

# Communicating X-Ray Crystallography Concepts through Game-Based Learning

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Since the turn of the century American students have been lagging other countries in math and science subjects. A recent study by the Organization for Economic Cooperation and Development found that American students rank 20th and 27th in science and math respectively out of 34 countries. In order to address this an effort has to be made to start to generate interest in the sciences in students from an early age. One possible solution is to use alternative methods such as game based learning when introducing scientific topics to students. Particularly younger students who may be more receptive to this form of learning. We attempted to address this issue within the field X-RAY Crystallography by developing a mobile game. Through the use of simple yet engaging tap based gameplay and a time proven minimal 8-bit graphical art style we were able to develop a game that introduces kids to XFELs, structure determination, and the structure and function of 3 different protein. Its development and gameplay are described.