EVALUATION OF CHEMICAL REPRESENTATIONS IN HIGH SCHOOL TEXTBOOKS IN INDONESIA

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ABSTRACT

The difficulties faced by students in learning chemistry stem from human factors and the intrinsic properties of chemistry. To enhance students' understanding of chemistry, there is some broad consensus within the chemistry educator community about the importance of representation and integrating different levels of representation. As a learning resource, textbooks can be easily obtained by students and teachers. Therefore, this study investigated how chemical phenomena are represented or depicted in senior high school chemistry textbooks. The goals of this study were (1) determine the prevalence of various features of representations in senior high school chemistry textbooks used in Indonesia and Malaysia (their nature and characteristics), and (2) use cognitive load theory to draw implications of the various features of analyzed representations.
The rubric is adopted from Gkitzia, Salta and Tzougraki. Development and application of suitable criteria for the evaluation of chemical representations in school textbooks to analyze the textbooks for types of representations; relatedness of chemical representations to text; and the appropriateness of captions.
The results show that (1). all samples have a percentage of pages with at least 1 representation of more than 91%, while the average number of representations per page is 1.4. Even though not every page had a representation, a very high percentage of the sampled pages had a representation on them (92% to 97%), (2). The symbolic representations were the most common type of representation used, followed by macroscopic and submicroscopic representations, respectively, (3). Majority of all representations had ambiguou surface features, (4). Of the representations that had captions, 40-70% of the captions were suffilenly linked, (5). All of the representations identified in the analyzed textbooks were completely related to the accompanying text, and (6). A much 90-96% of the captions were brief and explicit, and completely described the accompanying representations

Kata Kunci: *students' understanding of chemistry, representations, chemistry textbooks*