

NC DIGITAL LEARNING INITIATIVE GRANTS 2021

Type of Grant: Implementation Grant

School District: Mooresville Graded School District	Date of Application: April 30th, 2020
District Address: 305 N. Main St. Mooresville, NC 28115	State Board Region: Region 6
Name and Title of Primary Contact Person: Meghan McGrath Principal of MGSD Online Academy Scott S. Smith, Ed.D. Asst. Supt. of Elementary Instruction & Technology	Primary Contact Person's Email Address and Phone Number: mmcgrath@mgsd.k12.nc.us 704-657-0906 ssmith@mgsd.k12.nc.us 704.658.2503
Total Project Budget: \$49,669.49	Estimated Number of Schools Served: 9 schools in Mooresville Schools and Virtual Schools Statewide
Requested Grant Amount: \$49,669.49	Estimated Number of Students Served: 6000 in Mooresville Numerous across the state

STEPHEN A. MAUNY
Name of Superintendent

Stephen A. Mauny
Signature of Superintendent

Table of Contents

Cover Page.....	1
Table of Contents	2
Objectives and Intended Outcomes	3
Narrative Description	5
Local Evaluation and Procedures	10
Proposed Budget	12
Page of Assurances	15
Attachment A: Plan for Implementation Timeline.....	16
Attachment B: Needs Assessment	17
Appendix C – Sample STEAM Team Staff and Student Courses	23
Appendix D – Events	25
Appendix E – STEAM Learner Profiles	29
Appendix F – District Strategic Plan	31
Appendix G - Needs Assessment Rubrics.....	32
Appendix H-The Culturally Responsive STEM Scorecard	37
Appendix I-Cited Resources.....	41

Objectives & Intended Outcomes Table

Goal: *Identify a single goal for your project and provide that statement goal here. Goal should be specific, measurable, achievable in the 2020-2021 and 2021-2022 school years, and results-focused.*

To provide Mooresville Graded School District (MGSD) with a greater platform to provide culturally responsive instruction via STEAM education. This initiative will provide a greater opportunity for all families in MGSD to have exposure to STEAM resources.

Measurement of goal:

- Demonstrate growth by increasing 2 points on all areas of North Carolina STEAM School Progress Rubric
- Achieve a 3.0 or above in call categories North Carolina Digital Learning Progress Rubric
- Demonstrate growth on the MGSD Landscape Survey of Personalized Learning.
- Maintain a category 3-5 on quarterly unit audits using the Culturally Responsive-Sustaining STEAM Scorecard
- Increase MGSD Community Development Survey 20% in pre (fall) and post (spring) results.

Statement of Need: *Summarize how this goal was identified and any relevant data and analysis for your district, including evidence from the Needs Assessment (see Appendix B)*

As determined through analysis of each rubric and comparison to our district strategic plan there is an identified need to develop and implement a STEAM program that includes emphasis on flexible learning spaces and providing additional resources to our students and community. Our need includes a multi phased approach to increasing STEAM awareness through equitable access to education and empowering students through student ownership and learning profiles.

Activities:	Time Frame:	Impact:
MGSD Pop Up STEAM Playgrounds	Monthly 2021-2022	School and district exposure and knowledge of STEAM tools through community engagement.
Invention Project Kits	School Year 2021-2022	Student Impact: Engagement in interactive curriculum and hands-on learning. Teacher Impact: Growth in knowledge of STEAM and how to embed it into curriculum
Professional Development Phase 1 (Training)	School Year	Improving instructional practices in STEAM learning, culturally responsive pedagogy as it relates to STEAM

Phase 3 (Support) MOA STEAM Team will provide ongoing training for K-6 district staff and offer training statewide on the integration of STEAM in a virtual setting.	2021 - 2022	learning, learner profiles and community engagement.
STEAM Student Showcase Students will present their projects from Invention Project Kits in a community showcase.	School Year 2021-2022	Community exposure to STEAM learning and career fields while empowering student presenters.
Ourschool Classes	Monthly	Streaming courses to provide greater exposure in STEAM fields,

Deliverable/s: Briefly describe the intended outcome/s. This may be a bulleted and prioritized list.

- Creation of a dedicated core training team (MGSD STEAM Team) will be trained to impact K-6 district instruction in STEAM, culturally responsive teaching and creation of learner profiles. Aligned to Standard 3 Knowledge Constructor.
- Increase STEAM literacy and community exposure to STEAM education and careers through monthly MGSD pop up playground events. Aligned to Standard 3 Knowledge Constructor and Standard 4 Innovative Designer
- Teacher and student Canvas courses, modules and live classes prepared by the MGSD STEAM Team. Aligned to Standard 3 Knowledge Constructor.
- Invention Project Kits will enhance student learning through hand-on activities closely linked to the curriculum.
- STEAM Student Showcase will offer students an authentic audience to highlight their work in the community.
- MGSD STEAM Team will produce teacher and student modules to be used in MGSD, throughout other districts and across the state.
- Implementation of grant website to house all grant activities.

Narrative Description Overview:

We have identified a plan to enable teachers to promote educational equity and

recognize all students have the capacity to benefit from STEAM education. As a district,

we recognize our students are well versed in technology but lack hands-on application

to broaden knowledge and inspire curiosity. We also recognize the need to ensure

underserved communities have access to experiences that create STEAM literacy.

We discovered a unique area of success this year in our MGSD Online Academy

(MOA), which was created as a traditional school with a virtual setting. Throughout the

year we found that our students were more engaged with STEAM focused texts and

when we embedded online activities, virtual field trips and take home projects. Success

was measured academically and by parent, student, and teacher feedback.

In 2021-2022, our MOA has a STEAM and Global Studies focus that is uniquely poised

to not only provide a model for STEAM education, but to also address goals of culturally

responsive teaching (CRT). We propose to use this program as a pilot for our district in

STEAM education with impacts statewide, as shown in the table below.

Phase	Personnel	Goal	Activities
Phase 1 Training	MOA Staff	Participate in targeted PD to implement a culturally responsive elementary STEAM pedagogy.	• National Inventors Hall of Fame (NIHF) Training • STEM Com Conference • STEM Teacher Summit • Racial Equity Institute Training & CRP book study • Design STEAM learner profiles
Phase 2 Application	MOA Staff	Increase student and community engagement in STEAM	• Incorporate coding, robotics, virtual/augmented reality, makerspace, etc. into monthly units. • Host events targeted to increase STEAM literacy in our community in the

		Learning.	form of “pop-up STEM playgrounds” • Maintain STEAM learner profiles
Phase 3 Support	MOA staff, other MGSD staff, other school staff in North Carolina, other virtual schools.	Provide professional development and courses to stakeholders district and statewide.	Provide courses on: • STEAM Learning • CRP and STEAM • STEAM and Community Development • Virtual School Model

Research:

The mission of MGSD is to provide an educational environment that fosters strong academic, co-curricular, and interpersonal skills, allowing every child every day to grow and thrive as a responsible citizen in a diverse society. As researchers have pointed out, the population in U.S. public schools is becoming more culturally and linguistically diverse (Leonard, et al, 2018). There are strong implications that America’s “student population is projected to become more diverse with each passing year” (Van Ingen, S; Davis, J; & Arndt, K., 2018, p. 1). Minority communities represent 35% of our student population in MGSD. Abiding by our district motto, our desire is to teach “every child, every day.” We acknowledge our current academic and discipline data includes disproportionate gaps based on socioeconomic and race. Our district is ready to take collective action and make changes in the way we teach – and reach our students. We realize the importance of a STEAM education for our students. Research by Ashbrook points out that we all participate in science in various ways on a daily basis

(2021). The same can be said for technology, engineering, and math. Yet “Black/African American students are underrepresented in science, technology, engineering, and mathematics (STEM) fields including undergraduate and graduate degrees and participation in STEM-related careers” (Corneille, et al, 2020, p. 48).

We also realize the importance of teaching from a culturally relevant framework to support our students academically, emotionally, and socially. “More than a motivational tool, culturally responsive teaching is a serious and powerful tool for accelerating student learning” (Hammond, 2015, p. 3). MGSD recognizes the need for staff to look at our implicit biases and how they impact classroom learning. As our society continues to advance with technology, we need to embrace the benefit of diverse perspectives to promote STEAM innovation. Culturally responsive education can improve the STEAM learning experience through empowerment for social critiques, opportunities to understand cultural heritage, and through CRT practices (Bransford, et al, 1999, as cited in Corneille, 2020, p. 50).

Preliminary Steps:

MGSD created and successfully implemented a K-6 virtual school (MOA) during the 2020-2021 school year. In preparation for this grant proposal, a team of teachers, administrators, and curriculum staff completed the following:

- Evaluated current curriculum using NC STEM School Progress Rubric, NC Landscape Survey of Personalized Learning, and NC Digital Learning Progress Rubric.
- Evaluated existing staff and resources for readiness to implement STEM curriculum.

- Evaluated the needs of the community in relation to outreach and alignment with local career opportunities.
- Reviewed our district strategic plan to ensure alignment to grant goals.
- Evaluated K-6 STEM focused products in the categories of robotics, maker space, augmented reality, and coding.
- Selected professional development (PD) opportunities aligned to district needs in STEM education, learner profiles, and culturally responsive teaching (CRT).

Alignment with the NC Digital Learning Standards for Teachers & Administrators:

Our proposal is aligned to the NC Digital Learning Standards for Teachers and Administrators including having a vision to promote CRT through STEAM learning and a strategic plan to increase exposure for students in both school and community settings. Our focus on content and instruction provides greater access and opportunity for all students throughout MGSD, allowing our team to build a positive culture regarding STEAM experiences and increase STEAM literacy in our community. Our program sets a model for future PD in key focus areas including digital leadership, CRT through STEAM education, community engagement and virtual instruction.

Alignment with Standards for Students:

This proposal will directly impact teacher professional growth and student learning. Our program goals were designed to have impact on all stakeholders including students, teachers, and our MGSD community by using the NC Digital Learning Standards for Students and the ISTE Standards for Students. Within the 4 Pillars of Personalized Learning, we will focus on learner profiles (allowing us to embed engaging STEAM

education and career exploration while ensuring that our students take ownership of their learning) and flexible learning environments (highlighting STEAM in a virtual school and in a community setting through “STEAM pop-up playgrounds”.

Connection to MGSD Strategic Improvement Plan:

MGSD Strategic Improvement Plan Core Beliefs	Connection to proposal
Build authentic relationships with students, staff, and the community	Offer frequent engagement opportunities within the community, meeting families where they are to provide easy access to school related events via community centers and recreation facilities
Develop students’ feelings of empowerment and the difference they can make as an individual	Learner profiles and STEAM student interest surveys will empower our students and provide them with an opportunity to take ownership of their own learning
Provide resources that support the development of the whole child	Take home STEAM kits provide hands-on resources that allow for exploration and creativity supporting the development of the whole child

Sustainability:

The sustainability of this program can be defined by resources and ongoing PD.

Following the grant year, the resources can continue to be used in MGSD schools and the community with minimal costs for replenishment of consumable supplies. The PD is multi-layered with an initial focus on MGSD employees and then expanding to virtual school visits and presentations at state conferences. Finally, part of the sustainability of this program is to deepen conversations and awareness of equity education in STEAM learning. Our team envisions another phase to this program that eventually leads to focusing on workforce needs within the community and working collaboratively to produce graduates who are ready to contribute in meaningful ways.

Local Evaluation and Procedures

Evaluation Procedures for Success: The team will complete a monthly check in led by the MOA to ensure that all parts of the plan are complete in a timely and accurate manner. The team will use the evaluation indicators below to measure needs, challenges, and future opportunities to improve. All items will be included on the grant website which the grant coordinator will update on a regular basis in order to share progress with the state.

Goal	Evaluation Indicator	Timeline
Increase scores in domain: Student Opp - from 13 to 15 Class Env. - from 11 to 13 School Str - from 4 to 10 School Cul - from 6 to 10 Comm Conn - from 6 to 8	North Carolina STEM School Progress Rubric	2021 - 2022 school year
To increase all indicators	Landscape Survey for Personalized Learning	2021 - 2022 school year
Increase scores in domain: Leadership - 2.5 to 3.0 Prof Learning - 2.67 to 3.0 Cont & Instr - 2.28 to 3.0 Data & Assess - 3.0 to 3.5	Digital Learning Progress Rubric	2021 - 2022 school year
Demonstrate category 3 to category 5 on each quarterly unit.	Culturally Responsive STEAM Curriculum Scorecard Metropolitan Center for Research on Equity	Quarterly Unit Audit
Increase of 20% from pre-to post survey.	MGSD Community Development Survey	Pre Survey September 2021 Post Survey May 2022

Community Involvement:

We believe that ensuring an equitable education in science, technology, engineering, arts and mathematics is paramount to the success and growth of the school district as well as the community as a whole. While the proposal addresses improving instructional practices in the classroom, a key portion of our plan rests on community involvement. In order to build capacity within our community and involve all stakeholders, we plan to work closely with the town of Mooresville. Town community center coordinators will be involved in all planning and implementation as we have built a strong relationship through past collaborative events. They will work closely with us to plan each outreach event including gaining community feedback, advertising and coordination.

Sharing Information:

The team will maintain a grant website that includes all pieces of the grant including phases and monitored progress. In addition, all courses for teachers and students will be housed in Canvas but easily converted to another format if need be. Our program will be easily accessible to other districts for both training purposes and accessibility of lessons. Finally, our program plan will be readily available for state conferences and out of district training.

Proposed Budget

This table will be rated by the DLI Grant Application Reviewers. Align proposed budget based on the section "Use of Grant Funds" (see page 7); do not exceed allowable expenditures as defined.

Fund Category	Expenditure Amounts	Rationale for Proposed Expenditure
Contracted Services <i>(up to 40% of proposed budget)</i>	\$19,908	Invention Project K-6 10 units x 150 students = \$9750 Outschool Contractors STEM Escape Rooms 10 sessions x \$150 Kids Code 10 sessions x \$100 Dance and Create 10 sessions x \$100 Science through Art & Music 10 sessions x \$100 Not Just (Muscle) Building 10 sessions x \$100 PBL Project w/ STEM Connections Schoolwide License - \$425.94 Heart of STEM A Year of STEM Bundle - \$100 Read Aloud STEM Bundle - \$100 Discovery Place OutReach \$2200 Lego League Lego Explore (2nd - 4th) - \$625 + \$215 WeDo Robot Lego Challenge 4th-6th) - \$747 + \$245 Robot
Hardware or Software Purchases <i>(up to 25% of proposed budget)</i>	12,498.65	Club Invention Kit 25 kits x \$70 = \$1,750 Makey Makey Classic 10 x \$49.95 = \$499.50 Sphero at Home 10 x \$89.99 = \$899.90 Snap Circuit Junior 20 x \$20.99 = \$419.80 Blue-Bot Class Bundle 4 x \$599.95 = 2399.80 Augmented Reality Globes 10 x 42.29 = \$422.90 Super Magnet Kit 20 x \$29.99 = \$599.80

		Magnetic Building Blocks 20 x \$29.99 = \$599.80 Kid Knex 20 x \$37.41 = \$748.20 Lego Suitcase 20 x \$15.99 = \$319 Rok Blocks Mobile STEM Lab \$1,339.95 4 kits (for 16 students)w/ cart = \$1279.96 +\$59.99 Consumable Maker Space Items \$1000 Prodigy \$1500 Subscription for all MOA Students in Prodigy Math Game World
Professional Development Expenses <i>(up to 25% of proposed budget)</i>	\$4062.84	STEM Com Conference 8 attendees x \$49.98 = 399.84 STEM Teacher Summit 8 attendees x \$67 = \$536 National Inventors Hall of Fame (NIHF) Teacher Training 8 attendees x 4 Hours = \$750 Racial Equity Institute Training 8 people x \$265 = \$2120 Book Study: Culturally Responsive Teaching and The Brain 8 people x \$32 = \$256
Stipend Reimbursement or Teacher Substitutes	\$11,200	Stipend-MGSD STEAM team for initial training 8 teachers x \$100 per day x 6 conference days = \$4,800 Stipend-Creation student and teacher modules 8 teachers x 5 Modules x \$200 = \$6,400
State Subsistence Rates and Allowances		

Transportation Costs		
Printing and Duplicating <i>(up to 5% of proposed budget)</i>	2,000	Paper and cardstock for student STEM learning guides. Paper and cardstock for in person training tools for teachers.
TOTAL	49,669.49	

Page of Assurances

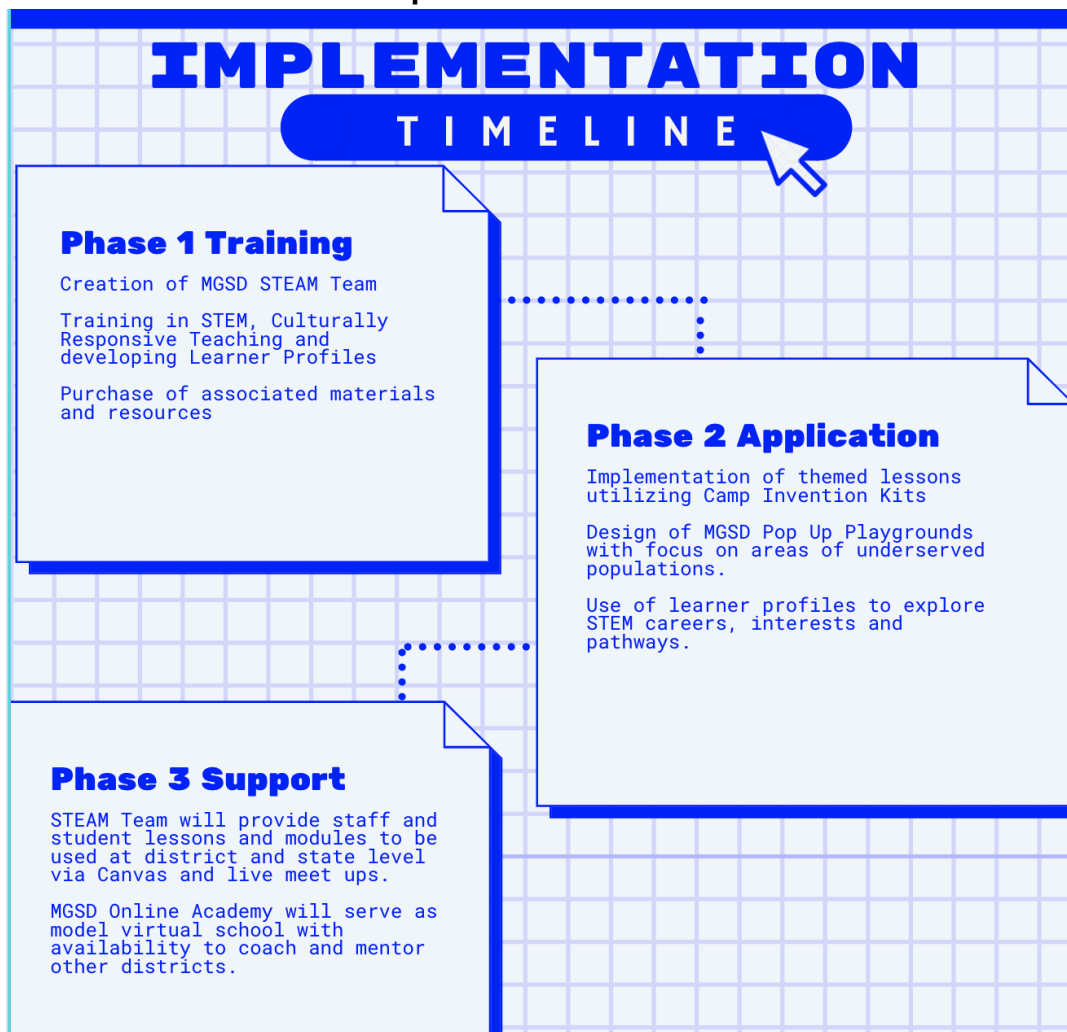
By signing below, I assure NCDPI that I am an official of the organization and authorized to bind the organization. I certify the following (check each box to indicate your review and certification):

- ☒ The information provided in this proposal is correct and complete.
- ☒ The applicant understands that this proposal and all attachments submitted are public records.

The applicant agrees to the below listed activities.

- ☒ Provide administrative supervision and support to foster success of the program.
- ☒ Provide personnel, time, and other resources to develop and implement program.
- ☒ Comply with the North Carolina General Statutes, the North Carolina Administrative Code, and any other rules or regulations that may govern the performance and oversight of this program, including all CIPA requirements.
- ☒ Ascertain that applicable federal and state laws are followed to promote equal opportunity for all participants without regard to race, color, religion, gender, age, disability, political affiliation, or national origin.
- ☒ Establish fiscal control and accounting procedures for proper disbursement of and accounting program funds.
- ☒ Submit required financial and performance reports to NCDPI.
- ☒ Participate in all evaluation activities, including collection, recording, and reporting of data, as required by NCDPI, NCSBE, or third-party evaluators, in compliance with relevant privacy laws.

4/29/21**Scott S. Smith****Name and Signature of Primary Contact****Date****4/29/21**
Name of Superintendent
Signature of Superintendent

Attachment A – Plan for Implementation

Attachment B – Needs Assessment

The North Carolina STEM School Progress Rubric The Landscape for Professional Learning Rubric and the North Carolina Digital Learning Progress Rubric were completed by the MOA Leadership Team and reviewed by our district Curriculum and Instruction team. Each rubric is presented in the summary table below.

North Carolina STEM School Progress Rubric			
Dimension	What is the overall rating?	What does the data reveal?	Identify the steps or strategies that would support the growth to the next level
Student Opportunities	13	- Our teachers make rich STEAM opportunities an important part of classroom learning utilizing digital technology. However, due to the virtual only environment, students' abilities to work in teams are limited.	- Pop Up STEAM Playgrounds would provide students opportunities to engage in STEAM learning together - drawing from each other's ideas in full collaboration. - Having class sets of STEAM related "gadgets" will also increase the collaboration as students could work virtually in break out rooms - having the same tools - and effectively collaborate on ideas.
Classroom Environment	11	- Our teachers collaborate in PLCs and across grade levels to share ideas for implementing STEAM for learning and to a lesser extent, for assessment. - The actual number of STEAM activities are limited by access to materials.	- Having class sets of STEAM related "gadgets" will allow for many more classroom opportunities for integrating STEAM into lessons. - Having turn key STEAM units AND professional development provided by National Inventors

			Hall of Fame will assist teachers in more frequent and effective implementation.
School Structures	4	- Our school and district are just scratching the surface in our STEAM knowledge and implementation	- PD for MOA staff to become a STEAM Team - STEAM Team then trains teachers throughout the district utilizing a train the trainer model
School Culture	6	- Our school staff have proven an interest in STEAM, but there is no formal plan or organized roll out	- PD provided by the National Inventors Hall of Fame will build teachers' knowledge base to allow purposeful integration of STEAM into the curriculum. - Invention Project kits will provide a unified monthly theme - MOA STEAM Team outreach to other district schools will spread the knowledge district-wide.
Community Connections	6	- Individual teachers or grade levels have successfully implemented STEAM activities - and shared those ideas with colleagues and families - The school and district do not have a network for STEAM resources.	- Pop Up STEAM playgrounds will be open students and families beyond our school and district. - Through the train the trainer model, the STEAM team can begin a network for STEAM within MGSD - Through STEAM Com Conference and other PD contacts teachers can begin to network outside of MGSD

From the Landscape Survey for Personalized Learning			
Dimension	What is the overall rating?	What does the data reveal?	Identify the steps or strategies that would support the growth to the next level
Learner Profiles	Yes, for some	- Learner profiles exist for academic data - and are student managed after primary grades.	- Expanding learner profiles to include interests, STEAM and career goals - Sharing learner profiles with families
Individualized Learning Paths	Yes, for some	- Teachers differentiate instruction based on student academic data - Additional support personnel are utilized to provide interventions and enrichment as needed	- Allow students more opportunities to choose how they learn based on their interests and learning styles - Increase opportunities for students to create, produce, and authentically engage with content.
Competency-Based Progression	No	- Students do not typically have the opportunity to advance at their own pace - In math/ELA students will be moved to an enrichment activity but not on to the next goal	- Offer students earlier opportunities for demonstration of mastery - Use individualized learning paths to guide next steps once goals are met.
Flexible Learning Environments	Yes, for some	- Small class sizes and instructional assistants allow for more flexible learning environments - Digital resources and virtual meetings allow for differentiation and more personalized instruction	- Providing opportunities for hands on small group activities to increase engagement and learning - Pop up STEAM playgrounds allow students to explore with peers in low pressure situations
North Carolina Digital Learning Progress Rubric			
Dimension	What is the overall rating?	What does the data reveal?	Identify the steps or strategies that would

			support the growth to the next level
Leadership	2.5 Developing	- The district has many digital resources for teachers to utilize - There is district collaboration and vision for resources purchased	- Blend district vision of collaboration and creation with district goal of providing high culturally responsive instruction through a STEAM focus.
Professional Learning	2.67 Advanced	- Teachers are well informed and regularly use digital technology during lessons and share those ideas at PLC	- Provide a specific focus area for professional development that blends an instructional practices with culturally responsive teaching.
Content & Instruction	2.28 Developing	- 12 years post digital conversion, our teachers have an understanding of how to effectively incorporate technology in instruction, but we must not stagnate.	- Move past understanding of content to hands on application via STEAM learning. - Via community events reach all populations of students to provide more equitable access to STEAM content.
Data & Assessment	3 Advanced	- Data collection and use is a strength	- Expanding Learner Profiles to include STEAM interests or/ career goals to guide planning and instruction

Landscape for Personalized Learning

Thank you for completing the Landscape of Personalized Learning Survey. If you have any questions or concerns please contact Julie Gurganus and Lindsey Sipe.

Thank you,
Julie and Lindsey
DLI Grant Co-Managers

julie.gurganus@dpi.nc.gov
lindsey.sipe@dpi.nc.gov

The NC Digital Learning & Media Inventory ([NC DLMI](#))

Location														
*School Year 2019-2020 *LEA 491 - Mooresville Graded School District														
School Validation														
Go Rows All Actions														
	☐ School Code	School Name	Shared Vision	Personnel	Sustainability	Policy	School Networks	End-Users Devices	Learning Environments	Technical Support	Learning Management System	Access to Digital Content	Learning Management System	Principal Name
Validation	☐	491303 East Mooresville Intermediate	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Julia Evans
Validation	☐	491305 NF Woods Campus	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Lorenzo Johnson
Validation	☐	491306 Mooresville Intermediate	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Quinetta Pratt
Validation	☐	491308 Mooresville Middle	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Ayana Robinson
Validation	☐	491312 Mooresville High School	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Luke Brown
Validation	☐	491316 Park View Elementary	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Misha Rogers
Validation	☐	491318 Rocky River Elementary	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Chuck Larusso
Validation	☐	491320 South Elementary	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Mark Cottone

1 - 8 of 8

Appendix C – Sample STEAM Team Course for Staff and Students For Staff

	
Teacher Courses	
STEAM Mindset	Getting started with STEAM lessons can be intimidating! This course will focus on the many benefits students can get from it, and will provide teachers with a step-by-step guide to developing an exciting lesson or unit.
Using Learner Profiles to Plan and Implement STEAM Lessons	This course focuses on how teachers can use students' formative and summative data, interests, strengths, weaknesses, and goals to plan and implement effective STEAM lessons.
Intentional Integration	Literacy is a part of every content area - always. In this course, teachers will explore using three ways to intentionally integrate English Language Arts into STEAM lessons: Visual Thinking, Embodying Text, and Reciprocal Teaching.
Ready for Robotics	Robotics in STEAM education can provide a multi-sensory and experiential learning experience, which can significantly increase a kid's capacity for learning. This course will explore how using robots to teach STEAM can also help children understand how technology can be used to solve real-world problems.
Ensuring Equity in STEM Education	It is increasingly important to ensure that ALL students have access to STEAM opportunities. Teachers will learn how to create an inclusive learning environment where everyone feels welcome, empowered, and safe to ask questions and explore.
Encouraging Curiosity	Teachers will learn how to encourage their learners to be inquisitive, risk-taking, reflective, and open-minded through effective questioning techniques.
The Power of the Sun	This course will provide everything teachers need to plan a STEAM unit on solar energy, including an exciting art project that uses special paper that reacts to light waves and particles when exposed to sunlight.
No-Prep STEAM Activities	Want to incorporate a last-minute STEAM challenge that is child-led and requires little to no materials? This course will provide several quick ideas teachers can use today!
Clever Coding	Teachers will learn how to engage students in creative electronics and coding activities. In these activities, students can complete open-ended challenges that encourage team building, creative thinking, and problem solving.
Diving Into Directed Drawings	In this course, teachers will explore examples of incorporating directed drawings within reading units to encourage a growth mindset!

Appendix C – Sample STEAM Team Course for Staff and Students

For Students

Grades K-3 Courses	
Course	Description
 Be a Paleontologist 101	Dinosaurs, fossils and more! Learn how a paleontologist discovers fossils as you dig for fossils yourself.
 Be a Robotics Engineer 101	A robot that fixes airplanes? Learn about a robotics engineer and test your robotic creating skills as you build a robot yourself.
 Be an Artist 101	Art is not just about paint! Come explore artists who use mixed media such as fabric, plastic, and metal. You will then create your own amazing work of art!
 Be a Marine Biologist 101	Grab your scuba gear and coral reef safe sunscreen. Learn how sunscreen harms coral reefs and about the marine biologists trying to protect the reefs.
Grades 4-6 Courses	
Course	Description
 Be an Engineer 101	Imagine your future career as an Engineer! In this course students will have the opportunity to explore the many adventures of an Engineer! Students will learn what it takes to build, craft, and think like an Engineer through many hands on experiences using technology!
 Be an Environmentalist 101	Are you interested in how you can better our planet? Then this course is for you! Learn what it takes to be an Environmentalist. From studying Wildlife, Endangered Animals, Ocean life, Conserving Power, and much more! Through this course you will learn the many avenues of an Environmentalist!
 Be a Chemist 101	Math, Science, Problem-Solving, Oh my! If you enjoy using your math skills, paired with science and critical thinking, then learning what it takes to be a Chemist is for you! Through this course, you will have hands-on experiences of experiments that will make you think like a chemist.
 Be an Architect 101	Do you enjoy designing? Drawing up blueprints? Join this course and learn what it takes to be an Architect! From brainstorming the idea, drawing up blueprints, and designing, you will design from start to finish your own projects! Let's get creative!

Appendix D –Events

MGSD STEAM Pop Up PlayGrounds

POP UP PLAYGROUND

Calling all dino enthusiasts!

Join us and unleash your inner paleontologist!

- Create your own fossils
- Dig to discover artifacts.
- Use augmented reality globes to bring dinosaurs alive in 3D and explore the prehistoric lands in which they lived.

Wednesday, September 22
2-3pm MOA students
3-4pm MGSD community

Selma Burke Community Center
781 Agape Dr, Mooresville, NC 28115

Brought to you by the MGSD STEAM Team



MGSD STEAM Pop Up PlayGrounds

POP UP PLAYGROUND

Stoked about STEM Stations!

Get your STEM juices flowing with our STEM tools. Kids can explore 6 different engineering, building and creative tools at their own pace with rotating stations.

Create electronic circuits

Build with Kid K'nex and Lego

Girls' Coding Corner

Explore with magnets

Make a banana piano

Create light-up flowers with bioluminescence and LEDs

Wednesday, October 20
2-3pm MOA students
3-4pm MGSD community

Selma Burke Community Center
781 Agape Dr, Mooresville, NC 28115

Brought to you by the MGSD STEAM Team

MOORESVILLE
EVERY CHILD EVERY DAY



Discover your **SPARK for STEM**

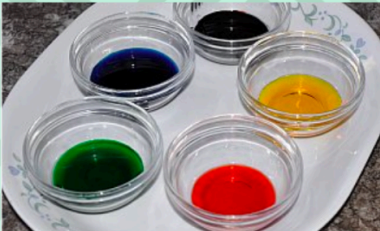
Join us at the War Memorial Center and explore these exciting STEM careers with hands-on fun!



Learn about careers in law enforcement & security with **fingerprint forensics**.



Are you a gamer? Find out what it takes to **design your own video game**.



Does a career in Food Science sound fun to you? Come create **sugar crystals** and find out.



If animals are your thing, we've got you covered! Come speak to a real **wildlife biologist** and learn the ropes!



Wednesday, October 6
2-3pm MOA students
3-4pm MGSD community

War Memorial Center
220 N Maple St, Mooresville, NC 28115

Brought to you by the MGSD STEAM Team



STEAM Showcase

Everyone has a Story to Tell!

Please join us for our STEAM SHOWCASE to learn about our students' stories.



WHO: FAMILIES, join us in enjoying an exciting evening with our students as they showcase their stories as students, learners, and future leaders in their careers.



WHERE: SELMA BURKE Community Center



WHEN: May 25th 5:00-7:00 PM



ATTIRE: Please make sure your child wears business casual attire (available for check out)



Appendix E- STEAM Learner Profiles

Sample K-3 Learner Profile

Students add a drawing of themselves in their future career based upon our learning.

(Student name) _____ **Personalized Learning Plan**

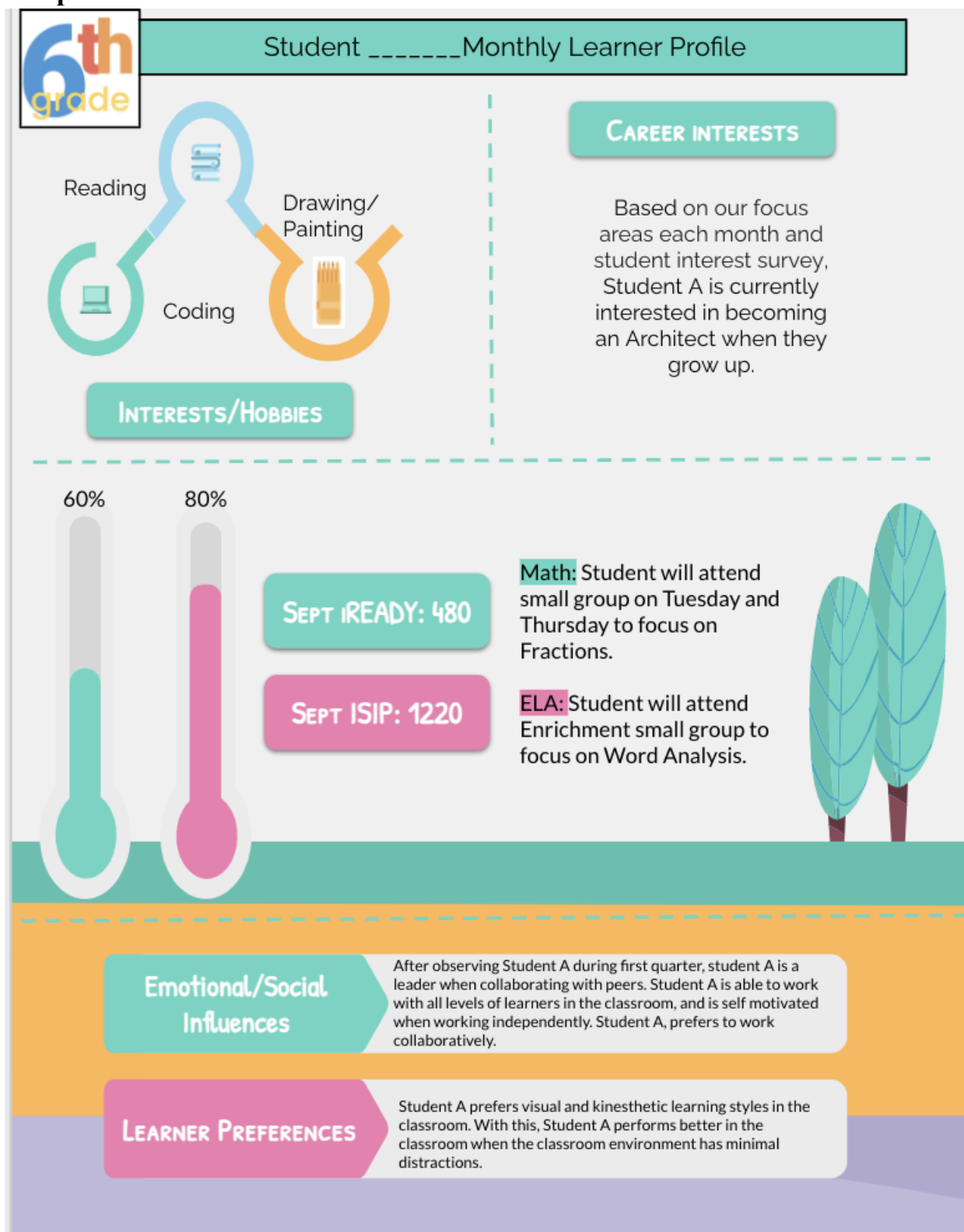
My Learning	My Monthly Goals: (Date)	Comments: ✓✓✓✓
 Reading	Sample Goal: I can read my sight words quickly.	Goal Met ☐ Notes: Still Practicing ☐
 Math	Sample Goal: I can use a number bond to solve an addition problem.	Goal Met ☐ Notes: Still Practicing ☐
 Science Social Studies	Sample Goal: I created a robot that can move.	Goal Met ☐ Notes: Still Practicing ☐
 SEL	Sample Goal: I worked peacefully with my classmates to complete projects.	Goal Met ☐ Notes: Still Practicing ☐

Outside of school, I like to _____.

I used my school skills to help me _____.

Students draw a picture of one thing they discovered about themselves this month.

Sample 4-6 Learner Profile



Appendix F – District Strategic Plan

Below is an excerpt of the MGSD Strategic Plan which shows how this aligns the core beliefs.

Vision

To empower every student with the opportunity to realize their maximum potential by embracing the inherent worth of the whole child.

Mission

To provide an educational environment that fosters strong academic, co-curricular, and interpersonal skills, allowing every child, every day to grow and thrive as an engaged, responsible citizen in a diverse society.

Motto

Every Child. Every Day.

Core Beliefs

A collaborative culture of caring is necessary for developing the whole child, as well as creating a climate for staff to succeed.

- Building authentic relationships with students, staff, and the community
- Developing students' feelings of empowerment and the difference they can make as an individual
- Ensuring a safe and inclusive environment that promotes optimal growth
- Providing resources that support the development of the whole child

High expectations forge highly successful students, staff, and schools.

- Inspiring continuous improvement through reflective practice
- Maintaining strong academic standards by providing relevant instruction and professional development

Appendix G – Needs Assessment Rubrics

North Carolina STEM School Progress Rubric

(1) Student Opportunities	Rank	Score
1.1 Students Designing	D	2
1.2 Students Working in Teams	E	1
1.3 Learning Connected to the Real World	D	2
1.4 Students Using Digital Technology	M	4
1.5 Opportunities with STEM Organizations	M	4
Overall Score		13
Average Score		2.6

(2) Classroom Environment	Rank	Score
2.1 Instruction Integrating Content	D	2
2.2 Varied Learning Approaches	D	2
2.3 Multiple Assessment Types	P	3
2.4 Teacher Collaboration	M	4
2.5 Comprehensive Advising *(High School Only)		
Overall Score		11
Average Score		2.75

(3) School Structures	Rank	Score
3.1 Professional Learning Focus	E	1
3.2 Professional Learning Format and Structure	E	1
3.3 Physical Space for Projects	E	1
3.4 Strategic Staffing for STEM	E	1
3.5 Variety of STEM Courses *(High School Only)		
Overall Score		4
Average Score		1

(4) School Culture	Rank	Score
4.1 STEM Education Plan	E	1
4.2 Data-Informed Continuous Improvement	E	1
4.3 Vibrant STEM Culture	D	2
4.4 Serving Underrepresented Students	D	2
Overall Score		6
Average Score		1.5

(5) Community Connections	Rank	Score
5.1 STEM Schools Network	E	1
5.2 STEM Business Advisory Council	D	2
5.3 Communication Strategy	P	3
Overall Score		6
Average Score		2

Landscape Survey for Personalized Learning

North Carolina Digital Learning Progress Rubric

Leadership	Score
L1 Shared Vision	2
L2 Personnel	2
L3 Communication & Collaboration	3
L4 Policy	3
L5 Continuous Improvement	3
L6 Procurement	2
OVERALL SCORE (average of L1-L6)	2.5

Professional Learning	Score
P1 Professional Learning Focus	2
P2 Professional Learning Format	3
P3 Professional Learning Participation	3
OVERALL SCORE (average of P1-P3)	2.7

Content & Instruction	Score
C1 Educator Role	2
C2 Student Centered Learning	2
C3 Future Ready Learning Spaces	2
C4 Technology Infrastructure & Devices	2
C5 Outside of School	3
C6 Data-Informed Instruction	2
C7 Digital Citizenship	3
OVERALL SCORE (average of C1-C7)	2.3

Data & Assessment	Score
D1 Learner Profiles	3
D2 Data Use Culture	3
OVERALL SCORE (average of D1-D2)	3

Digital Learning Progress	Overall Score	Level
Leadership	2.5	Developing
Professional Learning	2.67	Advanced
Content & Instruction	2.28	Developing
Data & Assessment	3	Advanced
Overall DLP School Rubric Score (average of 4 main areas)	2.61	Advanced

Appendix H – The Culturally Responsive STEM Scorecard (to be completed as quarterly audit of units and/or for any training materials for 2021-2022 school year)

REPRESENTATION

STATEMENTS	Very Satisfied (2)	Satisfied (1)	Unclear (-1)	Not Satisfied (-2)	GROUP AVERAGE SCORE
1 The curriculum centers the origins of science, technology, engineering, arts and/or math within BIPOC communities (Black, Indigenous, people of color).					
2 The curriculum elevates mathematicians, artists, and/or scientists with historically marginalized identities (i.e. non-binary or trans people, women, people of color, people with disabilities, working class people, multilingual people) and their discoveries.					
3 The curriculum acknowledges and/or incorporates the expertise of diverse communities, their cultures, and their historical and/or contemporary experiences.					
4 The curriculum has photos/pictures, names, scenarios, and text that reflect the experiences and interests of students of color in your community.					
5 The curriculum elevates not just "scientists, artists, and mathematicians", but the everyday users of math, science, arts, technology, and engineering.					
6 The curriculum affirms the multiple forms of communication or language systems during mathematical and scientific argumentation rooted in historically marginalized cultures.					
TOTAL					
TOTAL REPRESENTATION SCORE					

SOCIAL JUSTICE

STATEMENTS	Very Satisfied (2)	Satisfied (1)	Unclear (-1)	Not Satisfied (-2)	GROUP AVERAGE SCORE
7 Curriculum highlights and affirms the knowledge systems of Indigenous, Black/African, Brown, and non-Western conceptions of science, technology, engineering, arts, and math (such as interdependence, sustainability, and continual change).					
8 The curriculum and instructional activities promote or provoke critical questions about science, technology, engineering, arts, and/or math and the societal status quo.					
9 The curriculum and instructional activities present alternatives or allow students to present alternatives about the role science, technology, engineering, arts, and/or math plays in existing social structures.					
10 The curriculum presents multiple understandings of a scientific, mathematical, or artistic concept or theory, especially highlighting points of view from marginalized people/communities.					
11 The curriculum provides avenues for students to see STEAM as a way to understand and improve their world, take actions that combat inequity or promote equity, and connect learning to social, political, and/or environmental concerns.					
12 The curriculum presents social situations and problems not as individual problems but as embedded within a societal and/or systemic context.					
13 The curriculum encourages students to critically examine dominant knowledge systems as scientists, mathematicians, and artists.					
14 The curriculum affirms the multiple forms of communication or language systems during mathematical and scientific argumentation rooted in historically marginalized cultures.					
TOTAL					

TEACHER'S MATERIALS

STATEMENTS

		Very Satisfied (2)	Satisfied (1)	Unclear (-1)	Not Satisfied (-2)	GROUP AVERAGE SCORE
15	The authors of the teachers' materials are people of diverse identities (race/ethnicity, gender, other identities).					
16	Guidance is provided to teachers on being aware of one's biases, assumptions, and the gaps between one's own culture and students' cultures (implicit bias).					
17	The teachers' materials ask teachers to reflect on their own practices and experiences learning STEAM subjects and critique them through the lens of cultural responsiveness.					
18	Guidance is provided on combating the legacy of STEAM education related trauma amongst historically marginalized communities and on designing healing and joyful STEAM experiences.					
19	Guidance is provided on using students' everyday lives as the starting point for learning, and making real-life connections between academic content and the local neighborhoods, culture, environment, community issues, and current events.					
20	Guidance is provided on creating opportunities to meaningfully engage students' families to enhance lessons.					
21	Guidance is provided on appropriately using Indigenous and non-Western resources to understand math and science, including oral histories, legends, and community knowledge.					
22	Guidance is provided on engaging students in culturally responsive experiential learning activities.					
23	Guidance includes, for applicable lessons, a range of possible student responses that could all be valid, given the range of student experiences and perspectives.					

MATERIALS/RESOURCES

STATEMENTS

		Very Satisfied (2)	Satisfied (1)	Unclear (-1)	Not Satisfied (-2)	GROUP AVERAGE SCORE
27	The curriculum provides opportunities for students to use accessible technology and manipulatives to explore STEAM concepts in ways that reflect a variety of ways of "doing."					
28	Issues of social justice, equity, and Black, Indigenous, and people of color's experiences and contributions are reflected in homework/classroom assignments and assessments.					
29	The curriculum incorporates the arts as a tool to center experiences within STEM and innovation.					
30	Curriculum rigor is not dependent on access to resources, materials and technology that students and schools may not have. In other words, the curriculum materials are fully accessible; all resources, materials and technology options are rigorous and interesting. (Ex. If students can engage curriculum materials with a computer or paper, the paper materials should be just as rigorous, interesting, and engaging as using the computer).					
31	The resources, materials and technology referenced in lessons include resources from BIPOC communities (Black, Indigenous, people of color).					
TOTAL						
TOTAL MATERIALS/RESOURCES SCORE						

INTERPRETING YOUR SCORES

REPRESENTATION

CULTURALLY DESTRUCTIVE	CULTURALLY INSUFFICIENT	EMERGING AWARENESS	CULTURALLY AWARE	CULTURALLY RESPONSIVE
-12 to -6	-5 to -1	0 to 4	5 to 8	9 to 12
The curriculum likely has little to no representation beyond White male scientists, mathematicians, and artists. The curriculum likely fails to acknowledge the expertise of diverse communities or the everyday users of STEAM.	The curriculum likely minimally acknowledges the expertise and contribution of diverse communities or the everyday users of STEAM. The curriculum likely includes almost no texts, images, and assignments that allow students to learn by connecting their everyday experiences to STEAM lessons.	The curriculum occasionally and inconsistently centers and elevates BIPOC individuals and community contributions, expertise, and worldviews in the curriculum. The curriculum likely includes a few texts, images, and assignments that allow students to learn by connecting their everyday experiences to STEAM lessons.	The curriculum somewhat consistently centers and elevates BIPOC individuals and community contributions, expertise, and worldviews in the curriculum. The curriculum likely includes some texts, images, and assignments that allow students to learn by connecting their everyday experiences to STEAM lessons.	The curriculum likely centers and elevates BIPOC individuals and community contributions, expertise, and worldviews in the curriculum. The curriculum likely includes sufficient texts, images, and assignments that allow students to learn by connecting their everyday experiences to STEAM lessons.

SOCIAL JUSTICE

CULTURALLY DESTRUCTIVE	CULTURALLY INSUFFICIENT	EMERGING AWARENESS	CULTURALLY AWARE	CULTURALLY RESPONSIVE
-16 to -8	-7 to -1	0 to 6	7 to 11	12 to 16
The curriculum likely centers White, Eurocentric, or Western ideas and culture throughout the majority of the text. The curriculum likely includes prominent harmful biases, stereotypes, or positioning of marginalized communities (BIPOC, women, LGBTQ+, etc). The curriculum likely provides zero to very few opportunities to challenge dominant knowledge systems, understand STEAM within a societal context, or provoke critical questions about the status quo.	The curriculum likely centers White, Eurocentric, or Western ideas and culture, while sprinkling in non-Western ideas throughout the majority of the text. The curriculum likely includes some harmful biases, stereotypes, or positioning of marginalized communities (BIPOC, women, LGBTQ+, etc). The curriculum likely provides very few opportunities to challenge dominant knowledge systems, understand STEAM within a societal context, or provoke critical questions about the status quo.	The curriculum likely centers White, Eurocentric, or Western ideas and culture, and includes some non-Western ideas throughout the majority of the text. The curriculum likely includes a few harmful biases, stereotypes, or positioning of marginalized communities (BIPOC, women, LGBTQ+, etc). The curriculum likely provides a few opportunities to challenge dominant knowledge systems, understand STEAM within a societal context, or provoke critical questions about the status quo.	The curriculum likely includes both Western and non-Western ideas and culture. The curriculum likely does not include harmful biases, stereotypes, or positioning of marginalized communities (BIPOC, women, LGBTQ+, etc). The curriculum likely provides some opportunities to challenge dominant knowledge systems, understand STEAM within a societal context, or provoke critical questions about the status quo.	The curriculum likely meaningfully includes both Western and non-Western ideas and culture. The curriculum likely does not include harmful biases, stereotypes, or positioning of marginalized communities (BIPOC, women, LGBTQ+, etc) and uses critical perspectives in STEAM to combat them. The curriculum likely provides sufficient opportunities to challenge dominant knowledge systems, understand STEAM within a societal context, or provoke critical questions about the status quo.

TEACHER'S MATERIALS

CULTURALLY DESTRUCTIVE	CULTURALLY INSUFFICIENT	EMERGING AWARENESS	CULTURALLY AWARE	CULTURALLY RESPONSIVE
-24 to -10	-9 to 0	1 to 10	11 to 17	18 to 24
There is no guidance on engaging diverse learners or culturally responsive teaching in the teachers' materials. Teachers are not encouraged to reflect on their worldviews or their practice. There is no guidance about connecting the curriculum to students' lives. There is no opportunity for cultural responsiveness.	There is a little guidance on engaging diverse learners or culturally responsive teaching in the teachers' materials, but it is mostly on a superficial or symbolic level. It is seen as additive, rather than central to the curriculum and teaching.	There is a little guidance on engaging diverse learners in meaningful culturally responsive ways. The teachers' materials provide guidance on at least one of the following: supplementing curriculum, engaging students in culturally sensitive experiential learning, and making real life connections between the curriculum and students' lives.	There is a lot of guidance on engaging cultural responsiveness. Teachers are presented with activities to reflect on their worldviews and how they see and teach students. There is some guidance on several of the following: supplementing curriculum, engaging students in culturally sensitive experiential learning, and making real life connections between the curriculum and students' lives	There is an abundance of guidance on engaging cultural responsiveness meaningfully throughout the teaching approach, homework, lesson plans, etc. Culturally responsive guidance is clearly marked and presented as essential to effective teaching. Teachers are encouraged to consistently check their own biases and reflect on their practice

MATERIALS AND RESOURCES

CULTURALLY DESTRUCTIVE	CULTURALLY INSUFFICIENT	EMERGING AWARENESS	CULTURALLY AWARE	CULTURALLY RESPONSIVE
-10 to -4	-3 to 0	1 to 4	5 to 7	8 to 10
The curriculum likely does not make considerations for accessibility and does not include resources and materials from BIPOC communities. The academic rigor of the curriculum is highly dependent on the use of inaccessible, White centric materials and resources; these materials and resources are not used to address issues of social justice or BIPOC innovation.	The curriculum likely makes little consideration for accessibility and does not include resources and materials from BIPOC communities. The academic rigor of the curriculum is dependent on the use of inaccessible, White centric materials and resources; these materials and resources are not used to address issues of social justice or BIPOC innovation.	The curriculum likely makes some consideration for accessibility and includes some resources and materials from BIPOC communities. The academic rigor of the curriculum is not dependent on the use of materials and resources; these materials and resources are somewhat used to address issues of social justice or BIPOC innovation.	The curriculum likely makes significant consideration for accessibility and includes some resources and materials from BIPOC communities. The academic rigor of the curriculum is not dependent on the use of materials and resources; there are multiple ways that students can access the curriculum and practice STEAM. Materials and resources are used to address issues of social justice and BIPOC innovation.	The curriculum likely makes significant consideration for accessibility and includes sufficient resources and materials from BIPOC and other marginalized communities. Accessible materials and resources enhance students' STEAM experience and allow teachers to engage culturally responsive practices. There are multiple ways that students can access the curriculum and practice STEAM. Materials and resources are used to address issues of social justice and BIPOC innovation.

Appendix I Cited Resources

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