Student Teacher Observation Tool: Instrument Validity and Reliability[1]
May 2017

Instrument Validity

Construct validation of the Student Teacher Observation Tool (STOT) was implemented via an exploratory factor analysis (EFA) using data collected from a sample of n = 139 respondents that completed all 34 assessment items during fall 2016. The respondents were cooperating teachers evaluating student teachers from seven institutions in North Dakota. First, a KMO (a general measure of factorability) was computed, with the result of .960; the result was greater than the recommended threshold of .6 indicating the presence of a factor structure. Four factors were hypothesized, and a variety of tests[2] were used to determine the factor structure. The four-factor solution emerged as the most viable and substantively meaningful solution. Four common (principal axes) factors were extracted and rotated to an oblique solution (i.e., factors were allowed to be correlated) using the oblimin rotation criterion. The meanings of the four factors were determined through examination of the factor loadings on each of the items. The first factor represents the construct instructional practice (I), the second factor represents the construct content knowledge (C), the third factor professional responsibility (P) and the fourth factor represents learner and learning (L). Only salient loadings (coefficients greater than .35 in absolute value) were included.

Communality represents the proportion of variance in an item that can be accounted for by the factors. The communalities from this factor solution are quite good as all are at least moderate in magnitude (≥ .4); in fact, most are high (≥ .7). This reaffirms that the four-factor solution is indeed adequate since the factors account for a majority of the variance in all items. Table 1 displays communalities by construct.

Table 1: *Summary of Item Communalities by Construct*

Construct	Number of Items	Mean	Min	Max
Learner, learning, and diversity	8	.665	.541	.777
Content knowledge	7	.670	.607	.730
Instructional practices	12	.653	.504	.731
Professionalism	6	.651	.548	.785

Instrument Reliability

Cronbach's alpha was computed for each of the subscales corresponding to the factors that have been validated. Table 2 presents the reliabilities of the subscales.

Table 2: *Reliabilities of Subscales*

Subscale/Construct	Number of Items	Cronbach's Alpha
Learner, learning, and diversity	8	.930
Content knowledge	7	.929
Instructional practices	12	.952
Professionalism	6	.902

All subscales have excellent reliability.

[1]This report is a summary of a more extensive reporting of findings available upon request from Stacy.Duffield@ndsu.edu

[2]Parallel analysis (Horn, 1965); MAP (Velicer, 1976); Scree test (Cattell, 1966); Kaiser rule (Kaiser, 1960)