Fuzzy Logic: A Case in Testing Fairness

This study was an attempt to investigate the efficiency of the newly proposed scoring procedure, Fuzzy Partial Credit Scoring (FPCS) method to Multiple-choice (MC) items tests. This scoring procedure was proposed with the primary aim of moving beyond the zero-one view toward measuring test takers’ knowledge, distinguishing random and informed guesses and increasing the validity of test score interpretation. To meet the aforementioned goals, the conventional correction for guessing scoring procedure and the FPCS method were employed to score 4379 test takers’ answer sheets on Master of Art (MA) Teaching English as a Foreign Language (TEFL) state University Entrance Examination (UEE). The results revealed that there were more than 7% differences in more than 50% of test takers’ ranks when the two scoring method were compared. The FPCS method was further appeared to be sensitive to test takers’ partial knowledge and it successfully distinguished random and informed guesses. The application of fuzzy set in this study appeared to beneficially improve accuracy in testing and measurement, and it enhance testing fairness through appreciating test takers’ partial knowledge.