

ABSTRAK

PENGEMBANGAN PROGRAM PEMBELAJARAN ENERGI TERBARUKAN DENGAN STRATEGI *DESIGN THINKING* TERINTEGRASI *PjBL-STEM* UNTUK MENSTIMULUS KETERAMPILAN *CREATIVE PROBLEM SOLVING* DAN LITERASI NUMERASI PESERTA DIDIK

Oleh

GHANI FADHIL RABBANI

Penelitian ini bertujuan mendeskripsikan validitas, kepraktisan, dan efektivitas program pembelajaran dengan strategi *design thinking* terintegrasi *PjBL-STEM* untuk menstimulus keterampilan *creative problem solving* dan literasi numerasi peserta didik pada topik energi terbarukan. Jenis penelitian pengembangan ini mengacu pada model ADDIE yang meliputi tahap *Analysis*, *Design*, *Development*, *Implementation*, dan *Evaluation*. Teknik analisis data pada pengembangan produk menggunakan analisis persentase terhadap skor validitas dan kepraktisan, serta analisis statistik untuk efektivitas. Hasil analisis data menunjukkan program pembelajaran dengan strategi *design thinking* terintegrasi *PjBL-STEM* valid untuk menstimulus keterampilan *creative problem solving* dan literasi numerasi peserta didik pada topik energi terbarukan dengan bobot persentase 92,0% dengan kriteria sangat valid. Kepraktisan program pembelajaran memperoleh bobot persentase 92,1% dengan kriteria sangat praktis, dan efektivitas memperoleh *N-Gain* 0,7 dengan kriteria peningkatan sedang. Berdasarkan hasil analisis data yang telah dilakukan, dapat disimpulkan bahwa: 1) Program pembelajaran menggunakan dengan strategi *design thinking* terintegrasi *PjBL-STEM* dinyatakan valid, yaitu memuat modul ajar yang secara isi tersusun atas komponen-komponen sebagai bagian dari perencanaan pembelajaran yang menjadikan guru lebih terarah dalam melaksanakan pembelajaran dan dapat menjadikan waktu pelaksanaan lebih efisien. Selain itu, terdapat bahan ajar (*e-LKPD* dan *e-Handout*) telah memenuhi kriteria bahan ajar yang baik; 2) kepraktisan program pembelajaran dengan strategi *design thinking* terintegrasi *PjBL-STEM* terkategori sangat praktis, sehingga dapat digunakan pada pembelajaran Fisika SMA, Fase E, kelas X semester ganjil pada topik energi terbarukan; serta 3) efektivitas program pembelajaran terkategori sedang, sehingga program pembelajaran dengan strategi *design thinking* terintegrasi *PjBL-STEM* dinyatakan dapat menstimulus keterampilan *creative problem solving* dan literasi numerasi peserta didik pada topik energi terbarukan.

Kata kunci: *Creative problem solving*, *design thinking*, literasi numerasi, *PjBL-STEM*, program pembelajaran.

ABSTRACT

DEVELOPMENT OF A RENEWABLE ENERGY LEARNING PROGRAM WITH *PjBL-STEM* INTEGRATED DESIGN THINKING STRATEGIES TO STIMULATE CREATIVE PROBLEM SOLVING SKILLS AND NUMERATION LITERACY OF STUDENTS

By

GHANI FADHIL RABBANI

This research aims to describe the validity, practicality and effectiveness of a learning program using the *PjBL-STEM* integrated with the design thinking strategy to enhance students' creative problem-solving skills and numeracy literacy in the topic of renewable energy. This type of developmental research refers to the ADDIE model covering Analysis, Design, Development, Implementation, and Evaluation. The data analysis involves percentage analysis for validity and practicality scores, as well as statistical analysis for effectiveness. The results show that the learning program with the *PjBL-STEM* integrated with the design thinking strategy is valid for stimulating students' creative problem-solving skills and numeracy literacy in the topic of renewable energy with a percentage of 92,0% considered as very valid criteria. The practicality of the learning program obtained a percentage of 92,1% considered as very practical criteria, and the effectiveness obtained an N-Gain of 0,7 with moderate improvement criteria indicating its effectiveness. Based on the results, it can be concluded that: 1) The learning program using *PjBL-STEM* integrated with the design thinking strategy declared valid, namely containing teaching modules whose content is composed of several components as a part of learning planning to make teachers more focused in the learning process and make the time more effective and efficient. Furthermore, there are teaching materials (e-LKPD and e-Handout) that meet the criteria as good teaching materials; 2) the practicality of the learning program with the *PjBL-STEM* integrated the design thinking strategy categorized as very practical, so it can be used in high school physics learning, Phase E, class X odd semester on the topic of renewable energy; and 3) the effectiveness of the learning program is categorized as moderate, because of that, the learning program with the *PjBL-STEM* integrated the design thinking strategy stated to be able to stimulate students' creative problem-solving skills and numeracy literacy in the topic of renewable energy.

Keywords: Creative problem solving, design thinking, learning program, numeracy literacy, *PjBL-STEM*.