

# TELL Survey Factor Structure

## Factor Analysis and Recommendations for Survey Changes

### TELL AISD Survey

The Teaching, Empowering, Leading, and Learning (TELL) Survey utilizes items representative of many different factors, or variables, within the domain of campus climate and culture. Specifically, the TELL Survey, as it is currently conceptualized, consists of the following factors: 1) Achievement Press, 2) Community Support and Engagement, 3) District Leadership, 4) District Vision, 5) Facilities and Resources, 6) General Climate, 7) Instructional Practice and Support, 8) Job Satisfaction, 9) Managing Student Conduct, 10) Principal Leadership, 11) Professional Development, 12) Teacher Attachment to Profession, 13) Teacher Attachment to School, 14) Teacher Data Use 1, 15) Teacher Data Use 2, 16) Teacher Leadership, 17) Teacher Professional Learning Communities (PLCs), 18) Teacher Self-Efficacy, and 19) School Leadership 1, and 20) School Leadership 2. However, since the district began using the TELL Survey in 2011-2012, a thorough examination of these factors and the items within each of these factors has not been conducted. Therefore, this brief report aims to uncover the factor structure of the TELL Survey through factor analysis, to determine strong and weak factors and items, and to make recommendations for how the survey can be modified to more efficiently and accurately assess campus climate and culture.

### TELL Survey Factor Structure

An exploratory factor analysis was run on all TELL Survey items that were asked of campus-based staff excluding items that were only asked of campus-based administrators, given the comparatively low number of responses from campus-based administrators. The factor analysis, and more specifically the factor loadings, indicated 13 factors that make up the construct of campus climate and culture. These resulting 13 factors and the number of items that make up each factor are included in Table 1 below. The exact items for each of these new factors are available upon request.

As can be derived from Table 1, some factors included in the original 20 factors are missing. This occurs for several reasons. First, some items did not have factor loadings above the .30 minimum cutoff, and therefore were dropped from the results. Second, some items from the TELL Survey loaded most strongly onto a factor that was different from their original, intended factor. For example, a Job Satisfaction item referencing autonomy and an Instructional Practice item referencing autonomy, as shown from the analysis, loaded best onto the Teacher Leadership factor. Therefore, while these items may not accurately represent Job Satisfaction or Instructional Practice, they do seem to accurately represent Teacher Leadership. These two items are retained in the Teacher

Leadership factor and are included in the nine total items for Teacher Leadership as shown in Table 1.

**Table 1**  
**Proposed Factor Labels and Number of Items Per Factor to Retain**

Factor	Number of Items
General Climate	8
District Vision	3
Principal Leadership	10
School Leadership	11
Facilities and Resources	9
Teacher Leadership	9
Professional Development	12
Achievement Press	7
Community Support and Engagement	9
Student Conduct	11
Collaboration	6
Data Use	7
Attachment	16

*Source.* 2018-2019 TELL AISD Survey Factor Analysis.

Several other items loaded onto a factor that was not their originally intended factor, most notably, the School Leadership 1 items. One of these items fit best with the General Climate factor and three fit best with the Principal Leadership factor.

Additionally, the Teacher Attachment to Profession, Teacher Attachment to School, and Teacher Self-Efficacy items combined to form a broader factor of more general Attachment, as depicted by the Attachment factor in Table 1. Lastly, a Job Satisfaction item concerning collaboration loaded onto a factor with many of the PLC items, and thus this factor was re-conceptualized and labeled as Collaboration.

## Recommendations and Conclusions

While most items from the TELL Survey were retained as a result of the factor analysis, 27 items failed to reliably load onto a viable factor. It is our recommendation that these items be dropped from the TELL Survey for future administrations of the survey. Using the newly proposed survey structure and items will increase the integrity and construct validity of the survey. Additionally, we recommend using the factor labels as provided in Table 1 to ease in the interpretation of the survey. Currently, the existence of two School Leadership factors (i.e., School Leadership 1 and School Leadership 2) and two Data Use factors (i.e., Data Use 1 and Data Use 2) creates confusion for AISD staff and families trying to utilize the survey results. The factor labels in Table 1 should

## What is Factor Analysis?

Factor analysis, generally stated, is a statistical technique aimed to understand the underlying structure of multivariate data (Fabrigar, Wegener, MacCallum, & Strahan, 1999). Factor analysis intends to explain the relationships between items in a given data set, and further, how those relationships between items or variables can indicate the presence of latent, unobservable variables called factors (Fabrigar et al., 1999). In factor analysis, emphasis is put on the items' factor loadings, which represent the relationship between that item and the factor it represents. Therefore, when making decisions about strong items, the item's factor loading is what determines this strength. Based on extant literature, recommendations for minimum factor loadings range from .30 to .45 when determining if an item is valid (Costello & Osborne, 2005; Hinkin, 1998; Howard, 2016; Tabachnick & Fidell, 2001; Tabachnick & Fidell, 2007). For the purposes of this report, a more generous .30 was used as the minimum cutoff for determining an adequate factor loading.

help alleviate such confusion. Additionally, dropping items based on the factor analysis results will shorten the length of the survey, which should lessen survey fatigue and therefore may increase staffs' willingness to complete the survey. Of the 27 proposed items to drop from the survey, none are currently used in the district strategic scored, in the local accountability system, or by the Department of Research and Evaluation for other reporting. However, it will be vital to ensure that none of the items slated to be dropped are used for other district purposes (e.g., grant reporting). We conclude that the TELL Survey and its participants will benefit from survey modifications in accordance with the factor analysis results.

## References

- Costello, A. B., & Osborne, J. (2005). Best practices in exploratory factor analysis: Four recommendations for getting the most from your analysis. *Practical Assessment, Research & Evaluation, 10*, 1–9.
- Fabrigar, L. R., Wegener, D. T., MacCallum, R. C., & Strahan, E. J. (1999). Evaluating the use of EFA in psychological research. *Psychological Methods, 3*, 272–299.
- Hinkin, T. R. (1998). A brief tutorial on the development of measures for use in survey questionnaires. *Organizational Research Methods, 1*, 104–121.
- Howard, M. C. (2016). A review of exploratory factor analysis decisions and overview of current practices: What we are doing and how can we improve?. *International Journal of Human-Computer Interaction, 32*(1), 51–62.
- Tabachnick, B. G., & Fidell, L. S. (2001). *Using multivariate statistics*. Boston, MA: Allyn & Bacon.
- Tabachnick, B. G., & Fidell, L. S. (2007). *Using multivariate statistics* (5th ed.). Boston, MA: Allyn & Bacon.

