

P009 Diagnosis of student conceptual difficulties via pictorial depictions

M Cristina Tejedor¹, José C Díez¹, Concepción Tejero² and Angel Herráez¹

¹Universidad de Alcalá, Alcalá de Henares, Spain

²Universidad Complutense de Madrid, Madrid, Spain

The aim of this study is to ascertain possible errors or misconceptions in students, particularly related to previous learning experience, in order to make decisions in our teaching layout. Guiding ideas are to reinforce topics where the students need more training, skip those they already master, and detect unexpected misconceptions. The methodology was to prompt the students with a few “questions” which they reply using a hand-made sketch.

Asking students to create their own representations of a molecule, structure, cell, process... may reveal their understanding as well as uncover misconceptions, differently to using written tests.

We applied some items in common across several levels and degrees, e.g.: (1) A schematic representation of a cell. (2) A microscope slide with a smear of buccal mucosa cells. (3) Two proteins that you know.

Results analysed by checking the frequency of several key elements in the drawings allow to gain interesting –sometimes shocking– perspectives about the students prior knowledge, their understanding of cellular and biochemical concepts, strengths and weaknesses in their learning. Some examples of those elements are membranes, organelles, inclusion of details, tissue-like organization, depiction style of protein chains, identity of the chosen proteins, and ratio between hemoglobin subunits, heme groups and iron atoms.

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References:

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