Departamento de Ciências Sociais Aplicadas

3D visualizations in chemistry education

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Objectives

This research aims to:
Evaluate the potential of 3D visualization to increase student's understanding of chemistry, in order to improve the processes and outcomes.
Develop new practices in the classroom, helping learners to explore scientific content in more engaging and effective ways.

The chemical structure of caffeine
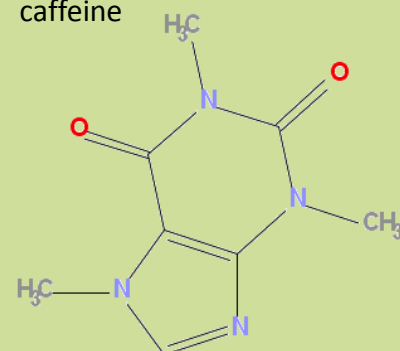
(Designed using *JChemPaint*)

Methodology

In order to evaluate the potential of 3D visualizations in chemistry education, we are developing 3D molecules using 3D authoring tools (Blender and Jmol).
Those 3D molecules will be included in PDF documents and be evaluated with 15 to 18 year old students in a secondary school. In addition to the pedagogical and usability evaluation for the model, a quasi-experimental design will be used to determine the effects of spatial visualization in student's performance.
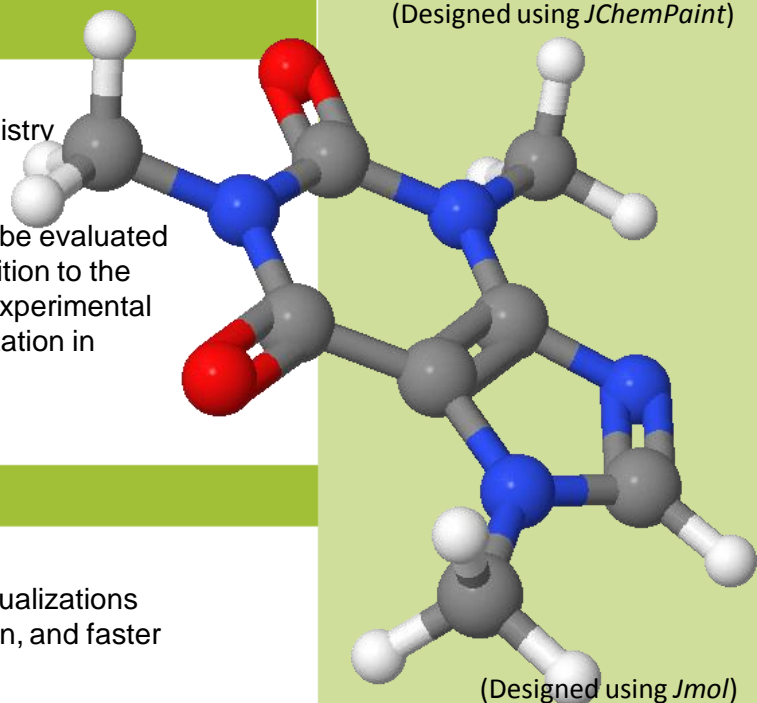
Expected Results

We expect that results will indicate a high efficiency of 3D visualizations amongst students, increase motivation, improve concentration, and faster and more accurate understanding of the learning content.

(Designed using *Jmol*)