RREV's Innovative Pilot Template

As part of the **Innovative Mindset and Pilot Development** courses being offered through several of Maine's institutions of higher education, the RREV project uses a consistent template for the creation of all future pilots. Because every pilot created and tested with RREV funds WILL BE published in EnGiNE, we want all of Maine's educators to have the assurance of consistency.

This template provides an outline of the components required of an Innovative Pilot. The information in this template will serve as the basis for requests for school/district level project funding.

Section 1: Define the Need

A. Describe your innovation.

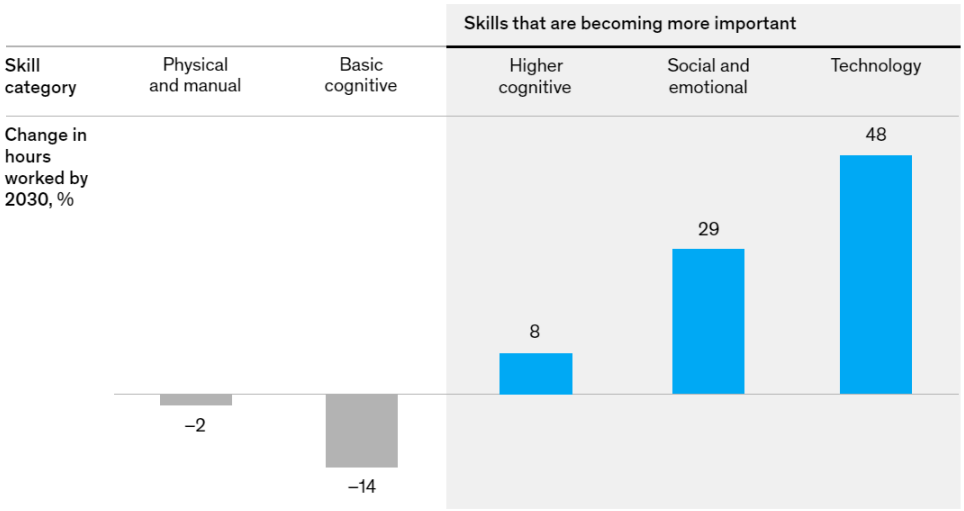
Consider what evidence supports the need for an innovation, and the evidence that suggests your innovation will improve the current situation.

For the past five years, St. George School staff, Board members, parents, and community members – through various working groups and committees – have identified Career Technical Education (CTE) as a top priority for St. George School. Historically, St. George School provided middle level students with CTE classes (referred to as "vocational technology" or "shop class") through a partnership with a local nonprofit called the Lillius Grace Institute. This partnership lasted for more than half a century, ending in 2012 when the Grace Institute closed.

In May 2021, the Facilities & Programming Working Group unanimously voted to recommend that the School Board pursue developing a K-8 CTE program and allocate funds to build a new CTE space at St. George School. Members of the Working Group - which include school administrators, teachers, School Board members, parents, and local contractors and business owners – recognized the challenge local employers have in finding skilled workers in a variety of trades, e.g., carpentry, plumbing, electrical, general construction, etc. The Working Group believed a K-8 CTE program would engage more students and enrich their education while helping them develop the skills and habits of mind to find meaningful employment after high school or college graduation. In addition, these students will be able to find work in their local community, strengthening the economic resilience of the Town of St. George.

In partnership with Mid-Coast School of Technology, we will connect St. George School's K-8 CTE program with MCST's high school program, thereby creating a K-12 CTE Program. This will provide a model for other rural communities while preparing students for an economy that increasingly requires technical knowledge. According to an analysis by the McKinsey Global Institute, by 2030, "more jobs will require technological, social, and emotional skills.[1]

[1] See The Next Normal: The future of capability building, McKinsey & Company, https://www.mckinsey.com/featured-insights/the-next-normal/capability-building?cid=other-eml-alt-mip-mck&hdpid=c20cfa17-9aa1-49a1-9e6e-4f8ad4db4698&hctky=12313837&hlkid=acf3abdfbf7548838877499a94145117 (March 3, 2021).



Source: US Bureau of Labor Statistics; McKinsey Global Institute analysis

In addition, as an administrator, I have participated in too many high school transition meetings over the years at which a student is told, "If you can only make it through 9th and 10th grade at the high school, then you can go to Mid-Coast School of Technology for your junior and senior year." Why are we making it harder for students to learn the skills that they are telling us *they want to learn*? Why do we make them wait two years before allowing them to study trades that are in demand by employers in our community, the State of Maine, and across the country and world? Why are we risking them disengaging from school and dropping out when they are telling us that they want to learn skills that will allow them to stay in their local communities and earn a good living?

This needs to change and it needs to change now. The roadblocks we place before students who want to pursue CTE are hurting students and communities. We need to value CTE as much as any other pathway toward graduation and make it easier for students to pursue their interests in technical fields.

B. Identify which students would be impacted, targeted, or supported by the innovation.

Review the evidence – quantitative and qualitative data and research – that indicates this group of students is considered the most vulnerable and would benefit from the described innovation.

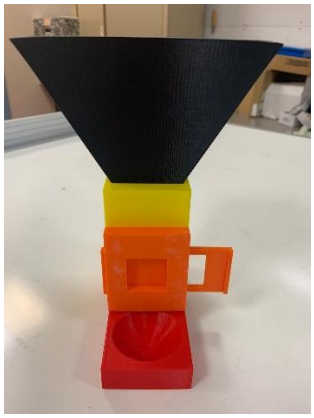
Data you can use to inform your innovation, rationale, and targeted student population include the performance of various groups of students (e.g., students in rural locales, students from low socio-economic conditions, students with disabilities, students who are Els, students at risk for dropping out, student who are homeless) with regard to academic achievement, graduation rates, social emotional and mental wellness, economic data, and/or workforce participation.

CTE is critical to our students, communities, and economy:

- CTE students are less likely to drop-out and more likely to graduate on time.
- CTE students and their parents are three times more likely to report being "very satisfied" with the real-world learning component of their education than non-CTE students and parents.
- CTE programs enable students to earn degrees, certificates, and credentials that qualify them for about 30 million "good jobs" – jobs that pay a median income of $55,000 or more and require education below a bachelor's degree. Many of these jobs are found in the skilled trades, health care, and hospitality.
- Shorter term CTE credentials can be as valuable as a bachelor's degree.

- A lack of skilled workers may leave an estimated 2.4 million manufacturing jobs unfilled between 2018 and 2028, while many of the almost 7.2 million workers employed in infrastructure jobs are nearing retirement.
- Communities benefit from CTE. For example, Oklahoma's economy gets a net benefit of $3.5 billion annually from graduates of the CareerTech System. Wisconsin taxpayers receive $12.20 in benefits for every dollar invested in the technical college system.[2]

St. George students and their families recognize the importance of CTE. One of our 5th grade students was struggling in the traditional classroom. He resisted coming to school and – when he was here – often had behavioral challenges in the classroom. This student was a hands-on learner so we connected him with our Makerspace Director, Paul Meinersmann. With Paul, the student designed and prototyped an automatic cat feeder using tools such as Tinkercad, 3D printers, and a laser cutter. He worked with Paul to program the electronic components that controlled the door that released food when the cat pressed a button. A picture of the prototype cat feeder is below:



I talked with the student's mother after he started working in the Makerspace with Paul. She shared that, one evening, the student's older brother - who is in middle school - said that he was going to become a diesel mechanic. The younger brother said, "I'm going to be an engineer and build motors." In the fall, this student didn't want to come to school and did not attend regularly. By the winter, after a few weeks in the Makerspace, this same 5th grader told his mother he wanted to study engineering.

Drew Minery attended St. George School and is currently at first-year student at Maine Maritime Academy (MMA). He shared the following feedback on the importance of CTE:

> *I attended* [Mid-Coast School of Technology] *MCST my senior year of high school and thought it was a great experience. In fact, I wish I had started attending MCST earlier in high school. I took the welding program and after just one year I was able to achieve an AWS welding certificate. I can use the skills I learned from MCST to fabricate many different parts for various types of machines/equipment. All the skills taught in the many different programs offered by MCST are valued by many employers around the world. Even if you do not want to have a profession in welding or machining for example, they are still great skills to have. I am now attending Maine Maritime Academy for Marine Engineering Technology where I had to take a welding course, so I was already prepared and was able to finish the course early. Welding could be needed on the ship, if there is ever a part that needs to be fabricated while at sea. I also just completed a graphics course at MMA where we used a computer-aided design (CAD) program to create any mechanical part you could possibly think of which could later be produced on a 3D printer or CNC machine.*

[2] *See* CTE Works! ACTE, https://www.acteonline.org/wp-content/uploads/2018/03/2014_NRCCUA_ACTE_Research_Report_Final.pdf (March 3, 2021).

I think if St. George School offers these types of hands-on classes, it will enhance the students learning experience, since most enjoy learning by hands on activities. It would also offer them an opportunity to try something they might not ever get to try again. I also think by teaching these classes at a younger age, it gives the students an idea of what they might want to do in the future. The demand for skilled trade workers increases every year and the demand will always be there, so I think it would be a great idea for St. George to provide the students with this opportunity.

CTE is the future of public education. Our kids are already there. It's time for the rest of us in education to catch up.

Section 2: Describe the Innovation

A. Describe the goals of your innovation.

Consider how your innovation will meet the needs of the identified target student population(s) and how you plan to achieve your goals. Additionally, consider any changes in policy, practice or structures you expect as a result of the innovation.

St. George Municipal School Unit (MSU) is partnering with the Mid-Coast School of Technical (MCST) to build on the success of our Makerspace Initiative and create a **K-12 Career and Technical Education (CTE) Program**. CTE integrates with academics in a rigorous and relevant curriculum; features partnerships with professionals and industries that enable clear pathways to certification and degrees; and prepares students to be college and career-ready by providing core academic, employability, and technical, job-specific skills.[3] Our existing CTE programming, such as the Makerspace Initiative and classes taught by our STEAM Educator, [4] will continue to be offered to students in grades K-8. As students get older and enter 5th-8th grade, they will be able to take specialized classes and spend more time focused on CTE. Our goal is to create a K-12 CTE program that will allow students, from the day they enter kindergarten through high school graduation, to (1) develop the technical, creative thinking, and social-emotional skills to thrive in an innovation economy and (2) strengthen our local and regional economies by meeting existing labor force needs *and* creating new businesses and industries.

Through the K-12 CTE program, the school will continue a long tradition of place-based education that grounds student learning in the history, traditions, and natural environment of St. George. Students apply their learning to strengthen the town through scientific research, civic engagement, and community service. In the process, our students develop the skills, sense of purpose, and civic commitment to positively impact their community *today* and the world *tomorrow*.

MCST Director, Bobby Deetjen, and I met with Senator David Miramant and Representative Ann Matlack this winter to discuss drafting legislation that would allow St. George students (who already enjoy high school choice) to choose to attend MCST fulltime for all four years of high school and receive their diploma from MCST. State law does not allow Maine's career and technical education schools to award diplomas. We want to change this.

B. Describe activities included in your plan for each stage – preparation (P) or implementation (I) – of your innovation.

- ***Preparation*** *includes building stakeholder awareness, establishing routines and processes, and coordination of logistics.*

[3] *See* What is CTE? Association for Career & Technical Education (ACTE), https://www.acteonline.org/why-cte/what-is-cte/ (March 3, 2021). Career Technical Education offers students training and experiences through 16 "Career Clusters" that include, among others, Information Technology; Health Science; Architecture & Construction; from Agricultural, Food & Natural Resources; Science Technology, Engineering & Mathematics; and Arts, A/V Technology & Communications. *Id.*

[4] STEAM stands for Science, Technology, Arts, and Math. With the support of the School Board and community, we added a STEAM Educator to our staff in the 2017/18 school year.

- ***Implementation*** *includes planned implementation activities, as well as professional development for the educators participating in the innovation.*

Activity	Purpose	Stage (P or I)	Date of Completion	Person Responsible
1. Develop initial vision based on input & feedback from community members	Share idea with school and community for further feedback and input	P	March 2021	Facilities & Programming Working Group; Superintendent Mike Felton
2. Participate in EMCC Design Thinking course	Rethink and test idea for K-12 CTE Program; apply design thinking process to original proposal; receive feedback from educators outside of St. George	P	May 2021	STEAM Educator Amy Palmer; Makerspace Director Paul Meinersmann; Superintendent Mike Felton
3. Facility & Programming Working Group votes to recommend School Board develop K-8 CTE Program	Demonstrate school and community support for K-8 CTE program	P	May 2021	Superintendent Mike Felton and Facilities & Programming Working Group
4. Hire 5th- 8th Grade St. George School CTE Teacher	Along with STEAM Educator Amy Palmer and Makerspace Director Paul Meinersmann, the 5th – 8th grade CTE teacher will provide CTE instruction to upper elementary and middle level students	I	April 2022	Superintendent Mike Felton and MCST Director Bobby Deetjen
5.Develop CTE Scope & Sequence	Develop the curriculum to deliver high quality K-8 CTE instruction with input from St. George School educators, MCST staff, and Facilities & Programming Working Group	I	August 2022	STEAM Educator Amy Palmer; Makerspace Director Paul Meinersmann; 5th-8th Grade CTE Teacher; Superintendent Mike Felton; MCST Director Bobby Deetjen
6. Design and build CTE space to house Makerspace, STEAM and K-8 CTE programs	Design and build a space that meets the needs of the K-8 CTE program	P	September 2022	Superintendent Mike Felton; MCST Director Bobby Deetjen; Facilities & Programming Working Group
7. Create K-8 CTE Programming committee or working group composed of St. George School	Develop ongoing K-8 CTE evaluation process that provides feedback and data	I	October 2022	Superintendent Mike Felton; MCST Director Bobby Deetjen; Facilities &

staff and Board members, MCST staff and Board members, St. George parents, and community stakeholder including local business owners an contractors	that can be used to improve program			Programming Working Group

Section 3: Define Innovation Outcomes & Measure to Assess Outcomes

A. Identify the outcomes *(i.e., student outcomes, changes in instructional practices, changes in student practice)* that you expect to see as a result of your innovation.

Consider both short-term and long-term outcomes, at different points in the time (e.g., at 6 months, 12 months, 2 years and 3+ years).

By June 2023:

- 100% of St. George students will access K-8 CTE Programming
- Social Emotional Learning (SEL) assessments will show an increase in student engagement in grades 5 – 8
- St. George School students attending MCST will demonstrate deeper understandings of CTE skills than students from schools that do not provide K-8 CTE programs as measured by feedback from MCST staff and student grades

By June 2025:

- Each year, 20% or more of rising St. George 9th grade students will elect to attend MCST fulltime and receive their diploma from MCST.

By June 2030:

- At least 80% of St. George high school graduates will indicate that the K-8 CTE program prepared them for post-secondary success (e.g., college, career, military service, etc.)
- 100% of St. George resident students will graduate from high school or MCST

By June 2035:

- At least 95% of St. George high school graduates will indicate that the K-8 CTE program prepared them for post-secondary success (e.g., college, career, military service, etc.)
- 100% of St. George high school/ MCST graduates will have a credential of value (college degree, trade certificate, etc.)[5]

B. Describe your plan for collecting and reviewing data to assess your innovation outcomes.

Potential data to collect includes qualitative and quantitative data (e.g., surveys, interviews, focus groups, observations, exit tickets, and on-demand assessment(s) that can be considered.

[5] MaineSpark reports that, currently, 43% of Mainers have a "credential of value." See MaineSpark Policy Priorities, https://mainespark.me/wp-content/uploads/2018/12/PolicyPriorities-LetterSize-FNL-2-X.pdf, (May 31, 2021).

Data Type	Baseline (B) Interim (I) Summative (S)	Frequency of Data Collection	Person(s) Responsible for Collection and Data Quality
1. Graduation Rate (*quantitative*)	B, I, S	Annual	Superintendent Mike Felton (through annual state reports)
2. Percentage of St. George School students participating in K-8 CTE Program (*quantitative*)	B, I, S	Annual	St. George School Instructional Administrator Adam Bullard
3. SEL measures of student engagement (*quantitative*)	B, I, S	Annually in fall and spring	St. George School School-wide Behavior Interventionist Amy Hufnagel
4. St. George student success at MCST as measured by interviews with MCST teachers and student grades (qualitative & quantitative)	B, I, S	Annual	MCST Director Bobby Deetjen
5. College and career preparedness as measured by interviews with St. George high school graduates (*qualitative*)	B, I, S	Annual	Superintendent Mike Felton
6. Percentage of St. George high school/ MCST graduates with a credential of value	B, I, S	Annual	Superintendent Mike Felton and MCST Director Bobby Deetjen

C. Describe how you will scale your innovation, including necessary policy changes, changes in mindsets, capacity-building activities, and long-term financial sustainability.

Consider the systems changes that this innovation will require and promote.

St. George MSU and MCST will share qualitative and quantitative data from the K-12 CTE Program with community members, legislators, and business leaders. This data – both the stories and numbers – demonstrating the positive impact of K-12 CTE will help us work with state legislators to pass legislation creating a pilot program whereby St. George high school students can choose to attend MCST fulltime and receive their diploma from MCST. The K-12 CTE Program will provide a model for other rural communities focused on building rural educational, economic and civic resilience.

D. Describe the feasibility study you engaged in during the development of your innovative pilot plan, including which aspects of the plan for the pilot were reviewed, which stakeholders were engaged, feedback received and revisions made to the plan as a result of the feedback.

In 2016, with the generous support of the Perloff Family Foundation and Wickham Skinner's Mainstream Foundation, St. George School launched the Makerspace Initiative. The Makerspace is a *place* where people gather to design, build, and create (i.e., to make stuff), often using a mixture of traditional tools and resources, such as paper, scissors, duct tape, and cardboard, and modern tools, including 3D printers, laser

cutters, CNC machines, robotics, and computers. The Makerspace is also an *idea* – a belief that people often learn best when they are involved in making something that is tangible and has purpose.

The Makerspace reminds students and educators that we are all inventors and entrepreneurs and have the power to solve problems. When a piece of a classroom saltwater tank breaks, the first step is no longer to jump online and order a part. Instead, students create prototypes using the 3D printer, design software and – most importantly – imagination and perseverance. Students build and program their own robots and gain a better understanding of the logic that underlies the computers and software that pervade their lives. Rather than "Google" existing information and ideas, students use the Makerspace to create something new and reshape what already exists. To continue to grow the Makerspace Initiative, which now includes a STEAM Educator, and to develop a K-12 CTE program, we need space for people to collaborate, experiment, and create; new equipment; and a dedicated 5th-8th grade CTE Teacher.

Prior to participating in the Design Thinking class, STEAM Educator Amy Palmer, Makerspace Director Paul Meinersmann, and Superintendent Mike Felton outlined an idea for a K-12 CTE Program and new CTE space. Through the Design Thinking class, that idea evolved based on input from professors and classmates as well as feedback from St. George students, parents, and the Facilities and Programming Working Group. We sharpened our vision for K-5 CTE classes that will allow younger students to practice hands-on learning and develop habits of thinking that focus on (1) curiosity, (2) perseverance, and (3) understanding that they have the capacity to use tools to solve problems and create solutions. When students enter 5th-8th grade, they will focus on more specialized technical skills such as boatbuilding and 3D design and printing. To scale and diversify our offerings for older students, St. George School and MCST will hire a 5th-8th grade CTE teacher and partner with local organizations such as the Apprenticeshop.

The K-8 CTE program and building at St. George School will act as a satellite site for MCST. We plan to develop adult education CTE classes based at the St. George School CTE building. Through the K-8 CTE Program, MCST diploma offering for St. George students, and adult education classes, we will provide our entire community with access to CTE training, skills, and certifications. The St. George Municipal School Unit & Mid-Coast School of Technology K-12 CTE Program will serve as a model for delivering "remote" CTE programming in rural communities.

Section 4: Identify Key Expenses

A. Identify the key expenses associated with the preparation, implementation, and ongoing refinement of your pilot.

Expenses could include staff time, materials, professional development activities, facilities, and other related expenses. This section does not need to include specific costs, but rather list out the different costs that should be considered to implement the innovation.

- St George School and MCST staff time to plan and design a K-8 CTE scope and sequence
- 5th-8th grade CTE teacher based at St. George School
- Design and build CTE space on St. George School property
- Equipment, tools, and technology for CTE space