EVALUATION OF VISUAL LITERACY IN THE METABOLIC PATHWAYS

Oliveira, E. A.; Rossi-Rodrigues, B. C.; Galembeck, E.

Departamento de Bioquímica – IB - Unicamp, São Paulo, Brazil

External representations (ERs), such as diagrams and animations have an important role in biochemistry education; it allows the understanding of abstract concepts and phenomena. Visual literacy (the interpreting, thinking and learning capacities using images), has been pointed out as the main cause of student's difficulties to comprehend ERs. To evaluate the visual skills on metabolic pathways, a computer based exam was designed and applied to the undergraduate Biology students at Unicamp. The exam was based on questions that require ERs understanding. The symbology adopted is the most often used in biochemistry textbooks. The target concepts evaluated were defined previously, and clustered in categories to define the visual literacy skills to be evaluated. The exam was supported by both multiple choice questions and interactive questions such as "click and drag", and taken by 83 students. The analysis was performed using the average scores of each question. The lowest scored questions involves: 1) the identification of every substrate and product in a given metabolic pathways; 2) the understanding of the dynamics of the cyclical pathways diagrams; 3) to drag and drop icons to build a reaction diagram; 4) the recognition of compounds involved in the oxidation-reduction reactions. These results pointed out some of the major difficulties that the students have on interpreting ERs.

Key-words: visual literacy, skills visualization, education, metabolic pathways.