**Conceptual Change Teaching Model**

Kathleen Roth (1996, 2002)

1. Establish a question or problem in a way that engages students' interest and then elicit students' ideas about it (students will see that their peers have many ideas different from their own.

2. Engage students in exploring phenomena related to the question or problem (preferably through hands-on experiences that will challenge their preconceptions), allowing them opportunities to think through their ideas, gather new evidence, and consider whether their initial ideas still make sense.

3. Once students realize the need for new ideas, present scientific explanations and encourage students to compare these with their previous ideas and determine whether they make sense in light of the evidence.

4. Provide students with opportunities to apply the scientific concepts to explain real-world situations.

5. Engage students in reflecting on how their ideas have changed and exploring connections between the newly learned scientific ideas and other ideas.
