



Criterion Validity of A+nyWhere Learning System® Mathematical Assessment

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The *A+nyWhere Learning System*® (*A+LS*) is a network-installed computer program that delivers core curriculum instruction to students ranging from kindergarten through adult learners. This educational software features integrated assessment and automated reporting tools that are aligned to all state and national academic standards. Due to the No Child Left Behind Act, one important aspect to scientifically establish is that the *A+LS* assessments are valid assessments of their specific academic content areas. The method used in this paper is to investigate the magnitude of agreement (criterion validity) between a standard *A+LS* mathematical assessment and the mathematical portion of the well known Iowa Tests of Basic Skills (ITBS). Criterion validity (or concurrent validity) describes the correlation of *A+LS* and an established assessment. In this paper, the correlations between the mathematical portions of the ITBS and a specific *A+LS* mathematical assessment for seventh grade students are investigated to provide evidence that the *A+LS* assessment is valid.

The students were assessed at an Oklahoma City charter school, Independence Middle School (6-8th grade), during the 2005-2006 school year. The total sample consisted of 67 seventh-grade students. Of these students, 34 were female (50.7%), 29 were male (43.3%), and 4 were unknown. The ethnic background of these students was mostly Caucasian (45 or 67.2%) with minority students composing the rest of the sample: African Americans (9 or 13.4%), Hispanics (7 or 13.4%), and other (6 or 9%).

RESULTS

Four Pearson correlations were calculated for the standard *A+LS* Mathematical Assessment VII (Form A): one for each of the three ITBS subtests (Concepts and Estimation, Computation, and Problem Solving and Data Interpretation) and one with the total math composite score (Total Math Score). All produced highly significant correlations (please see Figures 1-4 for the scatter plots). The results show a very strong relationship between the *A+LS* test and the ITBS.

Figure 1. Scatter plot of ITBS NCE Total Math and *A+LS* scores: $r(57) = 0.866, p < .001$.

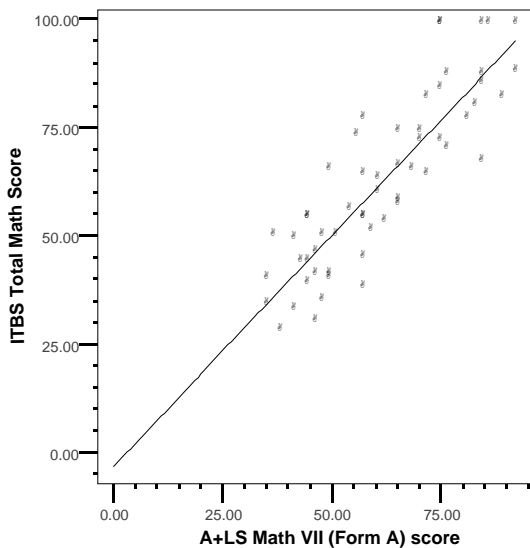


Figure 2. Scatter plot of ITBS Computation and *A+LS* scores: $r(59) = 0.503, p < .001$.

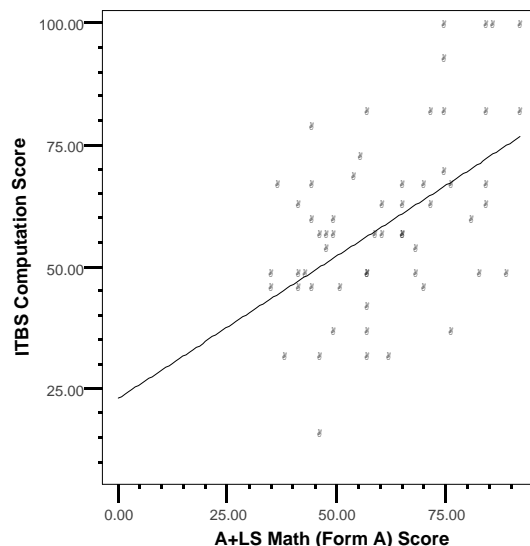


Figure 3. Scatter plot of ITBS Problem Solving & Data Interpretation & A+LS scores: $r(61) = 0.840, p < .001$.

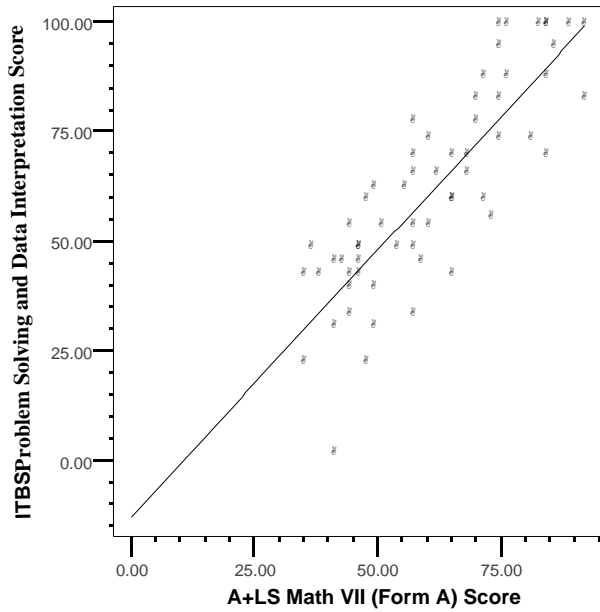
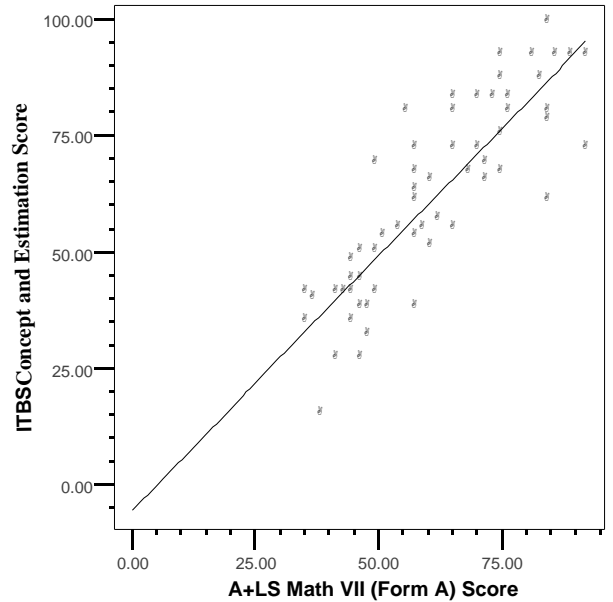


Figure 4. Scatter plot of ITBS Concepts and Estimation and A+LS scores: $r(59) = 0.855, p < .001$.



DISCUSSION

The results indicate that the *A+LS* assessment tests have value for educators beyond their prescriptive function. *A+LS* assessments allow educators to identify students who are poor performers in advance of their state mandated assessments and more importantly with enough time to direct limited resources to helping those students in need. The usefulness of this predictive power is further enhanced by the reporting of the significant correlations between the *A+LS* assessment to each of the three ITBS subtests. Specifically, this ability to predict a large percentage (over 70%) of a student's performance on well established standardized assessments enables educators to efficiently allocate scarce resources such as available tutors, additional time with computer-assisted learning, peer-to-peer interactions, or other educational interventions. The one exception is the .50 correlation of Computation. Some educators have commented that *A+LS* assessment is too much skill and drill focused on rote computation. It is therefore quite interesting that this is the weakest relationship from this study. Overall, all the results should translate into more efficient instruction of students prior to state-mandated assessments and increase the chances that schools make adequate yearly progress. Computer-based assessments are another tool in the educators' toolbox and the results from this observation support the efficacy of this specific tool, the *A+LS* Mathematical Assessment VII, as predicting student's performance on the Iowa Tests of Basic Skills.

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