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Modifying Cognitive Load Component Survey for K-12 STEM Testing

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Abstract: Test-taker's capability to answer questions is influenced by available cognitive resources for problem solving. Due to the limited working memory capacity, excessive cognitive load for interpreting instruction would impact test-taker's construct-relevant process and test validity. Especially in STEM assessment where multimedia and interactive design are widely used, test-takers can easily get overwhelmed by a large amount of visual or audio information. Testing materials should be designed to minimize the unnecessary cognitive load in order to increase cognitive resources for problem solving in the task. The Cognitive Load Component Survey is one of the first self-report measurements distinguishing different types of cognitive load: intrinsic cognitive load, extraneous cognitive load, and germane cognitive load. We report modifications of this survey to fit into K-12 educational assessment, results of measuring cognitive loads in a simulation-rich science assessment, and implications to use this survey for future assessment development.