

ABSTRACT

Dian Arima Gusti, 2021. "Development of Integrated Students' Worksheet with the Theme of Energy in Daily Life by Problem Based Learning of Integrated 21st Century Learning". Tesis. Master of Physics Education Study Program, Faculty of Mathematics and Natural Sciences, Padang State University.

In Indonesia, the 2013 curriculum applies which requires subjects to contribute to the formation of attitudes, knowledge, and skills for students according to the challenges of the 21st century, so in education, students not only have knowledge skills, but also adhere to attitudes that refer to science knowledge such as critical, creative, communicative and collaborative thinking. Preliminary analysis results obtained information that integrated student worksheet contained in student books that have been developed in previous research has not seen any 21st century learning indicators. In addition, analysis was also carried out on several students' worksheet from various sources and information was obtained that the students' worksheet used was not integrated into learning. 21st century and have not used the right learning model. The purpose of this study was to develop a teaching material in the form of integrated students' worksheet with the theme of energy in daily life using a problem-based learning model that is integrated in 21st century learning that is valid, practical and effective.

The type of research carried out in this research is research and development using the Plomp development model consisting of preliminary research, development or prototyping phase, and assessment phase. The trial was carried out on a limited basis at Junior High School of 4 Pasaman. The data in this study are needs analysis data, validation data, practicality data and effectiveness data. The research instrument consisted of questionnaires, validation sheets, practicality sheets, questions and 21st century learning assessment sheets (4C skills). Needs analysis data, validity and practicality as well as effectiveness for 21st century learning (4C skills) were analyzed using descriptive statistics. The validity data were analyzed using the Aiken's V formula, while the knowledge competency was analyzed using the n-gain formula.

The results in the preliminary research phase indicate that the need for developing integrated students' worksheet with the theme of energy in daily life using a problem based learning model in 21st century learning. Then, in the development or prototyping phase, integrated students' worksheet is obtained. Integrated with valid criteria with an average value of 0.89 for expert validators and education practitioners, as well as having practical criteria at the one to one evaluation and small group evaluation with each obtaining an average percentage value of 80. Furthermore, the results of the field test on the practicality test obtained an average percentage value of 84 for teacher responses and 81 for student responses. Furthermore, the integrated students' worksheet is effective in knowledge competency and 21st century learning (4C skills). It can be seen that there is an increase in the respective competencies of students. Based on the research that has been done, it can be concluded that this development research has resulted in an integrated students' worksheet with the theme of energy in daily

life using a problem based learning model integrated in 21st century learning that is valid, practical and effective.

Keywords : Integrated Students' Worksheet, Energy in Daily Life, Problem Based Learning Model, 21st Century Learning

ABSTRAK

Dian Arima Gusti, 2021. "Pengembangan LKPD IPA Terpadu dengan Tema Energi Dalam Kehidupan Menggunakan *Problem Based Learning* Terintegrasi Pembelajaran Abad 21". Tesis. Program Studi Magister Pendidikan Fisika, Fakultas Matematika dan Ilmu Pengetahuan Alam, Universitas Negeri Padang.

Di Indonesia berlaku kurikulum 2013 yang menuntut mata pelajaran berkontribusi terhadap pembentukan sikap, pengetahuan, dan keterampilan bagi peserta didik sesuai dengan tantangan abad 21, sehingga di dalam pendidikan peserta didik tidak hanya memiliki kecakapan pengetahuan, melainkan juga menganut sikap yang mengacu pada ilmu pengetahuan seperti berpikir kritis, berpikir kreatif, komunikatif dan kolaboratif. Hasil analisis pendahuluan diperoleh informasi bahwa LKPD IPA Terpadu yang terdapat pada buku siswa yang telah dikembangkan pada penelitian sebelumnya masih belum terlihat adanya indikator-indikator pembelajaran abad 21. Disamping itu, juga dilakukan analisis pada beberapa LKPD dari berbagai sumber dan diperoleh informasi bahwa LKPD yang digunakan masih belum terintegrasi ke dalam pembelajaran abad 21 serta belum menggunakan model pembelajaran yang tepat. Tujuan dari penelitian ini adalah untuk mengembangkan sebuah bahan ajar berupa LKPD IPA Terpadu dengan tema energi dalam kehidupan menggunakan model *problem based learning* terintegrasi pada pembelajaran abad 21 yang valid, praktis dan efektif.

Jenis penelitian yang dilakukan adalah penelitian pengembangan (*research development*) dengan menggunakan model pengembangan Plomp yang terdiri dari *preliminary research phase* (penelitian pendahuluan), *development or prototyping phase* (tahap pengembangan atau perancangan) dan *assessment phase* (tahap penilaian). Uji coba dilakukan secara terbatas di SMP Negeri 4 Pasaman. Data dalam penelitian ini adalah data analisis kebutuhan, data validasi, data praktikalitas dan data efektivitas. Instrumen penelitian terdiri dari angket, lembar validasi, lembar praktikalitas, soal dan lembar penilaian pembelajaran abad 21 (keterampilan 4C). Data analisis kebutuhan, validitas dan praktikalitas serta efektivitas untuk pembelajaran abad 21 (keterampilan 4C) dianalisis dengan statistik deskriptif. Data validitas dianalisis menggunakan formula Aiken's V, sedangkan kompetensi pengetahuan dianalisis menggunakan formula *n-gain*.

Hasil pada *preliminary research phase* (tahap penelitian pendahuluan) menunjukkan bahwa perlunya pengembangan LKPD IPA Terpadu dengan tema energi dalam kehidupan menggunakan model *problem based learning* yang terintegrasi pada pembelajaran abad 21. Kemudian, pada *development or prototyping phase* (tahap pengembangan atau perancangan) diperoleh LKPD IPA Terpadu dengan kriteria valid dengan nilai rata-rata sebesar 0,89 untuk validator ahli dan praktisi pendidikan, serta memiliki kriteria praktis pada tahap *one to one evaluation* dan *small group evaluation* dengan masing-masing memperoleh nilai rata-rata persentase sebesar 80. Lebih lanjut, hasil *field test* (uji lapangan) pada uji kepraktisan diperoleh nilai rata-rata persentase sebesar 84 untuk respon guru dan 81 untuk respon peserta didik. Selanjutnya LKPD IPA Terpadu ini efektif pada kompetensi pengetahuan dan pembelajaran abad 21 (keterampilan 4C). Hal ini