

CAPAIAN LITERASI SAINS SISWA SMAN DI KOTA PADANG DALAM PISA-KIMIA DITINJAU DARI *BENCHMARK* NASIONAL DAN INTERNASIONAL

ABSTRAK

Penelitian ini bertujuan untuk: (1) memperoleh gambaran tentang kemampuan literasi sains siswa aspek konten kimia, proses sains, konteks sains, dan sikap terhadap sains ditinjau dari *benchmark* nasional dan internasional, (2) menganalisis perbedaan kemampuan literasi sains siswa antar klaster, dan (3) memverifikasi apakah guru kimia telah menerapkan pembelajaran dan penilaian hasil belajar berbasis literasi sains. Penelitian ini adalah penelitian komparatif dengan menggunakan metode survei. Survei dilakukan terhadap 230 orang siswa kelas X dari tiga SMAN di kota Padang. Pengambilan sampel siswa menggunakan teknik *stratified cluster random sampling*. Sementara itu, semua guru kimia kelas X dari sekolah yang menjadi sampel penelitian menjadi responden wawancara. Untuk memperoleh gambaran tentang kemampuan literasi sains siswa aspek konten kimia, proses sains, konteks sains dan sikap terhadap sains digunakan tes PISA-kimia dan angket PISA. Capaian literasi sains aspek konten kimia, proses sains, konteks sains dinyatakan dalam *proportion correct* dan dibandingkan terhadap *benchmark* nasional dan internasional. Apakah guru kimia telah menerapkan pembelajaran dan penilaian hasil belajar berbasis literasi sains diverifikasi melalui wawancara. Hasil penelitian menunjukkan bahwa capaian siswa pada semua konten kimia, indikator proses sains, dan konteks sains masih berada pada kisaran yang rendah dengan rata-rata *proportion correct* $< 0,5$ kecuali konten kimia perubahan materi dan konteks sumber daya alam. Secara umum, capaian siswa pada semua konten kimia, indikator proses sains, dan konteks sains lebih rendah dibandingkan *benchmark* internasional namun lebih tinggi dibandingkan *benchmark* nasional kecuali pada konten energi yang menyertai perubahan materi, proses sains mengidentifikasi isu ilmiah dan konteks kesehatan serta perkembangan terkini sains dan teknologi. Profil sikap siswa terhadap sains cenderung positif hampir pada semua indikator sikap sains, kecuali indikator konsep diri dalam kimia. Sementara itu, kemampuan literasi sains siswa dalam PISA-kimia antara klaster atas, klaster menengah dan klaster bawah berbeda secara signifikan dengan nilai *asymptotic significance* $< 0,05$ pada uji *Kruskal Wallis*. Berdasarkan respon guru dalam wawancara, secara umum pembelajaran kimia dan penilaian hasil belajar kimia yang dilakukan guru belum berorientasi pengembangan literasi sains siswa. Ini dapat menjadi penyebab siswa mengalami kesulitan dalam menghadapi PISA-kimia.

Kata Kunci: *benchmark*, konteks sains, literasi sains, konten kimia, PISA-kimia, *proportion correct*, proses sains, sikap terhadap sains.

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STUDENTS' SCIENTIFIC LITERACY ACHIEVEMENT IN SENIOR HIGH SCHOOL PADANG ON PISA-CHEMISTRY BASED NATIONAL AND INTERNATIONAL BENCHMARKS

ABSTRACT

The aims of this study were to: (1) obtain an overview about students' scientific literacy abilities in chemical content, the process of science, scientific context, and attitudes toward science based national and international benchmarks, (2) analyze the difference of students' scientific literacy abilities on clusters, and (3) verify whether chemistry teacher has to apply learning process and its assessment based scientific literacy. This study employed comparative study with survey method. 230 ten grade students from three senior high schools in Padang participated in this study. Sampling used stratified cluster random sampling technique. All of ten grade chemistry teachers become interview respondents. To obtain about students' scientific literacy abilities in chemical content, the process of science, scientific context, and attitudes toward science used PISA-chemistry test and PISA-questionnaires. Students' scientific literacy achievement on chemical content, the process of science, science contexts expressed in proportion correct and compared with national and international benchmarks. Whether chemistry teacher has to apply learning process and its assessment of based scientific literacy verified through interview. Findings of this study revealed that the student's performance in all of chemical contents, science process indicators, and context of science was still in the low range with average proportion correct < 0.5 except in change of matter content and the context of natural resources. In general, student achievement in all of chemical contents, science process indicators, and context of science is lower than the international benchmark, but higher than the national benchmark except in matter and energy content, the process of science identify the scientific issues, and the context of health, and the latest development of science and technology. Profile of students' attitudes toward science tend to be positive in all of science attitude indicators, except self concept in chemistry indicator. Meanwhile, the students' literacy skills in PISA science-chemistry between the high cluster, middle cluster and the low cluster was significantly different with asymptotic significance value < 0.05 in Kruskal-Wallis test. Based on teachers' responses in interview, in general, chemistry learning process and its assessment were not oriented of development of student's scientific literacy. It can be the cause of students' difficulties in dealing with the PISA-chemistry.

Keywords: the benchmark, the context of science, chemical content, PISA-chemistry, proportion correct, scientific literacy, the process of science, attitudes toward science.

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