Application of Rasch Model on Basic Chemistry Tests Computer-Based Hots 0categories.

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- **Abstract:** The current development of the Disruption Era affects the chemistry teacher profession, especially the aspect of technology use in the learning process, measurement, and assessment. Currently, the competence measurement of prospective teachers is still being developed. Therefore, this study aims to develop a comprehensive test for mastering Basic Chemistry based on application technology (computer-based test) with HOTS (Higher Level Thinking) skills for prospective teachers using the Rasch Model. A development study was adopted using R&D Borg and Gall with ten steps, namely (1) content analysis, (2) construction and development of multiple-choice items, (3) digitizing item questions, (4) product validation by experts, (5) readability test by a panel of chemistry teachers, (6) limited trial to students, (7) revision of limited trial results, (8) large-scale application test, (9) revision of large-scale test results, and (10) dissemination to prospective teachers in the PTKIN environment. Furthermore, instrument validation with the Rasch Model assisted by the Winsteps application was carried out to obtain data, the item level of difficulty (item fit), and level of respondent suitability (respondent fit) from 406 prospective chemistry teacher candidates of Islamic State Universities in Jakarta, Semarang, and Yogyakarta. The analysis result for the reliability coefficient of 0.93 Cronbach's alpha indicated that the basic chemistry instrument based on the instrument application was valid and sufficient to measure the basic chemistry abilities of the teachers. Likewise, the respondent's and item reliability values were 0.91 and 0.99 respectively. The results showed 19% of chemistry education students had very high personal abilities, 29% and 39% indicated moderate personability, while 12% had low category and 1% had very low personability. In general, this instrument explains 37.4% of the variance which exceeded the unidimensional requirement (20%) and appeared in the respondent group. This indicated that it was unidimensional and there was a relationship between items. Also, the measurement of a comprehensive basic chemistry CBT instrument for student-teacher candidates can be conducted for this instrument.

- **Keywords:** Basic Chemistry, HOTS, Higher Level Thinking