Every year, biology students are introduced to the structure of deoxyribonucleic acid, commonly known as DNA. Although memorizing the structure of DNA is a low cognitive activity (Anderson et al., 2001), understanding and applying this information to real life contexts is not. In fact, a basic knowledge of the structure of DNA is critical to understanding a number of biological concepts such as replication, transcription, mutation, repair, and evolution. Without a basic understanding of the structure of DNA, it is unlikely that a student will be able to construct meaningful understandings, applications, or evaluations of how this knowledge relates to his/her life.

The learning experience described in this article uses a four-step instructional framework involving concrete and representational experiences to promote conceptual understanding of abstract biological concepts via a series of closely-related activities. The four-step instructional framework utilizes a(n):

Step 1. macroview of an abstract biological concept,

Step 2. simple 3D model to facilitate acquisition of basic knowledge about the biological concept,