



The University of Texas at Austin
Charles A. Dana Center

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Climbing the Summit: *Progress and Challenges in Scaling Strong Start to Finish Arkansas* 2018-2021

Since 2018, public community colleges and universities in Arkansas have collaborated to implement and scale mathematics pathways¹ and English and mathematics corequisite supports² to normative practice. This statewide initiative, called Strong Start to Finish Arkansas (SStF Arkansas), is supported by a community of practice and technical assistance from the Charles A. Dana Center at The University of Texas at Austin. SStF Arkansas colleges and universities have worked tirelessly to help students enter directly into mathematics pathways that are aligned to their programs of study and complete their introductory college-level mathematics course in their first year of college.

This report outlines the progress toward SStF Arkansas Initiative goals. It also presents the persistent scaling challenges that Arkansas higher education stakeholders face, as they work to increase equitable access and outcomes in undergraduate English and mathematics. Leveraging data to mobilize and motivate stakeholders, Arkansas colleges and universities have the means to dramatically reduce inequities and accelerate their efforts to help every student reach the summit of their academic and career goals.

¹ **Mathematics pathways** are a mathematics course or sequence of courses that students take that meet the requirements of their post-secondary programs of study.

² **Corequisite support** is a course design in which students who are assessed below college readiness in mathematics are enrolled in a first-year college mathematics course and receive additional academic support in college-level content concurrently with the college-level material. This model ensures that a student could complete a college-level gateway mathematics course within one academic year or less.

Leveraging Progress to Scale and Sustain for Long-Lasting Impact

Since the launch of the SStF Arkansas Initiative in 2018, a coalition of stakeholders across the state’s 32 public community colleges and universities have worked toward achieving the following goals and its impact targets to modernize undergraduate mathematics education and to intentionally place underprepared students into English and/or mathematics corequisite supports.

SStF Arkansas Goals	Student Impact
<p>Goal 1. All Arkansas public institutions of higher education will use data to improve courses, advising, and processes and will prioritize the use of data toward improving equitable access, learning, and outcomes for Black, Latinx, and Indigenous students as well as Pell-eligible and first-generation students.</p>	<ul style="list-style-type: none"> ● Racial and income inequities in student access, learning, and outcomes will be reduced for Black, Latinx, and Indigenous students as well as Pell-eligible and first-generation students.
<p>Goal 2. All Arkansas public institutions of higher education will have implemented mathematics pathways as normative practice.</p>	<ul style="list-style-type: none"> ● More students exit high school prepared for diverse entry-level college mathematics course offerings.
<p>Goal 3. All Arkansas public institutions of higher education will scale corequisite structures in all mathematics pathways for at least 75% of underprepared students, with all underprepared students being about to complete their first college-level mathematics course in 1 year.</p>	<ul style="list-style-type: none"> ● More students complete college-level mathematics aligned with their intended program of study within their first year.
<p>Goal 4. All Arkansas public institutions of higher education will scale corequisite structures in English for at least 75% of underprepared students, with all underprepared students being about to complete their first college-level English course in 1 year.</p>	<ul style="list-style-type: none"> ● More students complete college-level English within their first year. ● More students complete a certificate or degree and secure post-graduation opportunities that promote family-sustaining wages.

In 2020 and 2021, timelines for accomplishing these goals were slightly altered due to the COVID-19 pandemic. The Charles A. Dana Center and state education leaders (i.e., Arkansas Division for Higher Education, Arkansas Community Colleges) recognized the immense dedication of stakeholders, who refocused their vision and strategies and continued their transformative work despite these unforeseen challenges.

Progress toward each goal is described below, showing the critical use of data collection and analyses in this statewide effort. This report also discusses scaling challenges that hinder efforts to sustain long-lasting impact and shares recommendations on how to overcome those concerns.

Goal 1. Use Data to Improve Equitable Access, Learning, and Outcomes Slow Progress with Optimistic Outlook

In fall 2020 and spring 2021, the Charles A. Dana Center facilitated several virtual workshops for SStF Arkansas campus teams to address challenges to scaling mathematics pathways, and English and mathematics corequisite supports. Each event intentionally integrated state- and institution-level data to strengthen local discussions of where and how leaders could improve their campuses’ efforts toward statewide goals. One event, “Data Coaching Part I,” supported campus teams to use data for equity-driven discussions that would inform their student success efforts.

Statewide disaggregated data revealed that females were equitably served for placement into developmental mathematics and had equitable access to mathematics corequisite supports.ⁱ Additionally, females had equitable outcomes for completion of mathematics corequisite support and their college-level mathematics course. In contrast, male students, Pell-eligible students, and students of color, specifically Black and Hispanic students, experienced the greatest inequities as they were over-placed in developmental mathematics, had diminished access to mathematics corequisite support, and trailed in college-level mathematics course completion.



To sustain long-lasting impact for student access and success, Arkansas higher education stakeholders must continue to intentionally collect, analyze, and interrogate disaggregated data of their student population. Using aggregate data solely to assess progress toward SSTF Arkansas goals and student impact will only perpetuate inequities among the most disadvantaged students.

Goal 2. Implement Mathematics Pathways to Normative Practice

Significant Progress but Lagging Student Enrollment in Quantitative Literacy



Significant progress has been made to implement and scale mathematics pathways. As of September 2021, **100% of Arkansas public colleges and universities offered at least two well-defined mathematics pathways:** College Algebra and Quantitative Literacy (as known as Mathematical Reasoning). Quantitative Literacy (QL) has been widely adopted pursuant to the Arkansas Division for Higher Education (ADHE) and the Arkansas Course Transfer System (ACTS) Math Review Committee [recommendations](#), issued in spring 2018. As of fall 2021, **Arkansas public universities have scaled 89% of the recommendations,**

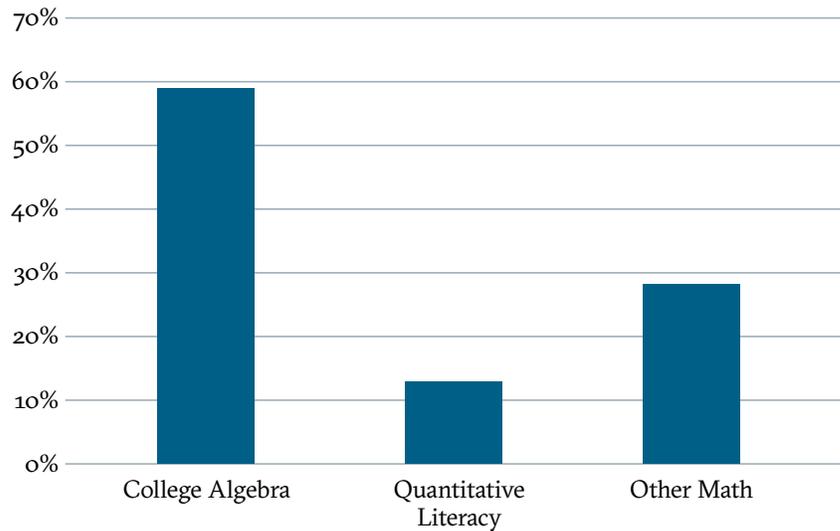
which represent almost 45% of all undergraduate degrees that accept QL, instead of College Algebra, as its general education math requirement. Statewide higher education activity to adopt and scale the ACTS QL recommendations are a concerted effort to promote efficient and predictable transfer and applicability of mathematics credits across institutions.

The most recent SSTF Arkansas Math Pathways Transfer Inventory Guide, which lists Arkansas public universities accepting QL for their programs of study, can be downloaded here: <https://utexas.box.com/v/SStFAR-MathPathwaysGuide>

Although there has been notable advancement in the adoption and scaling of the ACTS QL recommendations, slow or absent processes and practices have impeded the shift of student enrollment into this mathematics course.

In fall 2020, 17,682 students were enrolled in introductory college-level mathematics courses across 30 public colleges and universities, of which 59% (10,409) were enrolled in College Algebra and 13% (2,271) were enrolled in Quantitative Literacy. An additional 28% of enrolled students took other introductory college-level mathematics courses, such as Technical Mathematics, Trigonometry, PreCalculus, etc.

Fall 2020: Distribution of Student Enrollment in Introductory College-Level Mathematics



Note: Data are from 21 Arkansas public community colleges and 9 public universities.



To sustain long-lasting impact of the SStF Arkansas Initiative, community colleges and universities must actively promote student enrollment into Quantitative Literacy. QL is a well-designed math course that is both rigorous and relevant to students' desired area of study and applicable to everyday activities, bolstering greater levels of motivation and engagement among students.ⁱⁱ QL demonstrates rigor by fostering the problem-solving and reasoning skills that are needed in future courses and careers in engaging ways, emphasizing critical thinking, mathematical application, and communication. Students, especially students of color, are more likely to engage in mathematics and form a mathematics identity when they see the relevance between what they are learning and their communities.ⁱⁱⁱ

Goals 3 and 4. Scale Corequisite Supports in English and All Mathematics Pathways for at Least 75% of Underprepared Students

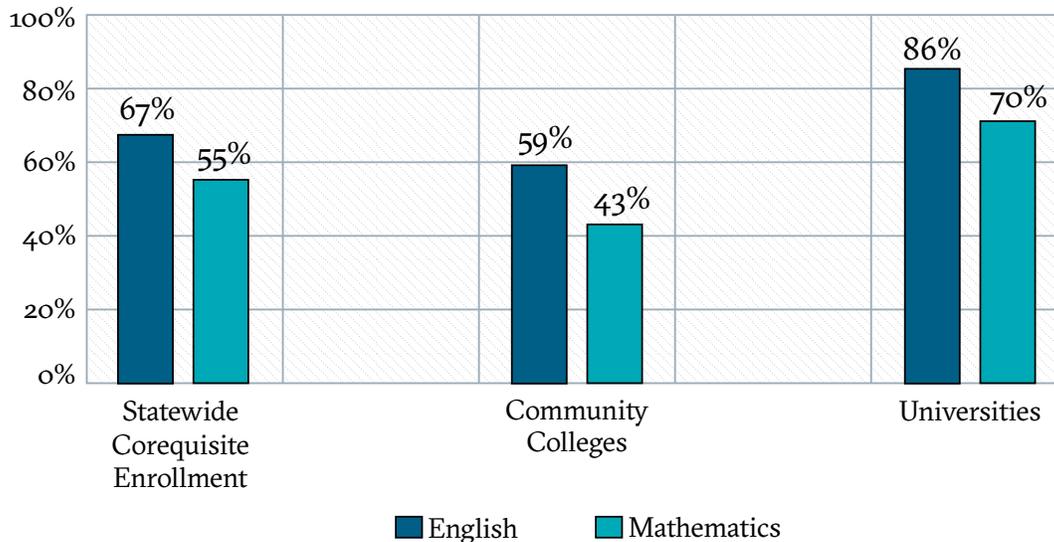
Progress but Unequal Representation Across Sectors

Across Arkansas public community colleges and universities, efforts to scale English and mathematics corequisite supports for at least 75% of underprepared students are evident, with the aim of having all underprepared students complete their first college English and/or mathematics course in one year. Across the state, **fall 2020 student enrollment revealed 67% of students identified as underprepared in English were enrolled in English corequisite support** with their introductory college-level English course, **while 55% of students identified as underprepared in mathematics were enrolled in mathematics corequisite support** with their introductory college-level mathematics course.

Disaggregating fall 2020 corequisite enrollment rates by higher education sector continued to reveal clear progress for each academic area; however, there was evidence of unequal representation in corequisite support enrollment progress across sectors. **Arkansas public universities and community colleges differed in their English corequisite support enrollment rates by 27**

percentage points (86% and 59%, respectively). Similarly, mathematics corequisite enrollment rates differed by 27 percentage points for each sector (70% and 43%, respectively).

Fall 2020: Statewide Underprepared Student Enrollment in English and Mathematics Corequisite Supports



Note: Data are from 21 Arkansas public community colleges and 9 public universities.

What is less known, to date, are the state- and sector-wide underprepared student completion rates in introductory, college-level English and mathematics courses in one year. Challenges persist in data collection, reporting, and entry efforts for underprepared student completion.

However, each participating SStF Arkansas college and university has access to campus-specific data that define fall 2016, 2019, and 2020 student outcomes for both underprepared and college-ready students. Analyzing and interrogating these data are necessary steps to ascertain which students are benefitting from the campus’s efforts and which students are being left behind, and to determine how to encourage continuous improvement and professional development for faculty and staff immersed in the work.

To further scale English and mathematics corequisite supports and sustain long-lasting impact for student success, community colleges and universities are encouraged to consider a three-prong approach to their corequisite support scaling efforts:



1. Use and/or expand multiple measures for student placement (e.g., high school GPA, high school grades, student motivation survey).
2. Backward map learning outcomes for the corequisite support course from the readiness competencies of each introductory college-level course.
3. Incorporate evidence-based instructional approaches to motivate and engage learners.

Action to Scale Mathematics Pathways and English and Mathematics Corequisite Supports

This report highlights the efforts, through the SStF Arkansas Initiative, to increase access and outcomes for Arkansas students. However, there is still work to be done to meet the four goals described here and to close inequities that persist for students.

It is clear that Arkansas community colleges and universities possess the expertise and passion to mobilize their efforts in a unified vision of increasing student access and success toward introductory, college-level English and mathematics courses. The current and future adaptive challenges, nonetheless, require additional focus to expand leadership capacity; dismantle systemic policies, processes, and practices that do not support disadvantaged students; increase student placement in English and mathematics corequisite supports for underprepared students; and actively promote and encourage more students to enroll in Quantitative Literacy as aligned to their desired areas of study.

How Can Your Campus Amplify Its Efforts?

- Expand involved higher education stakeholders—the more involved in the work, the greater likelihood of sustaining the work beyond a select few.
- Analyze and interrogate campus-level data to understand the current context of progress, identify blind spots, and, where appropriate, celebrate successes.
- Identify and prioritize efforts on focus areas that will make the quickest impact for students, such as encouraging greater student enrollment in QL for applicable programs, expanding student placement guidelines into corequisite supports, and reducing or eliminating prerequisite remedial courses.
- Incorporate professional learning opportunities that align with identified focus areas (e.g., training for QL faculty to teach the course).
- Establish consistent communication activities with campus stakeholders, especially students, to inform them of ongoing progress or challenges. Elevate student voices—they are the **why** that motivates the work!

Endnotes

ⁱ Each Arkansas college and university were provided a representational equity table using the Equity Index Method as a data tool to measure equity. See **Data Tools** by The Center for Urban Education: https://static1.squarespace.com/static/5eb5c03682a92c5f96da4fc8/t/5f3a1a566ced5eoad47879fb/1597643354901/Data+Tools_Summer2020.pdf

ⁱⁱ Rutschow, E. Z., & Diamond, J. (2015). *Laying the foundations: Early findings from the New Mathways Project*. https://www.mdrc.org/sites/default/files/New_Mathways_FR.pdf

ⁱⁱⁱ Dadgar, M., Buck, D., & Burdman, P. (2021). *Solving for equity: Design and implementation of new postsecondary math pathways*. <https://justequations.org/wp-content/uploads/Just-Equations-2021-Report-Solving-for-Equity-Digital.pdf>



About this resource

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About the Dana Center

The Dana Center develops and scales math and science education innovations to support educators, administrators, and policy makers in creating seamless transitions throughout the K-14 system for all students, especially those who have historically been underserved.

We focus in particular on strategies for improving student engagement, motivation, persistence, and achievement.

The Center was founded in 1991 at The University of Texas at Austin. Our staff members have expertise in leadership, literacy, research, program evaluation, mathematics and science education, policy and systemic reform, and services to high-need populations.

For more information about the Dana Center Mathematics Pathways (DCMP), see www.dcmathpathways.org.

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