General Chemistry Students' Cognitive Engagement During Intermolecular Interactions Activity Involving Sodium Ions, Chloride Ions and Water

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In chemistry, three-dimensional models are used to help students understand advanced topics. Understanding what causes and increase in cognitive load is critical because a greater cognitive load is often related to three-dimensional models. To understand cognitive load in relation to models, students were given both a virtual simulation to complete and three-dimensional models to use. Question four of the activity was further analyzed and broken down into smaller sections based on the molecules involved. With the three-dimensional modeling kits, the students were given water molecules, sodium ions, and chloride ions. The students were asked to figure out if certain molecules interacted with each other and what interactions took place between them. The students then used this kit to model various interactions that occurred in question four of the exercise. They subsequently completed a chart on worksheet related to this task. EEG data was taken directly from the scalp by a 16-channel Electrocap. Results will include Pope Engagement Index data, and a comparison of what parts of the brain were active when completing each section of question four.