**Supplementary Material**

***Table S1. Coding of Interaction Levels***

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| **Interaction Level** | **Code Description** |
| Low | * One student initiates all ideas. * Others accept without discussing /expanding. * Yes/No type questions. No why/how questions. * No addition to the discussion * No clarifying other students’ statements. * Generic agreement. * One student wrote. Others contribute none or little. |
| Medium | * One student is proposing ideas mostly. Others shallow contribution. * Other students are not expanding/opposing. * Restate/repeat. * Active engagement rather than passive. * Add some critical information. * Statements are discontinuous. * Few why/how questions. |
| High | * Why /How questions. * Equal amount of responses/statements * Each statement is built upon each other. * Expanding/elaborating/restating/rebuttal * Conclusions are jointly made. |

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| --- |
| 1. Define the anti conformation. 2. Draw a template to illustrate anti conformation of an alkane. 3. Compare the most stable anti and least stable eclipsed conformations of heptane for the rotation around the C3-C4 axis. 4. Draw the most stable anti-conformation of heptane for the rotation around the C3-C4 axis. 5. Explain the stability of the least stable eclipsed conformations of butane defined for the rotation around the C2-C3 axis in comparison to that of octane defined for the rotation around the C4-C5 axis. 6. Develop an analogy explaining why a molecule's stability will change as substituent size increases. |

***Figure S1. All prompts for group quiz 2***

Table

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Graphical user interface, text, application, email

Description automatically generatedGraphical user interface, text, application, email

Description automatically generated

Diagram

Description automatically generatedGraphical user interface, text, application

Description automatically generated

Graphical user interface, text

Description automatically generatedText

Description automatically generated

A picture containing application

Description automatically generatedGraphical user interface, text, application

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***Figure S2. All prompts for group quiz 3***