Richard Woods, Georgia's School Superintendent
"Educating Georgia's Future"

Georgia STEAM Certification Continuum for Middle School

Criteria	Continuum Pre-Implementation Implementation →			Full
1. STEAM Vision and Culture	No vision is in place and there is no STEAM culture evident in the school.	→		The vision for STEAM is clearly defined and a STEAM culture has been established within the program and/or school (students articulate through their actions a passion and perception that STEAM is the culture of the school).
Required: ***Note - * The terms "Fine Arts" and "Arts" throughout all STEAM certification documents is defined as Dance, Music, Theatre and Visual Arts*** 1. The STEAM vision for the school/program is written. The school provides evidence that a STEAM culture has been established (it is the school's decision how they will show this).				
2. STEAM students (Not applicable for whole school certification)	No students are identified as STEAM.	STEAM students are identified.	STEAM students are identified and a selection process is described.	A school designed selection process that has been vetted with successful longitudinal evidence identifies STEAM students.
Required: 1. Students are selected based upon specific criteria such as academic achievement, interest, standardized test scores, lottery, random selection, etc. 2. All course options for STEAM students are in a written document 3. A copy of the STEAM application for the STEAM program/school.				

3. Non-traditional student participation in STEAM (minorities, females, and economically disadvantaged)	The non-traditional student participation does not reflect the diversity and gender of the school district.	A plan is being developed for outreach, support, and focus on non-traditional student populations.	A plan is in place for outreach, support, and focus on non-traditional student populations.	The non-traditional student participation reflects the diversity of the school in terms of gender, minorities, and economically disadvantaged.
Required: 1. Documentation of non-traditional student participation (The term Nontraditional Careers refers to jobs that have been traditionally filled by one gender. The US Department of Labor defines Nontraditional Occupations as occupations for which individuals from one gender comprise less than 25% of the individuals employed in each such occupation. For certification purposes, the definition is expanded to include minorities and economically disadvantaged).				
4. Characteristics of the STEAM curriculum	Students in the STEAM program follow a similar curriculum as students not in the STEAM program.	A plan is being developed for an explicit and unique curriculum for STEAM students or a specific curriculum for STEAM students is currently implemented only in some of the school's grade levels.	There is a plan in place to expand an explicit and unique curriculum from grade level to multiple grade levels and to maintain sustainability.	STEAM students are exposed to a unique and explicit curriculum that is different from non-STEAM students and there is evidence of its sustainability (three plus years). The STEAM curriculum should support one or more of the GaDOE STEAM focus areas: advanced academics, agriculture, architecture, biotechnology, computer science, cyber security, energy, engineering, food science and nutrition, forensic science, and/or health care science ***plus arts integration.***
Required: 1. Written description of the unique characteristics of the STEAM curriculum. 2. The school's STEAM focus area is described.				
EXAMPLE ARTIFACTS THAT SUPPORT STEAM EFFORTS • The curriculum offers opportunities for student presentations of investigations and findings *through an art form* • There is evidence that students engage in regular "arguments from evidence" during classroom instruction • There are opportunities for students to interact with STEAM professionals to support curriculum • There are opportunities that involve older students working with elementary students in the STEAM program				

• There are opportunities for students to interact with business/community/arts/museum/university partners to support curriculum • A school foundation composed of parents, community, arts, and business partners has been established to maintain sustainability • An entrepreneur component of the STEAM program may be in place.				
5. Teacher Content Knowledge	None of the STEM teachers are working toward increasing content knowledge in science and math. Fine Arts teachers are uncertified in their subject area.			Fine Arts Teachers are all content matter experts holding certification in their subject area. STEM teachers are *working toward* increasing content knowledge in science and math through multiple means such as: • science and/or math endorsements • STEM Endorsement (available from the GA PSC school year 2018-19) • additional coursework in math and/or science at the post-secondary level • content collaboration with business/industry or post-secondary partners • externships
Required: 1. Documentation of method/procedures implemented for increasing math and science content knowledge for all STEM teachers. 2. Documentation of method/procedures implemented for increasing fine arts teachers content knowledge and arts integration content knowledge of STEAM teachers. 3. Documentation of the plan for sustaining content knowledge and induction of new STEAM teachers.				
6. Teacher Professional Learning	There is not STEAM related professional development currently	STEAM teachers attended at least one STEAM professional learning event.	STEAM teachers have on-going STEAM-specific professional learning (specific	STEAM teachers have on-going STEAM professional learning and STEAM specific

	being planned or that has been offered in the last year. Arts integration training has not been provided for general education classroom teachers.	Arts integration training for general classroom teachers has occurred at least once.	to their STEM or Arts focus) and there is evidence of its implementation in classroom instruction. Fine arts teachers have been provided with specific content training for their subject area.	strategies relating to the school's identified STEAM focus area and there is evidence of implementation in classroom instruction. Arts integration training is ongoing throughout the school year.
Required: 1. Documentation of STEAM specific professional learning for all STEAM teachers that incorporates the following: • Project/problem/place-based learning • Arts integrated instruction • Investigative research-based practices • Collaborative planning practices • Improve the STEM-focused content knowledge (advanced academics, agriculture, architecture, biotechnology, computer science, cybersecurity, energy, engineering, food science and nutrition, forensic science, and/or health care science). • Increase of the fine arts focused content knowledge (dance, music, theatre and visual arts) 2. Documentation of visits to other STEM Certified Schools and STEAM focused schools (what school staff visited and location)**.**				
EXAMPLE ARTIFACTS THAT SUPPORT STEAM EFFORTS • STEAM teachers have tailored professional learning to their specific needs and/or to their STEM or fine arts focus area. • STEAM teachers participate in a job-embedded or practice-based approach to professional learning • STEAM teachers attend STEM, STEAM, and/or fine arts content area state, regional, and national conferences • STEAM teachers present at STEM, STEAM, and/or fine arts content area state, regional, and national conferences • STEAM teachers/administrators have visited other STEM Certified Schools or STEAM focused Schools • STEAM teachers observe other STEM/STEAM, and fine arts teachers (peer observations, instructional rounds, etc.) • STEAM teachers participate in project/problem-based learning professional learning • STEAM teachers participate in professional learning related to STEAM integration • STEAM teachers participate in professional learning to strengthen STEAM and fine arts content knowledge and skills • STEAM teachers participate in arts integration training				
7. Teacher Collaboration	There is no collaboration or collaboration is not structured or planned.	Teachers collaborate quarterly to plan integrated lessons, share/co-create STEAM activities, and plan learning outcomes.	Teachers have a set time they collaborate at least monthly together to plan integrated lessons, share/co-create STEAM activities, and plan learning outcomes.	Teachers collaborate at least bi-monthly to plan integrated lessons, share/co-create STEAM activities, and plan learning outcomes.

Required: 1. Documented evidence of weekly STEAM collaborative planning time (minutes, generated artifacts, agendas, etc.).				
8. Math, Science, and Fine Arts Instruction	Students do not take high-level math and science coursework. Students do not taking daily fine arts instruction.	<50% of the 8th grade STEAM students are enrolled in high school level math, science, and fine arts courses.	~75% the 8th grade STEAM students are enrolled in high school level math, science, and fine arts courses. Additional supports are instituted to assist students in meeting these expectations.	All 8th grade STEAM students are enrolled in high school level math, science, and fine arts courses and may be offered high school CTAE courses. The school provides additional supports to assist students in meeting these expectations.
Required: 1. Documentation of the number of students enrolled and passing high school physical science, high school mathematics, high school Visual art Comprehensive 1 and high school CTAE courses (if offered).				
9. Business, Community, and Post-Secondary Partnerships **STEM Georgia Business/Community/Post-Secondary Partnership Involvement Levels** ***Link to the GA Teaching Artists Roster:*** **http://gaarts.org/georgia-artists/artists-rosters**	There are no business, community, arts, and post-secondary partnerships.	Plans are being developed to provide student opportunities to meet STEAM partners and to participate in STEAM learning environments directly connected to in-class learning.	Business, community, arts, and post-secondary partnerships are involved in the STEAM instructional program 1-4 times/school year and are directly connected to in-class learning.	Multiple business, community, arts, and post-secondary partnerships are on-going and are involved by directly connecting to in-class instruction, project/problem-based learning, and exposing students to STEAM careers.
Required: 1. Documentation on the quality of the partnership engagement based upon the STEM Georgia Partnership Involvement Levels. ***There must be involvement at all three levels.***				
10. STEM, STEAM, Fine Arts Competitions and Exhibits AND/OR STEM, STEAM, Fine Arts Clubs	No STEAM students are involved in STEM and/or arts competitions, on-site/online STEM or arts exhibits, and/or in state and national	Some of the STEAM students participate in STEM and/or arts competitions on-site/online STEM and/or arts exhibits and performances, and/or in state and national	A majority of the STEAM students participate in STEM and arts competitions on-site/online STEM and arts exhibits and performances, and/or in state and national STEAM forums.	All STEAM students participate in STEM and fine arts competitions, exhibits, forums and performances at the school, district, state and/or national.

	STEAM, STEM and/or arts forums or clubs.	STEAM forums.		
Required: 1. Documentation that shows how many students have participated in each STEM, STEAM, Arts competition, exhibit, or club (this should equal the number of students in the STEAM school/program).				
EXAMPLE ARTIFACTS THAT SUPPORT STEAM EFFORTS •Included but not limited to examples listed below: Examples: STEM Talk, Science Olympiad, Science and Engineering Fair, art club, band, orchestra, chorus, drama club, dance program, eCybermission, TAG IT Challenges, Dupont Essay Contest, Reflections PTA Art contest, BioGENEius Challenges, School wide or district wide art exhibit or performance, Clean Tech Challenges, Vex and Lego Robotics, Math Competitions, Scholastic Art, LGPE, Technology Fairs, CTAE CTSO Competitions, etc. Clubs could be science club, Maker Spaces, math club, engineering club, STEAM club, gardening club, etc.				
11. Project/Problem-Based Learning and the use of the arts as a presentation tool	Students are only assessed using state and unit assessments.	In addition to state and unit assessments, teachers use multiple indicators of success in a STEAM content area, including knowledge and performance-based assessments.	In addition to state, unit, knowledge, and performance-based assessments, short and long-term projects/problems are implemented and are moving toward student-generated ideas. Students are able to present content learned through an arts form several times each semester.	Short and long-term projects/problems are implemented *throughout the school year* incorporating student-generated ideas that are standards-based, multidisciplinary and real world. Students are able to articulate the relationship among the concepts they are learning in math, science, and the arts to their created projects. Students are able to present content learned through an art form as regular practice. Documentation is evident throughout the use of student STEAM Journals.
Required: 1. Summary of grade level specific, interdisciplinary, STEAM-focused, problem/project-based learning opportunities that have occurred throughout the school year (curriculum map, timeline, calendar, etc.). 2. Students have documentation of PBL projects in their STEAM Journals.				
EXAMPLE ARTIFACTS THAT SUPPORT STEAM EFFORTS				

• Collaborative projects that require planning, research, discussion/debate, and presentations through an arts form • Products that require students to analyze and interpret data, construct explanations and design solutions, and engage in argument from evidence • Experimentation that requires students illustrate their understanding of STEAM concepts • Peer/Self-assessment on products using rubrics • Solving problems using real-world applications • Student demonstrations that reflect mastery of STEAM content and procedures • Student work may be designed around the Grand Challenges • Creation of video, artwork, or performance that demonstrates content mastery • Portfolios that allow students to portray their learning via collections of personal work • A culminating project that integrates all the STEAM content areas and presents information learned through an art form • Student work created in collaboration with a business/community/arts/post-secondary partner				
12. STEAM Integration	STEAM is not integrated into the curriculum. Students receive daily math and science instruction in isolation. Fine Arts classes are sporadic and not integrated into STEM courses.	STEAM students receive integrated math, science, and fine arts instruction 1-3 times/week.	STEAM students participate in integrated math, science, and fine arts instruction. Arts Integration is occasionally integrated into other content areas. Standards may be revisited from previous years.	Students receive daily math, science, and fine arts instruction that supports a STEAM project correlated to current math, science, and fine arts standards. **Students are able to clearly articulate an understanding of the math, science, and fine arts concepts being studied and provide evidence of learning through the use of their STEAM Journals**. Instruction is multidisciplinary including mathematics, technology, arts and the science and engineering practices: {1. Asking questions (for science) and defining problems (for engineering) 2. Developing and using models 3. Planning and carrying out

				investigations 4. Analyzing and interpreting data 5. Using mathematics and computational thinking 6. Constructing explanations (for science) and designing solutions (for engineering) 7. Engaging in argument from evidence 8. Obtaining, evaluating, and communicating information}
Required: 1. Documentation of the school or classroom schedule indicating time spent on interdisciplinary learning. 2. Student documentation of integrated math, science, and fine arts instruction in their STEAM Journals.				
13. STEAM Labs/Resources	There are no STEAM lab/resources in the school. STEAM lab has replaced fine arts spaces.	The STEAM lab has only technology access and a few resources.	The STEAM lab(s) has technology access and resources but are only used by a few teachers. STEAM lab is separate from fine arts spaces.	The STEAM lab(s) has technology access and resources are used by multiple teachers for collaboration, project work, virtual collaboration, and can be used as exhibition and performance space.
Required: Documentation describing the STEAM lab(s), including who uses the lab, how often, and for what purposes?				
14. Student Rigor & Relevance and Instructional Quality	Most of the learning occurs at the acquisition level. Content knowledge is taught in a silo by discipline and instruction focuses on knowledge awareness and comprehension of	Most of the learning occurs at the acquisition and application levels. Classroom instruction is predominantly teacher centered. Work shows students designing solutions to problems	Most of the learning occurs at the assimilation levels. Classroom instruction is predominantly student centered and students extend and refine their acquired knowledge to	Learning occurs at the adaptation level on a regular basis. *Classroom instruction is predominantly student centered* and students have the competence to think in complex ways and also apply the knowledge and skills they have

	information. Classroom instruction is predominantly teacher centered.	centered on a single discipline at a time by applying knowledge to new situations.	routinely analyze and solve problems, as well as create unique solutions.	acquired. When confronted with perplexing unknowns, students are able to create solutions and take action that further develops their skills and knowledge.
Required: 1. Submission of at least two examples of student work that has occurred at the adaptation level of the Rigor and Relevance Framework				
EXAMPLE ARTIFACTS THAT SUPPORT STEAM EFFORTS • Students are asked to use extensive knowledge and skills to take action on perplexing problems with unknown solutions • Student work is designed around a STEAM community or business/arts/industry problem • Project products are exhibited that indicate quadrant D critical thinking skills are being used • Involvement with a specialized science, math, fine arts, and/or engineering program(s) • A culture of inquiry, creativity, and innovation exists among students, teachers, and administrators.				
15. Technology Integration	There is little or no technology integration supporting STEAM teaching and learning.	A technology plan is in place to integrate a variety of technology tools supporting STEAM teaching and learning.	A technology plan is implemented in STEAM classrooms. Classrooms include a variety of technology tools that are integrated at least weekly into STEAM teaching and learning.	Technology use is ubiquitous throughout STEAM classrooms and students are producers and not just consumers of digital content. Technology is used to collect and analyze data.
Required: 1. Submission of at least two student-produced products through the use of technology. 2. Evidence of ubiquitous use of technology throughout classrooms.				
EXAMPLE ARTIFACTS THAT SUPPORT STEAM EFFORTS • Computer use is commonplace • Students are regular producers of websites, blogs, computer programs, videos, classroom digital products, music recording equipment, etc. • Computer-based, online, mobile, virtual, and other technology tools are integrated into STEAM classwork • Probes are used to collect and analyze data • Tablets are in use with apps specific to the topic • Graphing calculators may be used to solve problems • STEAM industry related technology is available for student use • 21st century technology tools used by students are visible throughout the school				

• Instructional Technology equipment is rarely inoperable • Teachers and students receive on-going access and opportunity to expand their proficiency in technology use				
16. Investigative Research	There is no investigative research occurring in classes.	Students are conducting investigative research that is grade-level appropriate but the purpose is ill defined and variables have not been identified.	STEAM students are conducting investigative research that is grade level appropriate, variables have been identified, and the scientific process is understood.	STEAM students conduct investigative research to make claims, collect evidence, analyze data, and argue from evidence. Students are able to communicate results via written, oral, drawn, and digital presentations and performances and enter their research in a science, math, fine arts and/or engineering competition. Students have evidence of ongoing research and data collection documented in their STEAM Journals.
Required: 1. Submission of at least two student investigative research topics and their findings. 2. Documentation of the number of students participating in a science and/or engineering fair and their results. 3. Students have documentation of investigative research in their STEAM journals.				
EXAMPLE ARTIFACTS THAT SUPPORT STEAM EFFORTS • Students enter a science and engineering fair • Students present findings to a public audience • Students publish research through an art form in a public venue • Student research is posted in hallways and classroom walls • Student performances and exhibitions are ongoing throughout the school year and integrated into project/ problem based learning				
17. Accountability	There is no evidence the STEAM program is increasing student	→		Schools determine the evidence that STEAM students are increasing in academic growth.

	academic growth.		

Required:

1. Schools indicate evidence the STEAM program is increasing student academic growth over a three-year period through a standardized measure selected by the school.

Georgia Department of Education CTAE STEM Pathways: agriculture, architecture, biotechnology, computer science, cyber security, energy, engineering, food science and nutrition, forensic science, and health care science. Fine Arts Pathways: Dance, Music, Theatre, and Visual Art.