Memorandum

To: Cynthia McCarty, Alabama STEM Council, Executive Committee Chair
Elizabeth Mohr, Alabama STEM Council, STEM Operations Manager

From: Human Resources Research Organization (HumRRO)

CC: Rene McNeal, Alabama STEM Council, Ecosystems Coordinator

Date: July 30, 2025

Re: ANA Evaluation Quarterly Memo

The purpose of this quarterly memo is to provide a status of HumRRO's Alabama Numeracy Act (ANA) evaluation. HumRRO is currently completing Year 3 of its contract. The information presented in this memo covers activities completed from April through June 2025.

Interim Findings

ANA Priorities

HumRRO presents updated information below regarding the ANA components that the STEM Council considers most important. These updates are based on depth of implementation (DOI) information provided by the Office of Mathematics (OMI):[1]

- 60 minutes a day of Tier 1 math instruction
  - 210 (of 210) full- and limited- support (FS/LS) schools have schedules that indicate 60 minutes of daily Tier 1 math instruction.
  - Tier 1 math instruction does not occur on a consistent basis for the full 60 minutes for 44 FS/LS schools. Support plans were established for these schools during SY2024–25 to ensure they provide 60 minutes of daily math instruction during future school years.
- Elementary Mathematics Task Force (EMTF)-approved core math curricula
  - 195 (of 210) FS/LS schools use EMTF-approved core math curricula. The remaining 15 schools have plans to implement EMTF-approved core math curricula in SY2025–26. These schools cited delays in creating a new curriculum, securing funding, or negotiating contracts as reasons for not using EMTF-approved core math curricula in SY2024–25.
- EMTF-approved math screening assessments
  - 203 (of 210) FS/LS schools use EMTF-approved math screening assessments to screen all K–5 students. The remaining 7 schools plan to implement EMTF-approved math screening assessments in SY2025–26. These schools cited delays in creating

[1] OMI staff conducted site visits during SY2024–25 to FS/LS schools to gather data regarding DOI. The DOI data collected by OMI staff included the extent to which the schools provided 60 minutes of daily Tier 1 instruction; use of EMTF-approved Tier 2 and Tier 3 instruction and intervention plans; and use of EMTF-approved core math curricula, math screening and formative benchmark assessments, and intensive/immediate interventions. OMI staff analyzed the DOI data they collected and shared the results presented in this report.

a transition plan and negotiating contracts as reasons for not using EMTF-approved screening assessments.

  - A fractional reasoning screening assessment was identified in SY2024–25. The fractional reasoning screening assessment will be implemented operationally for the first time in SY2025–26.

- EMTF-approved mathematics diagnostic assessments
  - There are no EMTF-approved diagnostic assessments; instead, the state uses a structured framework that includes:[2]
    - Alabama Comprehensive Assessment Program (ACAP) – the state summative assessment; administered once a year.
    - Formative benchmark assessments – assessments used to monitor student progress and guide instruction; administered three times a year (beginning, middle, and end).
    - Screeners (early numeracy screener K–2, fractional reasoning 4–5) – assessments used to identify students with potential learning gaps; administered twice a year.
    - Tiered instructional supports – intervention resources that are deployed based on classroom assessment, screener, formative, and summative assessment data in Tier 1, Tier 2, and Tier 3 lessons/supports.
  - All FS/LS schools have been directed to provide a student with immediate support once a math deficiency has been identified.

- EMTF- recommended intensive, immediate interventions
  - The process of creating student plans in PowerSchool Analytics & Insights was new for all local educational agencies (LEAs), resulting in inconsistent overall implementation of EMTF-approved intervention resources during SY2024–25.
  - 194 (of 210) FS/LS schools use an EMTF-approved intervention resource. The remaining 16 schools plan to implement EMTF-approved intervention resources during SY2025–26.

- Evidence-based accountability system
  - A search is underway for a vendor to support the development of an evidence-based accountability system to measure the effectiveness of math coaches for improving teacher professional development and increasing student growth.

- EMTF-approved curricula for core, Tier 2, and Tier 3 instruction and approved intervention plans
  - 195 (of 210) FS/LS schools use EMTF-approved core math curricula. The remaining 15 schools have plans to implement EMTF-approved core math curricula in SY2025–26.
  - 194 (of 210) FS/LS schools use EMTF-approved Tier 2 and Tier 3 resources. The remaining 16 schools plan to implement EMTF-approved intervention resources during SY2025–26.
  - 194 (of 210) FS/LS schools use an EMTF-approved intervention resource. The remaining 16 schools plan to implement EMTF-approved intervention resources during SY2025–26.

[2] Based on information provided by OMI.

- EMTF-approved formative benchmark assessments, screeners, and diagnostic assessments
  - The EMTF-approved screeners include the early numeracy screener (K–2 students) and a fractional reasoning screener (grades 4–5 students).
    - 203 (of 210) FS/LS schools use EMTF-approved early numeracy math screening assessments to screen all K–2 students. The remaining 7 schools plan to implement EMTF-approved math screening assessments in SY2025–26.
  - A fractional reasoning screening assessment was identified in SY2024–25. This screening assessment will be implemented operationally for the first time to screen all grades 4–5 students in SY2025–26.
  - The EMTF-approved formative benchmark assessments include Curriculum Associates (i-Ready), Edmentum (Exact Path), and Progress Learning (Progress Learning).
    - 195 (of 210) FS/LS schools use EMTF-approved formative benchmark assessments. The remaining 15 schools plan to implement EMTF-approved formative benchmark assessments in SY2025–26.
  - There are no EMTF-approved math diagnostic assessments.
- Alabama Math Summer Achievement Program
  - Because funding was provided to all districts, all FS schools with grades 4 and 5 should have offered a math program in summer 2025 to students in these grades who were identified with a math deficiency.
  - Some FS schools send their grade 5 students to a middle school camp, which may not have the same expectations for math content instruction (40–70 hours).
- Correlation of K–5 math coaches with measurable student performance growth
  - HumRRO will conduct analyses upon receipt of SY2024–25 math coach performance and student math achievement data.

Stakeholder Focus Group Preliminary Key Findings

HumRRO conducted separate (a) in-person focus groups with parents and students and (b) virtual focus groups with regional coordinators, local education agency [LEA] staff, math coaches, principals, and math teachers. We invited a sample of parents and a sample of grades 3–5 students to participate in separate focus groups at each FS/LS school we visited in fall 2024. In spring 2025, we invited all regional coordinators, LEA staff, math coaches, principals, and K–5 math teachers at all FS/LS schools to participate in separate focus groups. ***Preliminary*** key findings from the focus groups include:

- Regional coordinators (n=22)
  - The DOI process has notably transformed how schools are monitored and supported, with monthly site visits tied to strategic planning.
  - Staff do not have direct access to student performance data, undermining their ability to provide timely, actionable, and effective support and monitoring.
  - District leadership buy-in is a challenge, with consequences ranging from communication difficulties to a lack of participation in ANA implementation efforts.
  - Insufficient human resources and funding constraints limit efforts to effectively scale ANA implementation.

- The inherent difficulty of implementing a new statewide initiative while simultaneously developing its components creates internal coordination challenges (e.g., onboarding and professional development gaps, guidance/information version control issues).
- The evidence-based practice framework provides concrete tools for improvement by providing teachers with specific indicators for strengthening their instructional practice.

- LEA staff (n=11)
  - The relationship that the math coach builds with the teacher, along with their support related to intervention planning and data analysis, is a key factor in successful ANA implementation.
  - The systematic use of data represents a significant advancement in how districts approach math intervention, with value gained from the detailed information provided by the screening tools and formative assessment data.
  - There are significant gaps between training needs and available professional development capacity, including teachers' content knowledge and their ability to align the standards to instruction.
  - Staff are concerned about the cumulative impact of documentation requirements on math coaches and teachers, with data entry and reporting requirements consuming time needed for instruction to address student needs.
  - Schools struggle to implement tiered intervention systems given the large numbers of students identified with math deficiencies.
  - Solutions for providing equitable services across different district sizes and contexts often exceed available resources.
  - A cultural transformation is occurring in schools that reflects significant positive changes in math culture, quality of instruction, and student engagement.

- Principals (n=11)
  - While initially apprehensive, teachers are recognizing the benefits of receiving support from the math coaches.
  - Various approaches (e.g., regular meetings, sharing documentation, collaborating with external specialists) are proving effective in ensuring coaching is implemented with fidelity and achieving desired outcomes.
  - The ANA's systematic focus on math is creating measurable improvements that can be observed and documented.
  - Differentiated training approaches are needed to meet teachers' diverse needs (e.g., experience levels, gaps in content knowledge).
  - The intervention systems supported by the ANA are particularly effective in addressing student needs and closing achievement gaps.
  - Implementation of a multi-tiered system of supports (MTSS) is difficult because of insufficient funding for interventionists, inadequate staffing, and the need to make difficult trade-offs between different types of support personnel and programs.
  - Instructional leadership suffers and inefficiencies occur because excessive time is spent completing multiple reporting requirements and coordinating with various state entities involved in ANA implementation.

- Math coaches (n=26)
  - Building authentic, non-evaluative relationships with teachers is a fundamental prerequisite for successful coaching.

- Micro-modeling and co-teaching are especially effective for coaching teachers new to math instruction or those teaching outside their certification area.
- Collaborative planning allows for providing targeted support while building teacher autonomy and understanding of math content and pedagogy.
- There is tension between the time required for effective coaching and the time available within school schedules and structures.
- There are fundamental gaps in teacher preparation that require systematic attention, especially gaps in teachers' math content knowledge.
- Misalignment between adopted curricula and state standards, inconsistent vocabulary across resource documents, and insufficient time to engage in deep planning make it difficult for teachers to provide instruction aligned to the state's math standards.
- Excessive documentation requirements consume time needed for coaching and create burdens that detract from the primary instructional support role.

- Math teachers (n=10)
  - Math coaches provide strong support characterized by individualized assistance, modeling, and collaborative planning.
  - Number talks and number sense routines are most helpful in providing effective support to students who struggle to learn math.
  - Insufficient time is the biggest challenge to effectively deliver all components of quality math instruction while meeting the diverse needs of students.
  - The data management systems associated with ANA implementation are not user-friendly, making them especially difficult to use given the lack of adequate training.
  - While hands-on materials enhance math instruction, additional resources are needed to fully support all students.
  - There is mixed success with parent communication and engagement around math, with outcomes varying significantly based on parent capacity, involvement levels, and communication methods.
  - Teachers are seeing a significant positive cultural shift that is elevating math instruction as a priority.

- Parents (n=30)
  - Parents cite mixed awareness of ANA; some parents are not aware of ANA, some have heard of ANA but do not know anything about it, and some know about ANA and generally understand what it entails.
  - Parents describe mixed perceptions about how ANA is being implemented, with comments ranging from positive (e.g., ANA has improved their child's engagement with math) to negative (e.g., their child is struggling and experiencing stress due to testing).
  - Parents are eager for more proactive, detailed, and actionable feedback about their children's math progress, especially their struggles.
  - Parents report they do not know what math curriculum is used, how it is taught, or how they can effectively support their children at home.
  - Because parents are unfamiliar with the new math methods, they cite struggles that prevent them from supporting their children's learning at home and the need for more support and resources to effectively participate in their children's math education.

- Students (n=113; grade 3, 37 students; grade 4, 31 students; grade 5, 45 students)
  - Students favor (a) learning experiences that make abstract math concepts concrete, (b) multiplication as a core operation they are mastering, and (c) manipulative tools that provide visual scaffolding.
  - Students struggle most with complex computational procedures (especially division) and measurement tools that require precision (particularly rulers).
  - Students report mixed experiences regarding their schools' wanting them to do well in math; many feel supported, while others experience frustration with pressure, inconsistent help, or overly strict approaches.
  - Most students report receiving some form of feedback from their teachers about their math progress, but the quality and consistency varies.
  - While most students say their parents talk to them about how they are doing in math, they also say their parents do not understand current math teaching approaches.
  - Students' responses to why they think learning math is important indicate they understand math to be a life skill and career tool rather than an abstract academic subject.

Alabama Multi-Tiered System of Supports (AL-MTSS) Study

The AL-MTSS study examines the extent to which (a) the Alabama Framework for MTSS is being implemented in grades K–5 and (b) ratings of MTSS implementation within schools relate to the distribution of students within tiered placements.

- ***Preliminary*** study key findings from the annual survey include:
  - Most responding teachers are comfortable implementing Tier 2 and Tier 3 MTSS steps, with their comfort increasing as they acquire more experience implementing the ANA.
  - Most responding math coaches support teachers with Tier 1 instruction through modeling evidence-based practices, collaborating on instructional content, assisting with assessments, and using data weekly.

Comparison Study

The overall ANA evaluation includes a quasi-experimental design study to assess the impact that math coaches have on student math performance in FS/LS schools.

- ***Preliminary*** analyses examining the impact of math coaches in FS/LS schools on SY2023–24 student achievement suggest:
  - Student ACAP math performance in designated schools with a math coach does not significantly differ from student ACAP math performance in schools without a math coach.

Cost Effectiveness Analysis Study

The cost effectiveness analysis study examines the overall costs and actual or anticipated financial benefits of the ANA.

- ***Preliminary*** study key findings from the annual survey include:
  - Most responding FS/LS school principals do not use local funds to implement the ANA.
  - Nearly half of the responding LEA staff do not use district funds to support ANA implementation.

Screening Assessments Study

The screening assessments study examines the extent to which required screening assessments identify students who are subsequently identified as needing tiered services and/or receive a diagnosis relating to a math deficiency.

- ***Preliminary*** study key findings from the focus groups include:
  - Teachers use data from the ANA early numeracy screening assessments to (a) adjust their Tier 1 instruction to address student math learning gaps and (b) form groups of students for Tier 2 instruction (small group instruction) who are identified by the screening assessment as having a similar math deficiency.
  - Math coaches use data from the ANA early numeracy screening assessment to (a) create goals for the teacher based on classroom results and (b) ensure students are provided intentional intervention time to address their identified math deficiency or learning gap.

Stakeholder Awareness & Satisfaction Study

The awareness and satisfaction study examines the extent to which stakeholders are aware of and satisfied with ANA implementation.

- ***Preliminary*** study key findings from the focus groups include:
  - Most participating regional coordinators are generally satisfied with how the ANA is being implemented.
    - Most regional coordinators are very satisfied with the focus that the ANA places on math instruction.
    - Some regional coordinators are satisfied with the progress made so far in implementing the ANA but stated there is much progress yet to be made.
    - Some regional coordinators are somewhat dissatisfied with the uneven distribution of schools within their purview of responsibility, noting they have too many schools in their region to effectively implement their ANA responsibilities.
  - Most participating LEA staff are generally satisfied with how the ANA is being implemented.
    - All LEA staff are very satisfied with the increase in teachers' confidence.
    - Most LEA staff are satisfied with the balanced focus that the ANA brings to math and reading instruction.
    - Most LEA staff are satisfied that there is more hands-on math instruction, including the increased use of manipulatives and decreased focus on worksheets.
    - Some LEA staff are somewhat dissatisfied with the limited training related to math standards.

        - Some LEA staff are somewhat dissatisfied with the constraints that math coaches experience regarding their lack of direct access to student performance data.
- Most participating principals cite challenges but are generally very satisfied with how the ANA is implemented, expressing confidence that the goals are achievable with continued support and refinement.
        - Some principals are dissatisfied with the many administrative tasks their teachers must complete and feel that a more streamlined process is needed.
- Most participating math coaches are satisfied with how the ANA is being implemented.
        - Most math coaches are satisfied that the ANA encourages both teachers and students to share accountability for learning.
        - Most math coaches are satisfied with the intentionality of math instruction generated because of ANA's implementation.
        - Most math coaches are satisfied that the ANA is producing efforts to infuse math instruction into other content areas.
- Most participating teachers are generally somewhat satisfied or neutral about how the ANA is being implemented.
        - All teachers are very satisfied with the focus/priority that the ANA has given to math instruction.
        - Some teachers are very satisfied with the training they receive.
        - Some teachers are satisfied with the support they receive from a math coach, while others feel the math coach's presence interrupts their classroom instruction or distracts the students.
        - Some teachers are somewhat dissatisfied with the limited supporting manpower to implement the ANA.
        - Some teachers are dissatisfied that the ANA is not implemented in a staged/phased manner, allowing little or no time to develop the necessary infrastructure and facilitate a dedicated focus.

Teacher Knowledge and Pedagogy Study

The teacher knowledge and pedagogy study examines the (a) status and gains in math knowledge and skills of K–5 teachers and (b) extent to which ratings and gains in math knowledge and skills of K–5 teachers within FS/LS schools account for differences in student performance on formative and summative math assessments. We administered the Mathematics for Teaching Tool (MTT)[3], a validated measure of teachers' math knowledge for teaching, in fall 2024 to all K–5 teachers in all FS/LS schools. Using the MTT 10-point scale, principals rated the proficiency of their teachers' math knowledge and pedagogical skills (with higher number indicating higher proficiency).

- ***Preliminary*** study key findings that emerged from the MTT include:

[3] Ball, D. L., Thames, M. H., & Phelps, G. (2008). Content knowledge for teaching: What makes it special? *Journal of Teacher Education*, *59*(5), 389-407. https://doi.org/10.1177/0022487108324554

- Most responding FS/LS school principals report that the ANA has improved their teachers' math content knowledge and pedagogical skills to a moderate level of proficiency:
    - FS school principals reported an average of 5.5.
    - LS school principals reported an average of 6.

Unintended Consequences Study

The unintended consequences study examines the positive and negative outcomes that emerge from schools, LEAs, ALSDE, and other stakeholder groups that were not anticipated as a result of implementing the ANA.

- ***Preliminary*** positive outcomes that emerged from the focus groups include:
    - The availability and use of hands-on materials are enhancing math instruction.
    - The elevation of math as a priority creates a more balanced academic focus, increases student engagement with math learning, and boosts enthusiasm and confidence among students.
    - Teachers, students, and parents are having more conversations about math.
    - There are observed increases in teacher confidence and improved instructional quality.
    - Students are not being grouped (e.g., you are a math kid, you are not a math kid) or stereotyped based on their math proficiency (e.g., boys are better at math).
    - The systematic focus on evidence-based practices and professional learning creates more intentional instruction.
- ***Preliminary*** negative outcomes that emerged from the focus groups include:
    - The rapid scaling of ANA creates quality control issues and inequality in training and support delivery across the state.
    - Time and resource constraints create tension between following prescribed structures and meeting authentic student needs.
    - Excessive documentation requirements create pressure to prioritize documentation over coaching and teaching, impacting their effectiveness.
    - The reality of serving high-need populations impacts the equitable allocation of resources.
    - The complexity of managing relationships with multiple support organizations creates confusion and inefficiencies that impact planning and implementation.
    - Staffing constraints impact comprehensive service delivery and resource allocation that may not align with ideal ANA implementation approaches.
    - The complexity and user-unfriendly nature of data systems create additional work without clear instructional benefits.

Challenges

We have experienced the following challenges when conducting the ANA evaluation:

- ***AL-MTSS Study:*** Based on information in the Request for Proposals (RFP), we expected to use existing data to address the MTSS implementation fidelity research questions. However, instead of the implementation fidelity data being collected on a statewide basis, the data are gathered from only a limited set of schools that partner directly with the AL-

MTSS office, requiring us to collect new data to address the study's research questions. Beginning in SY2025–26, we will conduct structured interviews with a sample of FS/LS school principals about their MTSS implementation. To the extent possible without adding burden to principals, we will include implementation fidelity questions on the SY2025–26 annual survey.

- ***Comparison study:*** We are challenged to identify an equivalent matched comparison group (i.e., schools without a math coach) to conduct the planned quasi-experimental study. Although not planned this early in ANA implementation, we are investigating how we might conduct the comparison study using SY2023–24 and/or SY2024–25 data. We continue to work with OMI and to investigate the adequacy of various analytic models that may allow us to determine the impact (or relationship) that math coaches have on student math achievement.
- ***Math coach study:*** HumRRO requested math coach performance data for SY2023–24 and SY2024–25. OMI shared the SY2024–25 end-of-year coach proficiency level data at the end of June 2025. HumRRO continues to work with OMI to identify available SY2023–24 math coach data. We will be unable to provide any findings for SY2023–24 without these data.
- ***Teacher knowledge and pedagogy study:*** The RFP stated that the evaluator should determine the role of the Alabama Teacher Observation Tool (ATOT) within the evaluation. We expected to receive ATOT data and evaluate their utility for measuring teacher knowledge and pedagogy; however, ALSDE will not share ATOT, requiring us to administer an additional instrument (MTT) to collect the data needed for this study. Unfortunately, the SY2024–25 response rate for the MTT was only 11% for teachers who completed the entire measure and 22% for teachers who provided any responses. It is likely that administering the MTT was viewed by teachers as overly burdensome, which negatively impacted their completion rate. If ALSDE shares the ATOT data with HumRRO and we determine that it provides the information we need regarding teachers' math knowledge and pedagogy skills, we may not need to administer this additional instrument.

Remaining FY2025 Evaluation Activities

Attachment A presents the planned Year 3 general, process, and outcome evaluation activities that we completed from April through June 2025. Attachment B presents the planned Year 3 supplemental studies activities that we completed during this same timeframe.

Attachment A: Year 3 Planned General, Process, and Outcome ANA Evaluation Activities[4]

Year 3 Timing	General Evaluation Activities	Process Evaluation Activities	Outcome Evaluation Activities
Oct – Dec 2024 **COMPLETED**	Weekly meetings with OMI/ALSDE Biweekly supplemental study meetings with OMI/ALSDE Monthly meetings with STEM Council Executive Director Monthly HumRRO-Mathematica team meetings Refine/Update ANA evaluation data tracking system Prepare Year 2 annual report (Oct 2023–Sept 2024)	Work with OMI/ALSDE to coordinate in-person fall 2024 site visits (SVs) to a total of six FS and LS schools; conduct in-person SVs Analyze in-person fall 2024 fall SV data overall and by school type and/or stakeholder type Prepare description of fall 2024 in-person SV findings (narrative, tables) Refine Year 3 annual survey to measure quality/effectiveness of ANA implementation processes and activities; survey to include parallel versions for specific stakeholder groups (regional coordinators, district staff, principals [FS and LS schools], math coaches, math teachers) Work with OMI/ALSDE to whitelist Year 3 annual survey URL in FS and LS schools	Establish outcome evaluation data metrics Complete cleaning and merging SY2022–23 student, teacher, and school datasets Conduct baseline analysis of SY2022–23 outcome data, separately by metric as appropriate Prepare description of SY2022–23 baseline outcome findings (narrative and tables) Clean and merge SY2023–24 student, teacher, and school outcome datasets; review quality of data for meeting assumptions of proposed analyses (e.g., normality, linearity) Conduct analyses of SY2023–24 outcome data, separately by metric as appropriate

[4] Shaded text indicates completed activities.

Year 3 Timing	General Evaluation Activities	Process Evaluation Activities	Outcome Evaluation Activities
Jan – Mar 2025 **COMPLETED**	Weekly meetings with OMI/ALSDE Biweekly supplemental study meetings with OMI/ALSDE Monthly meetings with STEM Council Executive Director Monthly HumRRO-Mathematica team meetings Submit/Disseminate Year 2 annual report (Oct 2023–Sept 2024) Refine/Update ANA evaluation data tracking system	Administer Year 3 annual survey to stakeholders (regional coordinators, district staff, principals [FS and LS], math coaches, math teachers) Refine protocols for spring 2025 virtual focus groups (FGs) with stakeholder groups (regional coordinators, district staff, principals [FS and LS], math coaches, math teachers); sessions will elaborate on and/or clarify survey findings Conduct spring 2025 virtual FGs (regional coordinators, district staff, math coaches)	Compare SY2022–23 and SY2023–24 outcome findings to establish potential trends
Apr – Jun 2025 **COMPLETED**	Weekly meetings with OMI/ALSDE Biweekly supplemental study meetings with OMI/ALSDE Monthly meetings with STEM Council Executive Director Monthly HumRRO-Mathematica team meetings Refine/Update ANA evaluation data tracking system Prepare/Submit April 2025 quarterly memo	Clean annual survey data Analyze Year 3 annual survey data overall and separately by stakeholder type Prepare description of Year 3 survey findings (narrative, tables) Analyze spring 2025 regional coordinator, district staff, and math coach virtual FG data separately by stakeholder type Prepare description of regional coordinator, district staff, and math coach spring 2025 FG findings (narrative, tables) Conduct spring 2025 virtual FGs (principals [FS and LS], math teachers)	Prepare description of SY2023–24 outcome findings (narrative and data visualization/tables); include SY2022–23 and SY2023–24 trends as appropriate Identify procedures for receipt of SY2024–25 outcome data

Year 3 Timing	General Evaluation Activities	Process Evaluation Activities	Outcome Evaluation Activities
July – Sept 2025	Prepare/Submit July 2025 quarterly memo Weekly meetings with OMI/ALSDE Biweekly supplemental study meetings with OMI/ALSDE Monthly meetings with STEM Council Executive Director Monthly HumRRO-Mathematica team meetings Refine/Update ANA evaluation data tracking system	Analyze spring 2025 principal and math teacher virtual FG data separately by stakeholder group Prepare description of principal and math teacher spring 2025 virtual FG findings (narrative, tables) Refine protocols for fall 2025 in-person SVs Identify sample of schools in which to conduct fall 2025 in-person SVs (3 FS and 3 LS schools) Coordinate with OMI/selected school staff to determine procedures for conducting fall 2025 in-person SVs Conduct fall 2025 in-person SVs at identified sample of FS and LS schools	Work with ALSDE to receive SY2024–25 outcome data Clean and merge SY2024–25 student, teacher, and school outcome datasets Conduct analyses of SY2024–25 outcome data, separately by metric as appropriate Prepare description of SY2024–25 outcome findings (narrative and data visualization/tables); include SY2022–23, SY2023–24, and SY2024–25 trends as appropriate

Appendix B: Year 3 Planned ANA Supplemental Studies Activities[5]

Year 3 Timing	Math Coach Evaluation and Student Math Achievement[6]	MTSS and Student Math Achievement	Teacher Math Pedagogy and Student Math Achievement[7]
Oct – Dec 2024 **PARTIALLY COMPLETED**	Work with OMI/ALSDE to receive math coach info for full- and limited support schools (SY2023–24 and SY2024–25 status; number of math coaches each school had SY2022–23, SY2023–24, and SY2024–25; school's math coach funding source; math coach level of training/tier assigned; math coaches' other relevant professional learning) Work with OMI/ALSDE to receive SY2023–24 math coach performance data (performance ratings by principals and regional coordinators) Work with OMI/ALSDE to receive SY2023–24 math teacher performance data (performance ratings by principals and math coaches)	Work with OMI/ALSDE to receive AL-MTSS full-alignment status data and AIR MTSS Fidelity of Implementation rubric scores (SY2022-23; SY2023-24); determine SY2024-25 data availability Coordinate with OMI and regional coordinators to determine frequency and collect aggregate school-level scores on the depth of Tier 1, Tier 2, and Tier 3 instruction (SY2024–25) Work with OMI/ALSDE to receive school-level data on applicable MTSS tiered interventions and supports (SY2024–25) Finalize MTSS implementation questions and discuss with school leadership during fall 2024 in-person site visits (SVs) Analyze fall 2024 in-person SV MTSS implementation data Draft and finalize MTSS implementation questions for Year 3 annual survey	Finalize teacher math content/pedagogy knowledge questions and discuss with school leadership during fall 2024 in-person SVs Analyze teacher math content/pedagogy knowledge fall 2024 in-person SV data Implement validated teacher self-assessment of math pedagogical and domain specific content knowledge in FS and LS schools (SY2024–25) Draft and finalize teacher math content/pedagogy knowledge questions for Year 3 annual survey

[5] Shaded text indicates completed activities.
[6] HumRRO requested that ALSDE/OMI share math coach and math teacher performance data; however, ALSDE/OMI indicated they will not provide these data. We first communicated ALSDE's/OMI's reluctance to provide these data to the STEM Council in October 2024. HumRRO continues to work with ALSDE/OMI to identify coach performance data available for SY2023–24 that may be shared. Select planned study activities have not yet been completed because we have not been provided the necessary math coach and math teacher performance data.
[7] HumRRO requested that ALSDE/OMI share Alabama Teacher Observation Tool (ATOT) data (Essential and Learning dimensions); however, ALSDE/OMI indicated they will not provide these data. We first communicated ALSDE's/OMI's reluctance to provide these data to the STEM Council in October 2024. Select planned study activities have not yet been completed because we have not been provided ATOT data.

Year 3 Timing	Math Coach Evaluation and Student Math Achievement[6]	MTSS and Student Math Achievement	Teacher Math Pedagogy and Student Math Achievement[7]
Jan – Mar 2025 **PARTIALLY COMPLETED**	Clean math coach performance data and merge with student achievement data (SY2023–24) Clean math teacher performance data and merge with student achievement data (SY2023–24) Analyze math coach performance and student math achievement data (SY2023–24) Analyze math teacher performance and student math achievement data (SY2023–24)	Clean full-alignment AL-MTSS/AIR needs assessment/tiered instruction implementation data (SY2022–23 and SY2023–24); merge with student achievement data (SY2022–23 and SY2023–24) Analyze full-alignment AL-MTSS/AIR needs assessment/tiered instruction implementation and student achievement data (SY2022–23 and SY2023–24)[8]	Clean teacher math content/pedagogy knowledge self-assessment data (SY2024–25); merge with student math achievement data Analyze teacher math content/pedagogy knowledge Year 3 survey data (SY2024–25)
Apr – Jun 2025 **PARTIALLY COMPLETED**	Prepare description of math coach performance and student math achievement findings (SY2023–24; narrative and tables) Prepare description of math teacher performance and student math achievement findings (SY2023–24; narrative and tables)	Prepare description of full-alignment AL-MTSS/AIR needs assessment/tiered instruction implementation and student achievement findings (SY2022–23 and SY2023–24; narrative and tables)[9]	Work with OMI/ALSDE to receive SY2024–25 Alabama Teacher Observation Tool (ATOT) learning and essential dimensions subscale data Prepare description of teacher math content/pedagogy knowledge survey (SY2024–25; narrative and tables) Prepare description of teacher math content/pedagogy knowledge self-assessment findings (SY2024–25) Clean ATOT learning and essential dimensions subscale data (SY2024–25)

[8] Analysis is only partially complete due to delay in receipt to promptly clean, merge, and manipulate the SY2022–23 and SY2023–24 data.
[9] Descriptions are only partially complete due to delay in receipt of the SY2022–23 and SY2023–24 data.

Year 3 Timing	Math Coach Evaluation and Student Math Achievement[6]	MTSS and Student Math Achievement	Teacher Math Pedagogy and Student Math Achievement[7]
July – Sept 2025	Work with OMI/ALSDE to receive math coach performance data (SY2024–25) Clean math coach performance data (SY2024–25); merge with student achievement data (SY2024–25) Analyze math coach performance and student math achievement data (SY2024–25) Prepare description of math coach performance and student math achievement findings (SY2024–25; narrative and tables) Work with OMI/ALSDE to receive math teacher performance data (SY2024–25) Clean math teacher performance data (SY2024–25); merge with student math achievement data (SY2024–25) Analyze math teacher performance and student math achievement data (SY2024–25) Prepare description of math teacher performance and student math achievement findings (SY2024–25; narrative and tables)	Clean full-alignment AL-MTSS/AIR needs assessment/tiered instruction implementation data (SY2024–25); merge with student achievement data (SY2024–25) Analyze full-alignment AL-MTSS/AIR needs assessment/tiered instruction and student achievement data (SY2024–25) Triangulate findings from AL-MTSS/AIR needs assessment/tiered instruction, Year 3 annual survey, and student achievement data, as appropriate Prepare description of full-alignment AL-MTSS/AIR needs assessment/tiered instruction and student achievement separate and triangulated findings as appropriate (SY2024–25; narrative and tables)	Merge ATOT learning and essential dimensions data with student math achievement data (SY2024–25); analyze Prepare description of ATOT learning and essential dimensions and student math achievement findings (SY2024–25; narrative and tables) Triangulate teacher math content/pedagogy knowledge (survey and self-assessment), Year 3 annual survey, and student math achievement findings, as appropriate Prepare description of teacher math content/pedagogy knowledge (survey and self-assessment), Year 3 annual survey, and student math achievement triangulated findings (SY2024–25; narrative and tables)

Year 3 Timing	Effectiveness of Screening Assessments	Unintended Consequences of the ANA	Stakeholder Awareness and Satisfaction
Oct – Dec 2024 **COMPLETED**	Work with OMI/ALSDE to receive list of district-approved SY2023–24 screening and diagnostic assessments Work with OMI/ALSDE to receive SY2023–24 student (a) screening and diagnostic assessment data and (b) tiered services or math-related diagnosis classifications[10]	Discuss unintended consequences questions with parents during fall 2024 in-person SVs Analyze fall 2024 in-person SV parent data; prepare findings narrative and tables Draft and finalize unintended consequences questions for Year 3 annual survey	Discuss awareness and satisfaction questions with parents during fall 2024 in-person SVs Analyze fall 2024 in-person SV parent data; prepare findings narrative and tables Draft and finalize stakeholder awareness and satisfaction questions for Year 3 annual survey
Jan – Mar 2025 **COMPLETED**	Calculate classification rates, sensitivity, and specificity of required assessments[11] Draft and finalize screening/diagnostic assessment questions for Year 3 annual survey Draft and finalize screening/diagnostic assessment questions for spring 2025 virtual FGs (regional coordinator, district staff, principal, math coach, math teacher) Discuss screening/diagnostic assessment questions during spring 2025 virtual FGs (regional coordinator, district staff, math coach)	Draft and finalize unintended consequences questions for spring 2025 virtual FGs (regional coordinator, district staff, principal, math coach, math teacher) Discuss unintended consequences questions during spring 2025 virtual FGs (regional coordinator, district staff, math coach)	Draft and finalize stakeholder awareness and satisfaction questions for spring 2025 virtual FGs (regional coordinator, district staff, principal, math coach, math teacher) Discuss stakeholder awareness and satisfaction questions during spring 2025 virtual FGs (regional coordinator, district staff, math coach)

[10] For the 2023-2024 data, we received district name, test name, overall beginning-of-year (BOY) and middle-of-year (MOY) screening assessment scores and BOY possible deficiency for the sample of students taking the two approved screeners (i-Ready and Forefront early numeracy screening assessments). Unavailable data include the MOY for possible deficiency. HumRRO continues to work with ALSDE/OMI staff to identify and receive relevant screening assessment data.

[11] We computed frequency distributions of scale scores by deficiency and conducted Lift and Receiver Operating Characteristic Curve (ROC) analyses for tests of sensitivity. The Lift analysis looks at how effective the predictive model is using the BOY screening assessment scale score for students with a possible math deficiency at EOY compared to a random approach. The ROC is a pictorial representation of the ability of a test to distinguish between true positives and true negatives.

Year 3 Timing	Effectiveness of Screening Assessments	Unintended Consequences of the ANA	Stakeholder Awareness and Satisfaction
Apr – Jun 2025 **COMPLETED**	Conduct preliminary test of assessment classification accuracy Clean screening/diagnostic assessment Year 3 annual survey data Analyze Year 3 annual survey screening/diagnostic assessment data Discuss screening/diagnostic assessment questions during spring 2025 virtual FGs (principal and math teacher)	Clean unintended consequences Year 3 annual survey data Analyze Year 3 annual survey unintended consequences data Discuss unintended consequences questions during spring 2025 virtual FGs (principal and math teacher)	Clean stakeholder awareness and satisfaction Year 3 annual survey data Analyze Year 3 annual survey awareness and satisfaction data Discuss stakeholder awareness and satisfaction questions during spring 2025 virtual FGs (principal and math teacher)
July – Sept 2025	Analyze screening/diagnostic assessment Year 3 spring 2025 virtual FG data by stakeholder type Triangulate Year 3 annual survey and spring 2025 virtual FG screening/diagnostic assessment data, as appropriate Prepare description of screening/diagnostic assessment findings (narrative and tables)	Analyze unintended consequences Year 3 spring 2025 virtual FG data by stakeholder type Triangulate Year 3 annual survey and spring 2025 virtual FG unintended consequences data, as appropriate Prepare description of unintended consequences findings (narrative and tables)	Analyze awareness and satisfaction Year 3 spring 2025 virtual FG data by stakeholder type Triangulate Year 3 annual survey and spring 2025 virtual FG awareness and satisfaction data, as appropriate Prepare description of stakeholder awareness and satisfaction findings (narrative and tables)

Year 3 Timing	Comparison[12]	Cost Effectiveness Analysis
Oct – Dec 2024 **COMPLETED**	Work with ALSDE/OMI to receive outstanding SY2023–24 school math coach and individual math coach performance data Clean SY2023–24 school math coach and individual math coach performance data Conduct preliminary analysis of SY2023–24 school math coach and individual math coach performance data; if sufficient comparison schools, develop plans for retrospective quasi-experimental design (QED) study	Obtain ANA cost data from public sources; verify accuracy with OMI/ALSDE Work with OMI/ALSDE to receive non-public ANA cost data (SY2022–23, SY2023–24, and SY2024–25) Discuss ANA cost questions with school leaders during fall 2024 in-person SVs Draft and finalize ANA cost questions for Year 3 annual survey
Jan – Mar 2025 **COMPLETED**	Identify SY2023–24 final treatment and comparison schools for QED Conduct SY2023–24 impact analysis	Clean ANA cost data obtained from public and non-public sources and school leaders during fall 2024 in-person SVs Clean ANA cost Year 3 annual survey data Draft and finalize ANA cost questions for spring 2025 virtual FGs
Apr – Jun 2025 **PARTIALLY COMPLETED**	Prepare description of SY2023–24 comparison coach study findings (narrative and tables) Work with ALSDE/OMI to receive outstanding SY2024–25 school math coach and individual math coach performance data Clean SY2024–25 school math coach and individual math coach performance data	Discuss ANA cost questions during spring 2025 virtual FGs (regional coordinator, district staff, and math coach as appropriate); discussed with OMI/ALSDE instead Analyze Year 3 annual survey ANA cost data

[12] HumRRO requested that ALSDE/OMI share math coach performance data; however, ALSDE/OMI indicated they will not provide these data. We first communicated ALSDE's/OMI's reluctance to provide these data to the STEM Council in October 2024. HumRRO continues to work with ALSDE/OMI to identify coach performance data available for SY2023–24 that may be shared. Select planned study activities have not yet been completed because we have not been provided the necessary math coach performance data.

Year 3 Timing	Comparison[12]	Cost Effectiveness Analysis
July – Sept 2025	Conduct preliminary analysis of SY2024–25 school math coach and individual math coach data; if sufficient comparison schools, proceed with plans for retrospective QED study Identify SY2024–25 final treatment and comparison schools for QED Conduct SY2024–25 impact analysis Prepare description of SY2024–25 comparison coach study findings (narrative and tables)	Obtain updated ANA cost data from public sources; verify accuracy with OMI/ALSDE Triangulate public and non-public source, fall 2024 in-person SV, Year 3 survey, and spring 2025 virtual FG findings Prepare description of ANA cost findings by year and overall (SY2022–23, SY2023–24, and SY2024–25; narrative and tables)