ILD) oriented on the improvement of conceptual understanding. These teaching materials were used to visualise gas characteristics in closed spaces. The research method employed here was Research and Development (R&D) by Borg and Gall. The stages of this study comprised: 1) researching and information collecting, consisting of fieldwork activities and literature study; 2) planning; 3) developing preliminary form of product by using Representational Approach Learning to Write method; 4) preliminary field testing on 68 second-grade students in one senior high school in *Kota* Bandung; and 5) main product revision. The sampling technique was a class random technique. The two classes selected as samples of this study were divided into an experiment class and a control class. In terms of data collection, this research employed pretest and *posttest* to measure conceptual understanding and understanding level, attitude scales to identify students' perception on the implementation of teaching materials and observation sheets to observe the instructional processes. The data of the improvement of conceptual understanding were analysed using non-parametric statistics, Mann-Whitney test. The result reveals that there is a significant difference concerning conceptual understanding improvement between the group of students who were involved in the Physics instruction with ILD model using *TKG* teaching materials supported by multimode visualisation and those involved in that instruction employing the teaching materials without multimode visualisation. Moreover, the *TKG* teaching materials supported by multimode visualisation applied in the implementation of ILD highly influence students' conceptual understanding (d= 1.19)

Keywords: conceptual understanding, interactive lecture demonstrations, kinetic theory of gases, level of understanding, teaching material development.