Over the years, the methods used for teaching subject material in classrooms has changed dramatically. What once used to be an educational setting that was dominated by two-dimensional models, educators are beginning to use computerized molecular modeling in classrooms as a way to teach chemistry because of the convenience and simplicity that is associated with this new platform. Computerized molecular modeling or CMM makes it easy for students to construct molecules in any size, color or quantity and it also makes it easier for students to visualize matter in terms of a particulate model.

Three-dimensional hand-held molecular models have been often used in classrooms to depict molecules however these models are only a simulation and bears no resemblance to an actual molecule. This can result in students only having a partial or incorrect understanding of chemistry concepts. Also, using such models only adds to the existing difficulties students have when it comes to making linkages between macroscopic, submicroscopic and symbolic representations. Therefore, in order to solve the problem students have with making referential linkages between various representations and different dimensions (two-dimensional and three-dimensional), it would be ideal to introduce computer graphics or computer generated molecular models to the classroom along with the existing educational tools such as models and analogies to further enhance the students’ learning experiences. Classrooms as well as the drug industry are using computer programs to accurately represent molecular structures and calculate their properties in organic chemistry and biochemistry. The benefits of using computerized molecular modeling gives students the flexibility to create any molecules of any size, number, and model type and it also allows models to be constructed with different color patterns and precise size to improve the accuracy of the molecules.

Nitza Barnea and Yehudit J. Dori in their article Computerized Molecular Modeling as a Tool To Improve Chemistry Teaching test the effectiveness of computerized molecular models (CMM) in an educational setting by setting up a 14 hour workshop in which CMM was incorporated into a pre and in-service educational training in the Department of Education in Technology and Science at the Technion. Most teachers had a favorable reaction to CMM but were hesitant to actually use it in the classroom due to an anxiety to work with computers/insufficient access to technology. They also tested CMM in three experimental 10th grade classes with two control classes and the results showed that the experimental group scored higher on tests that tested the students’ understanding of concepts related to chemical structure and bonding as well as geometric and symbolic representation.

Overall, this journal article is useful because it shows that Chemtris does have real-world applications and would most likely get positive feedback and teacher/student usage if implemented in a classroom setting.

**Works Cited:** Barnea, N. and Dori, Y.J. (1996). Computerized Molecular Modeling as a Tool To Improve Chemistry Teaching. *Journal of Chemical Information and Computer Sciences,* *36*(4), 629-636. Retrieved from: http://pubs.acs.org/doi/abs/10.1021/ci950122o