

PENGEMBANGAN PERKULIAHAN KIMIA LINGKUNGAN  
BERBASIS MASALAH BERVISI *GREEN CHEMISTRY* UNTUK  
MENINGKATKAN KREATIVITAS MAHASISWA

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ABSTRAK

Penelitian ini bertujuan untuk meningkatkan kreativitas mahasiswa dalam memecahkan masalah lingkungan melalui perkuliahan Kimia Lingkungan berbasis masalah bervisi *Green Chemistry*. Penelitian ini menggunakan desain *mixed methods* dengan model *embedded experiment*. Model diimplementasikan pada mahasiswa Program Studi Pendidikan Kimia di salah satu LPTK Negeri di Semarang Jawa Tengah dengan melibatkan 34 mahasiswa kelas eksperimen dan 36 mahasiswa kelas kontrol. Mahasiswa di kelas eksperimen mengikuti perkuliahan Kimia Lingkungan berbasis masalah bervisi *Green Chemistry*, sedangkan mahasiswa di kelas kontrol menggunakan pendekatan konsep dengan metode ceramah, presentasi makalah tentang kimia lingkungan dan dilaksanakan secara terpisah. Pengumpulan data dilakukan melalui tes kreativitas yang meliputi: tes keterampilan berpikir kreatif, sikap kreatif, tindakan kreatif dan produk kreatif, serta tes penguasaan materi. Uji signifikansi untuk pencapaian hasil belajar kelas kontrol terhadap kelas eksperimen dilakukan melalui tahapan uji normalitas *Kolmogorov-Smirnov*, uji homogenitas varians dilanjutkan *One Sample T Test*, diakhiri dengan uji korelasi produk moment. Tanggapan mahasiswa, produk kreatif dan keberlanjutan tindakan digambarkan secara deskriptif. Hasil penelitian menunjukkan bahwa perkuliahan Kimia Lingkungan berbasis masalah bervisi *Green Chemistry* dapat meningkatkan kreativitas mahasiswa. Peningkatan kreativitas pada aspek keterampilan berpikir kreatif termasuk kategori tinggi, untuk kelas eksperimen (rata-rata *N-gain*= 0,7) dibandingkan kelas kontrol yang termasuk kategori sedang (rata-rata *N-gain*= 0,4). Aspek sikap kreatif kelas eksperimen termasuk kategori sedang (rata-rata *N-gain*= 0,3), lebih tinggi dibanding kelas kontrol termasuk kategori rendah (rata-rata *N-gain*= 0,1). Aspek tindakan kreatif kelas eksperimen mencapai skor rata-rata 74, lebih tinggi dibandingkan kelas kontrol yang skor rata-ratanya 54 (nilai maksimum 100). Peningkatan penguasaan materi untuk kelas kontrol termasuk kategori sedang (*N-gain* = 0,5), dan untuk kelas eksperimen lebih tinggi (rata-rata *N-gain*= 0,7). Terdapat perbedaan yang signifikan antara peningkatan penguasaan materi mahasiswa antara kelompok eksperimen dengan kelompok kontrol. Mahasiswa memberikan tanggapan yang positif terhadap implementasi perkuliahan kimia lingkungan berbasis masalah bervisi *Green Chemistry*. Perkuliahan Kimia Lingkungan berbasis masalah bervisi *Green Chemistry* dapat terimplementasi dengan lebih baik jika dalam proses perkuliahan dilatihkan secara berkelanjutan cara mengidentifikasi masalah, menganalisis pemecahan masalah yang telah ada, menuangkan gagasan dan merancang tindakan kreatif serta melaksanakan tindakan kreatif.

THE DEVELOPMENT OF ENVIRONMENT CHEMISTRY LECTURE  
BASED ON PROBLEM THAT FEATURE GREEN CHEMISTRY VISION  
TO ENHANCE STUDENTS' CREATIVITY

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ABSTRACT

This study aims to enhance students creativity in solving environmental problems and conceptual mastery through environmental chemistry lecture-based on problems with the green chemistry vision. The *mixed methods* design with *embedded experiment model* was used in the study. The model was implemented in the environmental chemistry lecture of chemistry prospective teacher in one of colleges in Semarang-Central Java. The subject involved were 34 students of the experiment at class and 36 students of control class. Students in the experimental class following the problem based Environmental Chemistry lecture that feature Green Chemistry vision. The control class had the same materials with the expository-discussion-presentation strategy. Data collected was done through the conceptual and creativity tests (includes: creative thinking skills, creative attitude, creative actions, and creative products). The student achievement of control and experimental classes were compared through significancy test by using steps: Kolmogorov-Smirnov normality test, variance homogeneity test with one Sample T-Test, and test of correlation product moment. The student perception, creative products and the sustainability of action were measured with descriptive quantitative design. The results showed that the models have been designed with a main focus on building creativity learning through stages of problem-based learning, where the presentation of the material was always associated with the vision of green chemistry. In the implementati, on it was shown that the model can increase creativity of students. The increase of creative thinking skill aspect of experiments class was higher than the one on the control class. The increase of experiment class was in high category (the average N-gain 0.7), while at the control class had the average N-gain 0.4 (medium category). The creative attitude of experimental class was also increased with the average N-gain = 0.3 (medium category), higher than the one in the control class (the average N-gain 0.1, lower category). Moreover it was shown that the creative action of experimental class reached 74 in average (maximum score is 100), higher than the one in the control class (scores 54 in average). In line with creativity, the mastery of concepts of experimental class was in high category with N-gain of 0,7, was significantly higher than the one of the control class (medium category, the average N-gain 0,5). Students responded positively to the implementation of the model. For the better and sustain impact, it is suggested that model should be implemented not only for the moment, but should be sustained because of the aspects of creativity such as identifying, analyzing, expressing ideas, designing creative act and implementing creative actions need continous practices.

