

GOVERNOR'S STEM ADVISORY COUNCIL

dedicated to building a strong STEM education foundation for all Iowans

January 13, 2016, 6:00pm

Iowa Governor's STEM Advisory Council Executive Committee,

In 2011 the STEM Council Executive Committee established Scale-Up as Iowa's mechanism for identifying the best know STEM programs, and for delivering those world-class learning opportunities to children across the state, regardless of geography or socioeconomics. To date, over 44 percent of all Iowa preK-12 youth have participated. Their state test scores and attitude surveys prove the program is increasing performance and inspiring greater interest in STEM.

Last year the STEM Council operations team partnered with Change the Equation (CtEq) to identify exemplars for scaling in Iowa while also populating the CtEq STEMworks Database. The partnership has brought high-level quality control to Iowa's identification process through the training of reviewers, and has broadened the applicant pool through CtEq's international reach.

Forty-two proposals were received for Iowa Scale-Up 2016-17. A total of 23 reviewers were trained by CtEq to use a highly respected Design Principals rubric for selection. Each proposal was evaluated by at least three trained reviewers. Numerically ranked proposals were then qualitatively evaluated by the Iowa STEM network team (Regional STEM Managers and Operations staff) to consider such factors as PreK-12 distribution, S-T-E-M distribution, diversity appeal, scalability, cost per unit, rural and urban applicability, sustainability, and when appropriate, support of broader Iowa education goals of reading and arts integration.

The result are the following eleven recommended programs for Scale-Up in 2016-17:

Recommend for Scale-Up 2016-2017	Scale-Up Program Title	Program Description	Grade Levels	In School	Out of School	S, T, E, or M
Yes	CASE Introduction to Agriculture, Food and Natural	Introduction to Agriculture, Food, and Natural Resources is an introductory course designed to teach students about the world of agriculture, the pathways of study they may pursue, and the science, math, reading, and writing components they will use throughout the curriculum and beyond to post-secondary.	9-12	X		STEM

	Resources - AFNR					
Yes	CASE Natural Resources Ecology - NRE	Natural Resources and Ecology is a foundation-level course that provides students with a variety of experiences in the fields of natural resources and ecology through field and lab experiences.	9-12	X		STEM
Yes	Engineering is Elementary	Integrates engineering and technology concepts and skills with elementary science topics. Also connects with literacy and social studies.	1-6	X	X	STEM
Yes	FIRST Robotics Competition (FRC)	FIRST brings together an alliance of business leaders, educators, mentors, volunteers and technology organizations to help young people design, program, and build sophisticated robots to compete in technical, sports-like events.	9-12		X	T, E, M
Yes	HyperStream	The HyperStream program has a strong focus on the "Technology" aspect of STEM. Students opt to participate in 5 major areas; Robotics, Multi-Media, Application Development, Cyber Defense and Game Design. Each Iowa club matched with an industry mentor.	5-12	X	X	T
Yes	Making STEM Connections (Science Center of Iowa)	Making STEM Connections aims to empower teachers to infuse their existing curriculum into the world of making with the result of authentic learning for their students. Utilizing both familiar and unfamiliar materials, students can create something through a hands-on process based on what they already know supplemented by new and evolving skills	3-5	X	X	S,T, E (A)
Yes	PLTW Biomedical Science Principles of Biomedical Science	Principles of Biomedical Science in addition to the obvious Biomed thrust also integrates Standards in Reading, Writing, and Language; Mathematics Standards in Algebra, and Statistics & Probability; and Science Standards in Life Sciences, Physical Sciences, and Engineering, Technology, and Applications of Science.	9-12	X		S, T
Yes	PLTW Computer Science Intro to Computer Science	Introduction to Computer Science in addition to the obvious CS principles and skills, integrates Standards in Reading, Writing, Speaking and Listening, and Language; Mathematics Standards in Number and Quantity, Algebra, and Statistics & Probability; and Engineering, Technology, and Applications of Science.	9-12	X		T, E, M

Yes	PowerTeaching Math	PowerTeaching is a structured cooperative learning program in which students work in teams to help each other solve problems and build mathematical understanding. Students are motivated to explain mathematical concepts to each other, fix misconceptions, and challenge each other to excel.	6-8	X		M
Yes	SEPUP	The Science Education for Public Understanding Program (SEPUP), developed at the University of California at Berkeley's Lawrence Hall of Science and distributed by LAB-AIDS, Inc. SEPUP develops comprehensive and supplemental science curriculum materials and resources targeted at diverse student populations.	5-12	X		S
Yes	ST Math	Developed by the MIND Research Institute, Spatial Temporal (ST) Math uses visual, language-independent animation to teach math concepts to improve spatial-temporal reasoning, or the innate ability to manipulate objects in space and time, an ability at the core of innovative thinking and sophisticated problem-solving.	K-6	X		M
No	A World in Motion	AWIM Engineering Design Experience (EDE) problem solving process allows students to work within an integrated structure to solve a "challenge" to design, build, and test a prototype, then defend their design through a presentation.	K-8	X	X	S,E, M
No	Camp Invention	Camp Invention is a weeklong summer program for children in grades 1-6 with curricula focused on developing creativity, inventive thinking, and problem solving skills through hands-on STEM content	1-6		X	ALL
No	CASE Agricultural Power and Technology	Throughout the course, students apply technical skill while becoming competent in the process used to operate, repair, engineer, and design agricultural tools and equipment.	9-12	X		S,T
No	CASE Agricultural Research and Development	Agricultural Research and Development is the capstone course designed to culminate students' experiences in agriculture, based on the pathway of study they pursued. Expands on content knowledge from previous CASE courses.	9-12	X		STEM

No	CASE Animal and Plant Biotechnology	Through Animal and Plant Biotechnology, a specialization-level course in the CASE program of study, students become proficient at projects involving micropipetting, bacterial cultures and transformations, electrophoresis, and polymerase chain reaction.	9-12	X		STEM
No	CASE Food Science and Safety	In Food Science and Safety, a specialization-level course in the CASE program of study, students will explore the science behind food through chemistry and microbiology, food safety, and processing.	9-12	X		S,T,M
No	CASE Principles of Agricultural Science - Plant	Principles of Agricultural Science—Plant is a foundation-level course that will teach students about the form and function of plant systems.	9-12	X		S
No	CASE Principles of Agricultural Science - Animal	Principles of Agricultural Science—Animal is a foundation-level course designed to engage students in hands-on laboratories and activities to explore the world of animal agriculture.	9-12	X		S
No	Ten80	NASCAR STEM Initiative is a "practice league" through which middle and high school students use electric radio controlled cars to create products and work together.	6-12	X	X	STEM
No	Engineering the Future	Engineering the Future: Science, Technology, and the Design Process (TM) is a full-year ninth-grade course designed to introduce ALL students to the world of technology and engineering.	8-12	X		E
No	FIRST Tech Challenge	FIRST brings together an alliance of business leaders, educators, mentors, volunteers and technology organizations to help young people design, program, and build sophisticated robots to compete in technical, sports-like events.	7-12	X	X	STEM
No	Intel Math	Intel Math is designed to compensate for deficiencies in the mathematics training of elementary school teachers who aren't equipped to prepare their students for challenging mathematics.	K-8	X		M
No	Iridescent	Iridescent leverages engineers and parents to address the STEM achievement gap. We use in-person, project-based curriculum, educate and empower parents to run hands-on science projects in their homes.	pre K-12	X	X	STEM

No	MAD-learn	This program introduces students to the inclusive mobile application development process, utilizing a professional, online tool to enable students to make their own mobile applications in teams.	2-12	X	X	T
No	Pint Size Science	Each experience of Pint Size Science is structured around a central theme or scientific principle, and includes interactive investigations of that topic.	pre K-K	X	X	S
No	PLTW Biomedical Science Human Body Systems	Human Body Systems – a PLTW high school Biomedical Science pathway course in Health Science and Human Anatomy.	9-12	X		S
No	PLTW Biomedical Science Medical Interventions	Medical Interventions – a PLTW high school Biomedical Science pathway course in Health Science and Human Anatomy.	9-12	X		S
No	PLTW Computer Science Applications	Computer Science Applications – a PLTW Computer Science high school pathway course in CS.	9-12	X		T
No	PLTW Computer Science Principles	Computer Science Principles (also referred to as “Computer Science and Software Engineering” or “CSE”) – a PLTW Computer Science or PLTW Engineering pathway course in CS.	9-12	X		T
No	PLTW Engineering Environmental Stability	Environmental Sustainability – a PLTW high school Engineering pathway course in environmental science.	9-12	X		S,T, E
No	PLTW Engineering Principles of Engineering	Principles of Engineering – a PLTW high school Engineering pathway course in engineering.	9-12	X		E
No	PLTW Gateway to Technology	PLTW’s recommended Gateway units for STEM Scale-up middle schools.	6-8	X		T,E
No	PLTW Launch	PLTW Launch – the elementary school program and foundation for PLTW’s K-12 curricular pathways.	K-5	X		STE M

No	Reasoning Mind Foundations	Foundations delivers an adaptive, individualized path through the curriculum for each student, providing feedback, repeated explanations, or extra practice as needed.	2-4	X		M
No	Reasoning Mind Smarter Solving	Smarter Solving is adaptable so that students are appropriately challenged. Interactive solutions teach crucial problem-solving skills so that students can solve complex problems of varying Depth of Knowledge levels and varying difficulty levels.	3-5	X		M
No	Reflex	ExploreLearning Reflex helps students of all ability levels to develop fluency with their basic facts in addition, subtraction, multiplication and division.	2-8	X		M
No	Mathspace	Mathspace is the world's first adaptive math program allowing students to show all their work for every math question. Students write each step of their math reasoning, and Mathspace's StepSmart technology grades each line immediately.	5-12	X		M
No	Imagination IOWA	Imagination IOWA encourages creativity, fosters entrepreneurship, and helps kids learn how to code.	pre K-12	X	X	E
No	Crazy 8s Club	Crazy 8s is a high-energy afterschool club designed to get elementary school kids fired up about math.	K-5		X	M
No	DreamBox Learning Math	DreamBox(R) Learning Math offers a personalized K-8 digital math learning experience where our Intelligent Adaptive Learning technology captures every interaction a student makes while working within and between lessons.	K-8	X		M
No	EverFi's STEM Readiness	EverFi's STEM Readiness suite of courses aims to equip students with foundational skills and motivate students to pursue careers in these areas.	4-10	X	X	STEM