

Investigating the Visual/Analytic Shift in Students' Knowledge in Chemistry

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Abstract: We argue that the acquisition of chemistry expertise requires considerable conceptual changes, which among other things involve a change from reliance on visual-spatial thinking to the employment of analytic strategies. We also argue that this shift in chemistry and specifically in knowledge about molecular structure is related to the acquisition of expertise and not to individual differences in visual-spatial thinking. In this presentation we will present an experiment designed to investigate the visual-analytic shift in knowledge about molecular structure in 132 11th graders. The results showed that the students, who were novices in chemistry, could solve the items requiring visual strategies but not those requiring analytic strategies, suggesting that they had not achieved the visual/analytic shift. Additional studies are needed to compare novices and experts in order to further test our hypothesis regarding the visual-analytic shift in chemistry.