

## Assessing an Instrument Usability: Response Interpolation and Scale Sensitivity

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**Abstract :** The purpose of the present study was to determine the particular scale rating that stands out for an instrument. The instrument was designed to assess student perceptions of various learning environments, namely face-to-face, online and blended. The original instrument had a 5-point Likert items (1 = strongly disagree and 5 = strongly agree). Alternate versions were modified with a 6-point Likert scale and a bar scale rating. Participants consisted of undergraduates in a local university were involved in the usability testing of the instrument in an electronic setting. They were presented with the 5-point, 6-point and percentage-bar (100-point) scale ratings, in response to their perceptions of learning environments. The 5-point and 6-point Likert scales were presented in the form of radio button controls for each number, while the percentage-bar scale was presented with a sliding selection. Among these responses, 6-point Likert scale emerged to be the best overall. When participants were confronted with the 5-point items, they either chose 3 or 4, suggesting that data loss could occur due to the insensitivity of instrument. The insensitivity of instrument could be due to the discreet options, as evidenced by response interpolation. To avoid the constraint of discreet options, the percentage-bar scale rating was tested, but the participant responses were not well-interpolated. The bar scale might have provided a variety of responses without a constraint of a set of categorical options, but it seemed to reflect a lack of perceived and objective accuracy. The 6-point Likert scale was more likely to reflect a respondent's perceived and objective accuracy as well as higher sensitivity. This finding supported the conclusion that 6-point Likert items provided a more accurate measure of the participant's evaluation. The 5-point and bar scale ratings might not be accurately measuring the participants' responses. This study highlighted the importance of the respondent's perception of accuracy, respondent's true evaluation, and the scale's ease of use. Implications and limitations of this study were also discussed.

**Keywords :** usability, interpolation, sensitivity, Likert scales, accuracy

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