

Validity and Reliability of the 2011 Teaching, Empowering, Leading and Learning (TELL) Kentucky Survey

The analyses presented throughout the multiple briefs are based on the responses to a survey instrument based on the North Carolina Teacher Working Conditions Survey, but customized to Kentucky by the TELL Kentucky Coalition of Partners. Analyses of the psychometric soundness of the TELL Kentucky Survey indicate that it is a reliable and valid measure of the presence of teaching, leading, and learning conditions in participating schools.

The TELL Kentucky Survey is designed to measure eight research-based constructs:

- **Time**—Available time to plan, to collaborate, to provide instruction, and to eliminate barriers in order to maximize instructional time during the school day
- **Facilities and Resources**—Availability of instructional, technology, office, communication, and school resources to teachers
- **Community Support and Involvement**—Community and parent/guardian communication and influence in the school
- **Managing Student Conduct**—Policies and practices to address student conduct issues and ensure a safe school environment
- **Teacher Leadership**—Teacher involvement in decisions that impact classroom and school practices

- **School Leadership**—The ability of school leadership to create trusting, supportive environments and address teacher concerns
- **Professional Development**—Availability and quality of learning opportunities for educators to enhance their teaching
- **Instructional Practices and Support**—Data and support available to teachers to improve instruction and student learning

Validity of the 2011 TELL Kentucky Survey

Examining the validity of the TELL Kentucky Survey addresses questions of whether the instrument is a true measure of what it is attempting to assess; in this case, the presence of teaching conditions.

Content Validity

Content validity refers to the extent to which a measure represents all facets of a given social concept, in this case, teaching, leading and learning conditions. The TELL Kentucky Survey is based on the North Carolina Teacher Working Conditions Survey. In creating the first working conditions survey in 2001, the North Carolina Professional Teaching Standards Commission (NCPTSC) completed a literature review of the role of working conditions on teacher dissatisfaction and which of those conditions contributed to teacher mobility. The work,

driven by analyses of state and national survey data from the National Center for Education Statistics' School and Staffing Survey, focused on areas that teachers identified as conditions that drove their satisfaction and employment decisions, including administrative support, autonomy in making decisions, school safety, class size, time, etc. The NCPTSC created 30 state working conditions standards passed by the North Carolina State Board of Education (online at www.ncptsc.org) in five areas: Time; Empowerment; Leadership; Decision Making; and Facilities and Resources.

While the list is by no means exhaustive, those 30 standards served as the foundation for the first statewide survey in North Carolina in 2002. The survey was designed to assess whether or not educators agreed that those standards were in place in schools across the state. It is why every educator is assessed and the unit of analysis is the school.

In 2004, the survey was expanded from a 39-question paper/pencil survey on a 1-to-6 scale to a 72-question online survey. Many of the items were "reality" questions, drawn from the National Center for Education Statistics School and Staffing Survey, to see if teachers' reporting of issues such as non-instructional time and professional development received had an impact on their perceptions of whether supportive working conditions were in place.

- In 2004, a sample of educators was asked to rank on an ordinal scale the relevance and importance of each question on the 2004 instrument. Those questions were then compared to the factor analyses to verify the importance of a set of critical conditions in each area of the survey. The questions rated as most important also had the highest factor loads and most make up the battery of core questions still used in 2011 in multiple states and districts.
- Correlations were calculated between the perceptual and "reality" questions on the survey to better understand teaching conditions. There were statistically significant and meaningful correlations

between teachers' perception of time and how much planning time they received and how many hours outside of the school day they worked. In South Carolina, where more than 160 variables were made available to triangulate the data, analyses showed that teachers were more negative about the availability of resources when a higher proportion of students were taught in portable classrooms, etc. (Hirsch, 2005)

Since 2004, there have been several iterations of Teaching and Learning Conditions Surveys. States and districts have added, deleted, or slightly altered some questions to address contexts that were particular to their states, districts, and schools, but the core constructs that the survey measures have remained largely the same. A section on beginning teacher support for those teachers in their first three years in the profession was added in 2006 to most surveys and items for principals that assess district support were added in 2008. In 2010 additional survey constructs were included in multiple surveys, including the 2011 TELL Kentucky Survey to address conditions related to Managing Student Conduct, Community Support and Involvement, and Instructional Practices and Support. The inclusion of these additional constructs provides a more detailed and nuanced lens to examining school working conditions. While some questions in these new constructs are new to the TELL Surveys, others have been taken from a redistribution of existing survey questions as their focus is better aligned in these new areas. More specifically, the Managing Student Conduct construct includes items formerly part of the constructs Facilities and Resources, Teacher Empowerment, and School Leadership. Additionally, response options were changed to a four-point scale (Strongly Disagree, Disagree, Agree, Strongly Agree) and included a "Don't Know" option. A new section related only to Kentucky is included in the 2011 TELL Kentucky Survey and includes questions regarding respondent perceptions of their school council and local governance boards overseeing operations at the school level. Questions in this section cover membership, representation, diversity, impact, and leadership.

Construct Validity

Swanlund (2011) conducted a psychometric analysis on the Teaching and Learning Conditions Survey (hereafter referred to as the TELL Survey), which is the basis for 2011 TELL Kentucky Survey, using data from 400,000 educators from 5,000 schools in 12 sites across the U.S. Using a statistical measurement model called the Rasch Rating Scale model, in combination with dimensionality analysis including factor analysis; he found that several of the above constructs actually function as more than one construct. For example, the teacher leadership construct may be more productively thought of as three separate constructs: 1) a general construct such as whether teachers are recognized as experts and whether they are centrally involved in decision-making on educational issues, 2) a construct regarding the amount of control the teacher has over making decisions in the classroom such as selecting instructional materials and resources or devising teaching techniques, and 3) a construct involving teachers' level of influence over larger school administration issues such as establishing the school budget priorities and having a say over the school improvement plan.

Analyzing the survey based on these more fine-grained constructs,¹ Swanlund (2011) found that the TELL survey holds up to a number of tests of its technical validity. First, the survey reliably measures the TELL constructs. In other words, the data generated from the survey are sufficient for comparing both individual perceptions as well as school-wide aggregates of these perceptions for each construct.² Second, the rating scale that the TELL Survey uses—wherein respondents are asked to indicate the extent of their agreement along a four-point scale—functions well in accordance with strict diagnostic criteria. Third, each of the items used in the survey fit each construct such that none of the items seem to measure some unknown other aspect of teaching and learning conditions. Swanlund, however, did find that there was some inconsistency across districts in how the constructs functioned. That is, some items tended to have different meanings across districts in relation to the particular policy context within a district. This means that comparing results across states or districts should be done carefully, paying attention to local context. All told,

however, the TELL instrument, and thus the 2011 TELL Kentucky Survey, is a robust tool for use in measuring multiple aspects of teaching and learning conditions.

To assess the degree to which the TELL Kentucky Survey measures the eight theoretical constructs on which it is designed—Time; Facilities and Resources; Professional Development; Teacher Leadership; School Leadership; Community Support and Involvement; Managing Student Conduct; and Instructional Practices and Support—both confirmatory and exploratory factor analyses on the data set were conducted. These analyses were used to determine if the items separated into eight distinct constructs or areas of focus. This would be expected if each of the eight areas were independent standards. However, as noted above, previous analyses of similar teaching conditions surveys indicated strong overlap between some constructs, such as school leadership and teacher leadership.

Using a principal components analysis and varimax rotation procedures, eigenvalues of one or greater were used as the criteria for factor extraction. In the TELL Kentucky Survey, a 10-factor model accounted for the greatest proportion in the total variance (67 percent) suggesting that there are 10 distinct concepts within the survey. This was not surprising as both Facilities and Resources and Instructional Practices and Support each split into two separate constructs.

Confirmatory factor analyses where the number of factors was set at eight produced an eight factor solution accounting for 63 percent of the variance (Table 1). In this model, Teacher Leadership included two additional questions, one from School Leadership (Teachers feel comfortable raising issues and concerns that are important to them) and one from Instructional Practices and Support (Teachers have autonomy to make decisions about instructional delivery (i.e. pacing, materials and pedagogy)). Teacher support was modeled as a separate construct as the questions included in it were asked of a subset of teachers and many questions are not scaled similarly as is required when conducting a factor analysis. Given how close the confirmatory factor analysis is to the constructs used to design the survey, we use the original eight constructs as the basis for reporting.

TABLE 1. RESULTS OF THE CONFIRMATORY FACTOR ANALYSIS

Factors				
	<i>Number of Questions Included</i>	<i>Questions Included</i>	<i>Percent Variance Explained</i>	<i>Cumulative Percent Variance Explained</i>
Professional Development	13/13	8.1a, 8.1b, 8.1c, 8.1d, 8.1e, 8.1f, 8.1g, 8.1h, 8.1i, 8.1j, 8.1k, 8.1l, 8.1m	13.2%	13.2%
Teacher Leadership	9/7	6.1a, 6.1b, 6.1c, 6.1d, 6.1e, 6.1f, 6.1g, 7.1c, 9.1h	8.6%	21.8%
School Leadership	10/11	7.1a, 7.1b, 7.1d, 7.1e, 7.1f, 7.1g, 7.1h, 7.1i, 7.1j, 7.1k	8.3%	30.1%
Facilities and Resources	9/9	3.1a, 3.1b, 3.1c, 3.1d, 3.1e, 3.1f, 3.1g, 3.1h, 3.1i	7.6%	37.7%
Community Support and Involvement	8/8	4.1a, 4.1b, 4.1c, 4.1d, 4.1e, 4.1f, 4.1g, 4.1h	7.5%	45.2%
Time	7/7	2.1a, 2.1b, 2.1c, 2.1d, 2.1e, 2.1f, 2.1g	6.6%	51.7%
Managing Student Conduct	7/7	5.1a, 5.1b, 5.1c, 5.1d, 5.1e, 5.1f, 5.1g	6.6%	58.3%
Instructional Practices and Support	6/8	9.1a, 9.1b, 9.1c, 9.1d, 9.1e, 9.1f	4.7%	63.0%

Note: The question "Teachers are assigned classes that maximize their likelihood of success with students." from the construct Instructional Practices and Support did not load above a .4 on any factor and thus did not load on any construct in a meaningful way. However, it is included as part of its original construct, Instructional Practices and Support, for reporting purposes.

Reliability of the 2011 TELL Kentucky Survey

Reliability refers to the consistency of measurement. Analyses were conducted measuring the reliability (consistency) of the 2011 TELL Kentucky Survey for measuring the presence of various components of teaching conditions. Reliability was assessed for the eight constructs upon which the survey was built.

In order to test the internal consistency of the eight major constructs (Time; Facilities and Resources; Community Support and Involvement; Managing Student Conduct; Teacher Leadership; School Leadership; Professional Development; and Instructional Practices and Support), Cronbach’s alphas were calculated. An alpha coefficient ranges from 0 to 1 with higher coefficients indicating higher levels of instrument consistency. *All eight constructs are reliable with alphas above 0.848* (Table 2).

TABLE 2. RELIABILITY STATISTICS FOR SURVEY ORGANIZED AROUND MAJOR CONSTRUCTS

Factors					
	<i>Cronbach's Alpha</i>	<i>Cronbach's Alpha based on Standardized Items</i>	<i>Mean Inter-Item Correlations</i>	<i>N of Items</i>	<i>Sample Size</i>
Time	.848	.849	.446	7	39,682
Facilities & Resources	.873	.875	.438	9	40,415
Community Support & Involvement	.897	.898	.523	8	37,834
Managing Student Conduct	.904	.904	.574	7	40,389
Teacher Leadership	.940	.940	.692	7	39,405
School Leadership	.946	.947	.596	12	34,563
Professional Development	.949	.950	.595	13	33,970
Instructional Practices & Support	.848	.883	.421	8	34,775

Note: Cronbach's alpha is a measure of internal consistency of a set of items or survey questions, not single survey items. Cronbach's alpha measure reliability using a single test administration to provide a unique estimate of the reliability for a given test in the absence of being able to conduct a test-retest method, which is impractical for this first iteration of the TELL Kentucky Survey. Alpha is the average value of the reliability coefficients one would obtain for all possible combinations of scaled items when split into two half-tests. The internal consistency estimates attempt to determine how consistently individuals respond to the items measured on a scale. The more consistent within-subject responses are, and the greater the variability between subjects in the sample, the higher the Alpha produced. Alphas above a 0.70 level are generally considered as good.

Notes

1. These 13 more finely-grained domains are: 1) Time; 2) Facilities and Resources—Technological Resources; 3) Facilities and Resources—Physical Environment; 4) Community Support and Involvement; 5) Managing Student Conduct; 6) Teacher Leadership—General; 7) Teacher Leadership—In the Classroom; 8) Teacher Leadership—School Administration; 9) School Leadership—General; 10) School Leadership—Teacher Concerns; 11) Professional Development; 12) Instructional Practices and Support—Assessments; 13) Instructional Practices and Support—Support

2. Swanlund notes that it is important that the sample size at each school is sufficient to ensure school-wide reliability.

About the New Teacher Center

The New Teacher Center is a national organization dedicated to improving student learning by accelerating the effectiveness of teachers and school leaders. NTC strengthens school communities through proven mentoring and professional development programs, online learning environments, policy advocacy, and research. Since 1998, the NTC has served over 49,000 teachers, 5,000 mentors, and touched millions of students across America.



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