

**PROFIL MODEL MENTAL MAHASISWA TAHUN PERTAMA  
TENTANG REAKSI REDUKSI DAN OKSIDASI DI JURUSAN KIMIA  
UNIVERSITAS PENDIDIKAN GANESHA**

**Oleh**

**Putu Dinda Kusuma Ariyesi, NIM 2213031017**

**Program Studi S1 Pendidikan Kimia**

**ABSTRAK**

Penelitian ini bertujuan untuk mendeskripsikan profil model mental mahasiswa tahun pertama di Jurusan Kimia pada pokok bahasan reaksi reduksi-oksidasi (redoks) serta mengidentifikasi faktor-faktor penyebab munculnya model mental tersebut. Penelitian ini menggunakan metode campuran (*mixed method*) dengan desain eksplanatori sekuensial. Subjek penelitian terdiri atas 37 mahasiswa yang tersebar di Program Studi S1 Pendidikan Kimia, S1 Kimia, dan D4 Kimia Terapan. Data dikumpulkan dengan tes model mental dua tingkat (*two-tier test*) dan diperdalam melalui wawancara. Hasil penelitian menunjukkan bahwa profil model mental mahasiswa didominasi oleh model mental alternatif sebesar 88%, yang terdiri atas kategori benar sebagian (*partially correct*) sebanyak 59% dan miskonsepsi khusus (*specific misconceptions*) sebanyak 29%; hanya 12% tergolong model mental ilmiah (*scientifically correct*). Faktor internal penyebab munculnya model mental ilmiah adalah mahasiswa memiliki penalaran yang benar berkaitan dengan tiga level kimia dan interkoneksinya. Faktor eksternalnya adalah pembelajaran kimia yang diterimanya ketika SMA sudah mencakup level makroskopis, submikroskopis, dan simbolik secara utuh. Faktor internal penyebab munculnya model mental alternatif meliputi mahasiswa kekurangan informasi terkait masalah yang dihadapi, ketidakmampuan menerapkan konsep untuk memecahkan masalah yang dihadapi, kesalahan penalaran, dan kurangnya perhatian terhadap proses pada level submikroskopis, sementara faktor eksternal berupa informasi yang didapatkan selama SMA tidak utuh.

Kata Kunci: model mental, reaksi redoks, miskonsepsi

***MENTAL MODEL PROFILE OF FIRST YEAR STUDENTS  
ABOUT REDUCTION AND OXIDATION REACTIONS IN CHEMISTRY  
DEPARTMENT OF GANESHA UNIVERSITY OF EDUCATION***

***By***

***Putu Dinda Kusuma Ariyesi, NIM 2213031017***

***Undergraduate Program in Chemistry Education***

***ABSTRACT***

*This study aimed to describe the profile of first-year students' mental models regarding oxidation-reduction (redox) reactions in the Department of Chemistry and to identify the factors contributing to the emergence of these mental models. This study employed a mixed-methods approach using a sequential explanatory design. The participants consisted of 37 first-year students enrolled in the Bachelor of Chemistry Education, Bachelor of Chemistry, and Applied Bachelor of Chemical Technology programs. Data were collected using a two-tier mental model test and further explored through interviews. The results revealed that students' mental models were predominantly categorized as alternative mental models (88%), consisting of 59% partially correct models and 29% specific misconceptions, while only 12% demonstrated scientifically correct mental models. The internal factors contributing to the emergence of scientifically correct mental models included students' ability to reason correctly across the three levels of chemical representation and to establish meaningful connections among them. The external factor was that the chemistry instruction students had received in senior high school had comprehensively integrated the macroscopic, submicroscopic, and symbolic levels of representation. In contrast, the internal factors contributing to alternative mental models included insufficient knowledge related to the problems encountered, inability to apply concepts to solve problems, incorrect reasoning, and limited attention to submicroscopic processes. The external factor was that the chemistry instruction students received during senior high school presented incomplete information across the three levels of chemical representation.*

*Keywords: mental models, redox reactions, misconceptions*

