Reading the Sky and The Spiral of Teaching and Learning in Astronomy

Dr. Urban Eriksson,
Sciences department, Kristianstad University, Sweden

Teaching and learning astronomy is known to be both exciting and challenging. To learn astronomy demands not only *disciplinary knowledge*, but also the ability to discern meaning from disciplinary specific representations (*disciplinary discernment*). This includes the ability to *think spatially*, in particular, extrapolating three-dimensionality from a one- or two-dimensional input i.e. to be able to visualize in one’s mind how a three-dimensional astronomical object may look from a one- or two-dimensional input such as from a visual image or a mathematical representation. In this talk I demonstrate that these abilities are deeply intertwined, and that to learn astronomy at any level demands becoming fluent in all three aspects (disciplinary knowledge, disciplinary discernment and spatial thinking). A framework is presented for how these competencies can be described, and combined, as a new and innovative way to frame teaching and learning in astronomy. It is argued that using this framework “*Reading the Sky*” optimizes the learning outcomes for students. The talk also suggests strategies for how to implement this approach for improving astronomy teaching and learning overall.