Measuring up: **Considerations for adopting computerized adaptive testing**

Computerized adaptive testing (CAT) selects test questions based on test takers' answers to previous questions. For example, if a student answers a question correctly, the next question is more difficult. Conversely, if a student answers a question incorrectly, the next question is easier. CAT has the potential to be more valid and reliable than non-adaptive tests.[1]

Some states have fully transitioned to using CAT for statewide assessments. For example, the Smarter Balanced assessments used in a handful of states, including Delaware in the mid-Atlantic region, employ CAT. Many states and districts that have not yet implemented CAT have begun administering assessments online, thereby creating the infrastructure that could support CAT in the future. The U.S. Department of Education has used CAT in studies to test cognitive skills.[2] Understanding the potential advantages and disadvantages of CAT is key as states and districts consider using this tool.

ADVANTAGES

- ☑ **Students take tests that are challenging** but not too difficult, which could lessen frustration.[3]
- ☑ **CAT takes less time to complete** than non-adaptive testing.[4]
- ☑ **Teachers and administrators can quickly identify strengths and weaknesses** of individual students, especially those performing outside of their grade level.[5]
- ☑ **CAT can track student growth over time** more effectively than conventional tests because it produces precise scores for high achievers, low achievers, and average students.[6]

DISADVANTAGES

- ☒ Set-up and administration **costs might be significant** for schools.[7]
- ☒ Like other computer-based tests, **CAT requires computer infrastructure and Internet access**, which might not be available in poorer districts.[8]
- ☒ **CAT works better for multiple-choice and one-word response questions** than longer answers and essays.[9]
- ☒ **CAT requires a larger bank of test questions** to minimize overexposure to questions and assess achievement of students performing significantly below or above average.[10,11]
- ☒ As with other computer-based tests, **students are unable to mark up test questions** to help think through answers.[12]
- ☒ **Students are usually not allowed to change answers** to previous questions.[13]

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[2] For example, researchers on the Early Childhood Longitudinal Study-Kindergarten used CAT for several direct cognitive assessments in reading, mathematics, and science. National Center for Education Statistics. (2019). Early Childhood Longitudinal Program (ECLS). Retrieved from https://nces.ed.gov/ecls/assessments2011.asp

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