



Dr. Papa is dual trained in the practice of medicine (board certified, Emergency Medicine) and higher education (PhD in artificial intelligence-based approaches to higher education). His research into the instruction and assessment of clinical competencies is internationally recognized and began in 1981 when he became deeply interested in the cognitive factors enabling the development of diagnostic competencies. He subsequently developed an artificial intelligence-based tool (called KBIT – Knowledge Based Inference Tool), which when integrated with learning sciences-derived 'reasoning' frameworks, enables him to conduct theoretical and applied research into the knowledge base structures and information processing mechanisms underlying diagnostic competence. In 2000, he redesigned KBIT to model a Dual Processing Theory (DPT)-based approach to diagnostic reasoning in order to better understand the roles of both System 1 and System 2 knowledge base structures and information processes in differential diagnosis. Since 2005 he has developed and field-tested WEB-based, artificial intelligence-derived tools as a means of providing medical students and practicing physicians with advanced instruction, assessment and competencies in differential diagnosis.

His research in differential diagnosis and medical education has garnered significant external funding (including two large grants from the United States Department of Education/FIPSE) and

numerous awards including the AAMC/RIME 'Thomas Hale Ham' award, and, the Decision Sciences Institute's 'Best Interdisciplinary Research' award. In 2003, he formed his own curricular consultative and educational technologies corporation – Advanced Curricular Design and Educational Technologies (ACDET). Through ACDET, Dr. Papa supports medical training programs and licensure agencies in the areas of: 1) curricular planning, 2) instructional design, 3) competencies-based assessment procedures, and 4) advanced, computer-based technologies designed to teach to and assess diagnostic competencies. He currently serves two core academic appointments at the University of North Texas Health Science Center (UNTHSC). That is, as Associate Dean, Curricular Design and Faculty Development, and, Director, Academy of Medical Educators – a unit of 50 full time faculty dedicated to developing knowledge and skills sufficient to advance their careers as formally trained clinician/educators and scientist/educators.

Over the past fifteen years he has served as the principal architect in planning UNTHSC's evolving curricular reform initiatives. This includes primary responsibility for transforming learning sciences theories and principles into an effective curricular model, the implementation and evaluation of course work predicated upon these cognitive principles, and, the development of advanced instructional and assessment procedures and technologies designed to expedite the efficient and effective transformation of medical novices into competent primary care practitioners. A paper describing the initial outcomes of this large scale, longitudinal curricular initiative (as follows) is being prepared for review. Concurrent with his curricular design activities is the continued development of KBIT as: 1) a web-based, artificial intelligence driven tool for teaching to and assessing diagnostic competencies of medical students and graduate practitioners, and 2) an investigational tool enabling a deeper understanding of the cognitive factors driving the development of diagnostic competencies.