AbstractID: 14361 Title: Developing Rich Learning Experiences for Medical Physics Education

Learning is a natural human function in which personal experiences produce changes in the brain. Of specific interest are the changes that form knowledge structures of the physical universe that are generally associated with the physical and biological sciences. There are many variables associated with a learning experience that determine the characteristics of the knowledge structures and especially the outcomes with respect to the ability to perform specific functions.

In the field of medical physics desired education and training outcomes are at the higher levels that include concept formation, ability to analyze and evaluate, problem solving, and the ability to create and produce innovations. This applies not only to medical physicists but also to medical professionals, especially those who are applying physical principles in medical imaging and radiation oncology procedures.

The challenge in medical physics education is to provide rich learning experiences, activities, and environments that will produce useful knowledge structures. These generally are learning experiences that provide the learner (student, resident, practicing professional, etc.) with the opportunity to observe, explore, and interact with the physical reality along with experienced learning facilitators (teachers) and collaborating learners. In this symposium we will begin by exploring the human brain with respect to its functional regions (from a medical physics perspective), the characteristics of the knowledge structures in each, and then the types of experiences that contribute to knowledge formation. We will recall some of our personal learning experiences, both general and professional, and consider them with respect to their richness and the quality of learning they produced. As we analyze several academic environments (classroom, laboratory, collaborative learning, etc.) we observe characteristics and conditions that determine richness and effectiveness. With our knowledge of human brain function we will then design several types of learning activities to achieve the desired learning outcomes. Our goal will be to use technology to enhance human performance for both learners and learning facilitators. That is us!

Learning Objectives:

1. Use contemporary models of human brain function as a foundation for understanding medical physics knowledge structures.
2. Identify desirable learning outcomes that promote the effective applications of physics and technology to improved clinical medicine.
3. Analyze a variety of learning activities with respect to their richness and effectiveness in producing desirable learning outcomes.
4. Plan and develop learning activities that make appropriate use of technology to optimize the effectiveness and efficiency of educational activities.