# Blended Learning Math Programs

<table>
<thead>
<tr>
<th>TEA Strategic Priority:</th>
<th>#2—Build A Foundation in Reading and Math</th>
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<tr>
<th>Statutorily allowable use of funds:</th>
<th><strong>Title I, Part A:</strong> Improving Basic Programs—<em>Schoolwide Programs</em>: Supplemental programs or activities that strengthen the academic program of the school, targeting specific, identified needs and offering students, particularly those failing, or at risk of failing to meet standards, opportunities to meet State academic standards.</th>
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<tbody>
<tr>
<td></td>
<td>**Title IV, Part A—<em>Education Technology</em>: Carrying out blended learning projects, to include—planning activities, which may include development of new instructional models (including blended learning technology software and platforms), the purchase of digital instructional resources, initial professional development activities, and one-time information technology purchases not related to significant construction or renovation of facilities.</td>
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## Project Summary

TEA encourages LEAs to review and replicate high impact blended learning math programs that “early adopter” Texas schools are using, those that have been shown to dramatically improve student academic outcomes. This is the one the highest returns on investment that the state can achieve. TEA has invested in new strategies to support LEAs replicating effective blended learning math programs.

**LEA Financial Commitment** (start-up and annual costs) *

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  *When possible, TEA staff has estimated costs by major expenditure categories used in the ESSA Consolidated Application and the Expenditure Reporting (ER) System. Costs, such as locally-determined salaries, benefits, and wages, could not be estimated.*

## Project Description

Blended learning early adopter LEAs in Texas are finding increased levels of student engagement, as assessed by structured classroom observations; increased concept knowledge and skills mastery of participating students; improved student performance on short-cycle assessments; and increases in student achievement on STAAR math content area assessments and Algebra I End of Course exams.

Blended learning academic models thoroughly integrate education technology into regular classroom instruction. These instructional strategies increase the number of high-quality resources available for teachers to personalize learning. Early adopter LEAs often implemented one of four blended learning models: rotation, flex, self-blend, or enriched virtual classrooms described by Staker, H. & Horn, M. (2012) in *Classifying K–12 Blended Learning* from the Innosight Institute. LEAs and schools also adapted these models to meet specific locally-identified needs. Information on student outcome gains based on the work of early adopting LEAs is now available to inform efforts to bring high-quality blended learning to scale.

In rotation models, students rotate on a fixed schedule, or at the teacher’s discretion between learning modalities, at least one of which is online learning. Other modalities include: small-group or large-group instruction, project-based learning in student groups, individual tutoring, and pen-and-paper activities. Four early variations of rotation models included the following:
• In station rotation, students rotate on a fixed schedule or at the teacher’s discretion. The teacher may simultaneously rotate all students or may rotate students through different stations based on grouping of students into small-groups to address specific instructional goals.
• In lab rotation model, students move among different classrooms in schools, instead of staying in one classroom. One classroom is a learning lab reserved for online learning.
• In flipped classrooms, students rotate on a fixed schedule between teacher-guided project-based learning and activities during the school day and online instruction after school that delivers content and instruction online, beyond online homework.
• Individual rotation allows students to rotate between stations on an individually customized schedule, and some time is spent in online learning. Teachers develop the individual student schedule.
• The flex model offers content and instruction primarily online, and students move through a customized schedule among learning modalities. The teacher is onsite and gives support, as needed. In Self-Blend Models, students select online courses to supplement the school’s offerings. The online learning of remote, but classroom learning is at school. Finally, the Enriched Virtual Model allows students to divide their time between attending class at school and learning remotely using online delivery of content and instruction.

Goals and Student Achievement

Objectives Expected Outcomes

The list below offers a sample of expected outcomes formatted as SMART goals (the percentage of_____ will increase from X% to Y% by Z or the number of____will increase from X to Y by Z).

• The percentage of students who meet STAAR Progress Measure in Math on the state exams will increase from X% to Y% by Z.
• The percentage of students who exceed STAAR Progress Measure in Math on state exams will increase from X% to Y% by Z.
• The percentage of students who meet or exceed the STAAR Progress Measure in Math on the state exams will increase from X% to Y% by Z.
• The percentage of students who did not meet standard or exceed STAAR Progress Measure in Math on the state exams will decrease from X% to Y% by Z.

Training or Support TEA Offers

TEA offers Math Academies focused on professional development for teachers specific to math standards. The Academies offer training to advance teacher understanding of standards. Additional resources are available on the Learning Support and Programs page of TEA’s web site.

Required Activities or Components

• Identify Needs: clearly show the specific mathematics need or challenge your school or district is trying to address with a math blended learning initiative.
• Review and evaluate the blended learning models piloted by early adopting entities.
• Plan for the blended learning math program, to include setting goals, developing timelines, finding and collecting data to measure success, collaboration time with education technology developers and researchers.
• Collaborate with blended leaning education technology developers and evaluation teams to develop ongoing professional development and coaching work plans for teachers, school leaders, and LEA administrators.
Program Duration, Timeline, Significant Milestones

Implementing a blended learning math program requires a commitment to planning time. LEAs and schools should begin with inventorying the education technology resources available for math blended learning initiatives, to include hardware, software, and online resources. Academics, curriculum, and technology offices or departments must collaborate to identify hardware, networks, software, and/or online curriculum platforms that meet LEA technology standards and will be supported by staff for multiple years.

Staffing Requirements for LEAs

LEAs preparing to implement a blended learning math program should assess the capacity of education technology staff and of coaching and math content area specialists to support a multi-year math education technology initiative.

Resources

The following resources offer LEAs information on blended learning models and student outcomes gains achieved by early adopters.

- TEA’s Learning Support and Programs page
- Texas Virtual School Network
- Technology Planning and Technology Resources links on TEA’s Learning Support and Programs page.
- Classifying K-12 Blended Learning
- Blended Learning: The Convergence of Online and Face-to-Face Education
- Instructional Practices: Integration of Optimal Evidence-based Practices
- Summary of Research on Online and Blended Learning Programs that Offer Differentiated Learning Options from IES’s Regional Educational Laboratory
- What Works Clearinghouse’s Quick Review of Access to Algebra I: The Effects of Online Mathematics for Grade 8 Students

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