Mathematics, Self-Regulation, Social Skills, and Mental Health Assessments Pilot: Grades 1-3

January 2023 Update



School and division leaders, teachers, and families across Virginia have expressed interest in understanding how young students are developing into the early elementary grades and how to better track student growth from pre-kindergarten through the early grades.

As required by Virginia's 2023-2024 Biennial Budget, researchers at the University of Virginia—including the teams from the Virginia Kindergarten Readiness Program (VKRP) and Virginia Literacy Partnerships (VLP)—in partnership with the Virginia Department of Education (VDOE) are conducting an assessment pilot to explore the utility of building our longitudinal measures of mathematics, self-regulation, social skills, and mental health that would extend into the early elementary grades.

Update on Key Pilot Activities

1. Co-designing the purpose, scope, design, and implementation of 1-3 Assessment through biweekly UVA-VDOE meetings.

2. Gathering information about existing assessments and evaluating current interest in state-supported assessments for mathematics, self-regulation, social skills, and mental health.

- During Fall 2022, UVA team members reviewed all Virginia school divisions' public websites for information related to mathematics and social-emotional learning (SEL) assessments in use in grades 1 through 3. The team is currently creating an inventory of assessments based on publicly available information.
- UVA and VDOE designed an assessment survey to be administered in early 2023. The goal is to understand what assessments are currently being used to measure social emotional learning, mathematics, and mental health in grades 1-3 and to explore interest in a state supported assessment for each area.

3. Creating an inventory of current Early Mathematics Assessment System (EMAS) and Child Behavior Rating Scale (CBRS) items

- For mathematics, UVA created a crosswalk between Clements and Sarama's[1,2] Mathematics Learning Trajectories, which describe the developmental path along which children learn mathematical concepts and skills, and the Virginia Mathematics Standards of Learning and existing EMAS items to guide item development.
- VDOE reviewed and provided feedback on the CBRS, which is used statewide in preschool and kindergarten to measure aspects of children's self-regulation, social skills, and mental health.

4. Establishing Working Group and Drafting Mathematics Items

- UVA Established a Mathematics Working Group to advise the Pilot. Members include researchers with expertise in children's early mathematics development and mathematics coaches, coordinators, and specialists from four Virginia school divisions. Member expertise includes mathematics, special education, and English Language/Multilingual learners.
- The Working Group has:
  - Provided feedback and guidance on the mathematics assessment pilot.
  - Provided expertise on existing measures used nationally and/or in Virginia.
  - Drafted over 300 items for students in grades 1-3 in the subdomains of numeracy, computation, geometry, patterning, measurement, and data and probability. All items are aligned with the Virginia Standards of Learning and/or the Mathematics Learning Trajectories[1,2]. The group also consulted Kathy Richardson's Critical Learning Phases[3].
- VDOE has reviewed and provided feedback on the pilot items that have been developed.

Immediate Next Steps

- Analyze and report back the information learned from the website scan and assessment survey.
- Pilot the mathematics items to identify items that provide accurate information about young students' mathematical skills, can be used with all students, are practical for teachers to administer, and are useful for educators and families.
  - A group of teachers from across Virginia will be invited to provide feedback on the pilot items. We will solicit representation of teachers across various communities and backgrounds.
  - External UVA data collectors will administer plot items with a sample of students in grades 1-3 in school divisions across Virginia.

[1] Clements, D. H., & Sarama, J. (2021). Learning and Teaching Early Math: The Learning Trajectories Approach. Routledge & CRC Press. https://www.routledge.com/Learning-and-Teaching-Early-Math-The-Learning-Trajectories-Approach/Clements-Sarama/p/book/9780367521974

[2] Sarama, J., & Clements, D. H. (2009). Early Childhood Mathematics Education Research: Learning Trajectories for Young Children. Routledge. https://doi.org/10.4324/9780203883785

[3] Richardson, K. (2012). How children learn number concepts: A guide to the critical learning phases. Math Perspectives.

Have questions about the pilot? Please contact us.

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