

ABSTRACT

THE DEVELOPMENT OF STUDENTS' WORKSHEET OF VIRTUAL LABORATORY PRACTICE ON DYNAMIC ELECTRICITY BASED ON STUDENTS' PROCESSING SKILL AND SCIENTIFIC ATTITUDE

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The purpose of this research is to produce students' worksheet of virtual laboratory practice, using simulations Phet media, which are interesting, useful, and effective to improve scientific students' processing skill and scientific attitude. The potency and the problem were gained from the analysis of Physics teachers' responses of Senior High Schools in Bandar Lampung. It was found that 40% of Senior High Schools in Bandar Lampung have laboratory equipments and facilities for real practice, and 80% of Physics teachers need students' worksheet despite in the virtual laboratory forms. Based on the analysis of students' need, there were 100% students need practice activities. The researcher used evaluation sheet of material, media, and questionnaires of interesting and usefull students' worksheets for data collecting techniques. This research was conducted at

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SMAN 10 and SMA Muhammadiyah 2 Bandar Lampung. From this research, it was gained that the rate of pre-test result = 55 and 44, and the rate of post-test result = 89 and 82. The level of usefulness and interestingness towards students' worksheets are interestingness (86,4%), and usefulness (84,7%), and the effectiveness with N-Gain (g) 0.80 and 0.75. It is considered high classification to improve students' learning achievement. The level of the effectiveness in improving scientific processing skill is measured from the scores of practice activity, based on scientific processing skill indicators. The students could propose hypotheses, do the experiments, collect the data, and make conclusion. It was gained that the rate of N-Gain (g) = 0.7, and it is considered high and effective. The assesement of students' scientific attitude was based on practice observation result. It was used to measure students' curiosity, respect, criticality, cooperation and persistence. It was gained that the rate of it = 0.87 and 0.82, and it is considered high catagory. The cognitive assesements of dynamic electricity material concept from two schools were 89.33 and 86.67, which meant more than minimum criteria of mastery learning (75).

Key words : development research, practice worksheet, processing skill,
scientific attitude, virtual laboratory.

ABSTRAK

PENGEMBANGAN LEMBAR KERJA SISWA PRAKTIKUM VIRTUAL LABORATORY PADA MATERI LISTRIK DINAMIS BERBASIS KETERAMPILAN PROSES DAN SIKAP ILMIAH SISWA

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Tujuan penelitian ini adalah menghasilkan lembar kerja siswa praktikum *virtual laboratory*, menggunakan media *PhET simulations*, yang menarik, bermanfaat serta efektif meningkatkan keterampilan proses sains, dan sikap ilmiah siswa. Potensi dan masalah diperoleh dari analisis tanggapan guru Fisika di SMA Kota Bandar Lampung, ditemukan 40% SMA yang memiliki alat-alat laboratorium dan sarana prasarana untuk praktikum *real* dan sebanyak 80% guru Fisika membutuhkan lembar kerja siswa praktikum meskipun dalam bentuk *virtual laboratory*. Berdasarkan analisis kebutuhan siswa sebesar 100% menginginkan kegiatan praktikum. Pengumpulan data awal menggunakan lembar penilaian ahli materi dan media serta lembar angket kemenarikan dan kemanfaatan LKS praktikum. Uji coba dilaksanakan di SMAN 10 dan SMA Muhammadiyah 2

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Bandar Lampung, diperoleh hasil *pre-test* rata-rata 55 dan 44 mengalami peningkatan nilai *post-test* 89 dan 82 setelah menggunakan LKS praktikum *virtual laboratory*. Tingkat kemenarikan, dan kemanfaatan terhadap LKS praktikum berturut-turut adalah menarik (86,4%), dan bermanfaat (84,7%), serta keefektifan dengan rata-rata *N-Gain* (*g*) 0,80 dan 0,75 termasuk klasifikasi tinggi meningkatkan hasil belajar siswa. Tingkat keefektifan dalam meningkatkan keterampilan proses sains diukur dari nilai kegiatan praktikum sesuai indikator keterampilan proses sains, mengajukan hipotesis, melakukan percobaan, mengumpulkan data dan membuat kesimpulan, diperoleh rata-rata *N-Gain* (*g*) 0,7 termasuk kriteria tinggi dan efektif. Penilaian sikap ilmiah siswa berdasarkan hasil pengamatan kegiatan praktikum terukur sikap ingin tahu, respek, kritis, kerjasama dan ketekunan diperoleh rata-rata 0,87 dan 0,82 termasuk kategori tinggi . Serta penilaian kognitif hasil uji pemahaman konsep materi listrik dinamis dari kedua sekolah diperoleh nilai rata-rata 89,33 dan 86,67 yang berarti sudah memenuhi kriteria ketuntasan minimal pembelajaran yaitu 75.

Kata kunci : penelitian pengembangan, LKS praktikum, *virtual laboratory*, keterampilan proses, dan sikap ilmiah.