Defining and Predicting Teachers’ Supplementation of Official Curriculum Materials: An Exploratory Analysis

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Motivation
The vast majority of U.S. K-12 teachers have access to core curriculum materials like textbooks to use in their instruction. However, recent survey data indicate that nearly all teachers supplement their district-adopted textbooks with unofficial curriculum materials, despite the fact that these supplemental materials can be of questionable academic quality (Blazar, et al., 2019; Polikoff & Dean, 2019). Beyond its ubiquity, relatively little is currently known about curriculum supplementation. This study uses data from RAND’s 2019 American Teacher Panel survey to highlight four distinct dimensions of supplementation. We then build models to predict each dimension from a rich set of teacher-level, school-level, and textbook-level characteristics. This study is exploratory and descriptive—a first attempt to understand supplementation and its correlates.

Research Questions and Methods
1. Along what dimensions can we measure supplementation?
   - Present summary statistics and histograms for each dimension of supplementation available in the data.
   - (Two of four dimensions presented here for space reasons.)
2. To what extent are these dimensions of supplementation meaningfully distinct?
   - Present bivariate correlations between each pair of dimensions.
3. What teacher-level, school-level, and textbook-level factors predict each dimension?
   - Specify models using the lasso estimator, which performs well when there are many plausible predictors relative to sample size and excludes predictors from the model that do not predict the outcome. (e.g., Hastie, Tibshirani, & Wainwright, 2015)
   - (Two of four dimensions presented here for space reasons.)

Findings

<table>
<thead>
<tr>
<th>Dimensions of Supplementation: Bivariate Correlations</th>
<th>Prevalence</th>
<th>Importance</th>
<th>Extent</th>
<th>Frequency</th>
</tr>
</thead>
<tbody>
<tr>
<td>Prevalence</td>
<td>0.512</td>
<td>0.056</td>
<td>0.059</td>
<td></td>
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<tr>
<td>Importance</td>
<td>0.894</td>
<td>0.874</td>
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<tr>
<td>Extent</td>
<td>0.833</td>
<td>0.860</td>
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<td>1666</td>
</tr>
<tr>
<td>Frequency</td>
<td>0.148</td>
<td>0.150</td>
<td></td>
<td>0.000</td>
</tr>
</tbody>
</table>

Note: Values in table are bivariate Pearson’s r (p-values in parentheses).

Limitations
- CCD data is not yet available for school year 2018-2019, so we’ve matched to data from the year before until that data becomes available. All our school-level variables are probably somewhat inaccurate, but we have no reason to believe there would be any systematic pattern to this inaccuracy.
- The questions asked in the ATP supplement limit what dimensions of supplementation we can investigate. However, our goal is to argue that supplementation is multidimensional, not to give an exhaustive survey of the types of supplementation.
- These data do not allow us to make causal claims about the predictors of supplementation.

Future Directions
- Test robustness of the models in this study on new data.
- Directly observe teachers’ supplementation to investigate more dimensions of supplementation and start understanding the causal mechanisms behind these dimensions.

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[References]