

Educator Externship Fellowship Proposal (DRAFT)

Introduction:

ReadyCT has its roots in a 2010 legislatively mandated education reform commission under Gov. M. Jodi Rell. The commission was charged with creating a plan to address Connecticut's education achievement gap -- a gap initially identified by the large disparity in academic performance between low-income fourth- and eighth-graders and their non-low-income counterparts. Following creation of the plan, the work was deemed so valuable that in 2011 the original commission members formed a nonprofit organization, CCER, to ensure the plan's outlined recommendations were implemented and that further efforts would be pursued to advance the work.

Today, ReadyCT is driven by its mission statement: *to advance academic excellence and opportunity for all public school students in Connecticut through collaboration with business, civic, and education leaders*. Leveraging our cross-sector approach to this work, specific activities include policy advocacy by engaging with lawmakers on education legislation; capacity building of schools and districts; and program delivery that promotes best practices in education, inclusive of literacy leadership and improved rigor in classrooms across content areas.

In response to the overall need to identify and nurture STEM and specifically, computer science talent, ReadyCT is currently very active in the STEM/computer science sphere and pursues all appropriate opportunities to address the need to bring K-12 STEM/computer science instruction to students who are often less inclined to think of themselves as STEM/computer science types, i.e., girls/women, low-income students, and students of color. Most recently, ReadyCT played an active role within a small but mighty CS coalition that includes the Connecticut Computer Science Teachers Association (CT CSTA). ReadyCT's executive director, Shannon Marimón, helped to inform the strategy employed to move forward the seminal 2019 CS legislation - Public Act 19-128, which includes a mandate of CS curriculum in public schools also requires the CT State Department of Education (CSDE) to provide a clear pathway for teacher certification in CS and develop an alternative route to certification. Shannon's contribution included oral and written testimony as well as leading a multitude of conversations focused on modifying language in order to arrive at a version of the bill that ultimately passed unanimously through the Senate and passed by a significant majority through the House. Now ReadyCT's attention will turn to implementation of this new law.

The Opportunity (Problem or Needs Statement):

As you know, the rapidly evolving fields of CS and IT are currently in high demand and rapidly involving in today's technological world, and quality CS training is essential to satisfying that demand. Recent data from nonprofitCode.org indicates that in 2017, there were over 5,500 computer-coding jobs in CT with only 533 college graduates from CT receiving a degree in

computer science¹. Prospectively, according to the CT State Department of Labor (DOL), within the next decade there will be 15,000 computer-related jobs in software and IT.² Demand for computer science in CT is significantly high at nearly three times the national rate.³

Although ReadyCT's advocacy and contribution efforts to mandate computer science in the public school curriculum ultimately led to its inclusion in now [Public Act 19-128](#), the law has not yet been effectively implemented. Data has shown a significant achievement gap in science performance between students within the Hartford Alliance Districts and the state of Connecticut as a whole.

¹ <https://code.org/promote/ct>

²

<https://www.hartfordbusiness.com/article/as-ct-faces-tech-worker-shortages-momentum-builds-for-k-12-computer-science-curriculum>

³ <https://code.org/promote/ct>

Opportunity Districts Next Generation Science Standard (NGSS) CMT/CAPT Science Assessments⁴

District (*Opportunity District)	Total Number of Scored Tests	Percentage of Students who reached the CMT/CAPT Science Goal	Gap between District and State of CT Percentage of Students who reached the CMT/CAPT Science Goal (34.2%)
Hartford*	4,369	18.4%	-15.8%
East Hartford*	1,517	21.4%	-12.8%
New Britain*	1,942	15.7%	-18.5%
Bridgeport	4,340	15.0%	-19.2%
Derby	311	21.5%	-12.7%
East Haven	664	32.4	-1.8%
New Haven	4,360	19.0%	-15.2%
New London	712	19.7%	-14.5
Norwich	766	27.2%	-7.0
Waterbury	3,985	17.1%	-17.1%

Our hypothesis: Developing effective educators through work-based learning professional development will improve both teacher and student engagement, motivation, and learning. The hands-on projects the students complete as a result of the educator’s more effective teaching method will ultimately ensure the students have a better understanding of the CS field and the opportunities that exist within that field, providing them with adequate training to enter into the CS workforce. The Externship Program will provide continual support to the extern throughout their externship experience and through developing their lesson plan. We believe an educator externship program can be an effective form of professional development that the extern can use to enhance his or her career.

⁴ <http://edsight.ct.gov/SASPortal/main.do>

Ultimately, instructors are responsible for adequately preparing students to fill jobs that are in high demand through effective curriculum, regardless of their present capacity. Research has shown that professional development of teachers plays an important role in student achievement.⁵ An Educator Externship Program in which real-world application of STEM/CS is implemented in the classroom after an instructor's extensive exposure to the day-to-day practices of a business was shown to be highly effective based on the positive outcomes and a majority of positive testimonials given from the Regional Center for Next Generation Manufacturing Externship Program run from 2005-2009.

Summary of Student Outcomes:

- ☐ Increased engagement
- ☐ Improved critical thinking and problem-solving skills
- ☐ Increased awareness of STEM/CS career pathways

The following testimonials are reflective of the type of feedback that was received from 28 out of the 38 participants regarding the Regional Center for Next Generation Manufacturing Externship Program:

"This kind of authentic experience was able to lend me a credibility that I would not have had if not for the externship." -Chris Petersen, Bacon Academy

"The students were exposed to real-world ideas and situations." -Jeremy Rubock, Wilby High School

Additionally, businesses were able to gain a better connection to education. This was in part through the opportunity for teachers to bring their students on field trips to the worksite of their externship as a result of their newfound connections to employers.

Several externs found the experience to be valuable and successful in both in improving student engagement and learning and chose to participate in a second externship either at the same company or an alternative company. Additionally, a significant number of employer hosts found the externship to be of value both for their businesses as well as for the educational system and chose to participate with the second cohort.

The Educator Externship Program was a four-week, 160-hour summer program that consisted of two cohorts of STEM/CS educators with 38 extern participants and 30 employer hosts. Among the 38 externs, 11 were from high schools, 8 were from technical high schools, 16 were from community colleges, and 3 were from 4-year colleges.

⁵

https://www.researchgate.net/publication/242339121_Teacher_effectiveness_and_student_achievement_Investigating_a_multilevel_cross-classified_model

Following the externship, the extern was required to develop a work-based learning project that aligned with what they learned at the externship and implement it into the classroom.

One notable pattern of feedback from the majority of externs and employer hosts was the concern that the four-weeks did not provide enough time for an in-depth experience to learn the often large amounts of new information that was presented to educators.

As one of the key contributors to the language and content of P.A. 19-128, ReadyCT has an obligation to ensure the law of a computer science curriculum mandate in CT public schools is sufficiently implemented. Thus, we must invest in CT's CS educators through building their potential to develop quality, relevant, and reality-based curriculum.

Additional Considerations:

Research (Other State Comparables)

- Other states have also shown a positive correlation between educator externships and student outcomes,⁶ reporting similar outcomes as those from CT's externship program as well as an increased awareness and influence on education from businesses,⁷ resulting in more relevant curriculum material.⁸

The testimonials below reflect the above-stated outcomes:

*"My classroom has become much more interactive, and I feel like students are taking ownership of their material instead of just copying notes and trying to do learning just for learning's sake. The students enjoy solving a problem that could be found in the world. instead of just studying because that is what other people have done before in similar classes."*⁹

*"They're inputting us and we're inputting them. They are able to take their newfound skills back to their classroom, which then becomes transferable to the students as they are looking for career paths" -David Jahn, Municipal Arborist*¹⁰

These state comparable summer programs, like [Lift2](#), which worked with educators teaching math, science, and CS, were run for five-eight weeks.

⁶ <https://files.eric.ed.gov/fulltext/EJ974465.pdf>

⁷ Foncault, P. (2002). Linking Schools to businesses, *The Clearing House*, (75) (3), 164-165.

⁸ <https://files.eric.ed.gov/fulltext/EJ974465.pdf>

⁹ <http://www.teachers21.org/program-testimonials#lift2>

¹⁰

https://iowastem.gov/sites/default/files/Externships/2016Externships_Case-Studies_Des-Moines-Public-Works.pdf

The Proposal:

ReadyCT is seeking support to design and execute an Educator Externship Program focused on updating curriculum in CS/IT to adequately prepare students to meet the current demands of the workforce. This professional development would be a revival of the above-mentioned Regional Center for Next Generation Manufacturing Educator Externship Program run from 2005-2009, which emphasized the development of work-based learning projects within STEM/CS fields to be applied to classroom material. Like the previous CT model, it would consist of two cohorts of 20-25 participants each. Reflecting the state comparables, they will each participate in a six-to-eight week long summer externship that demonstrates both the extern's abilities/qualifications and interests. The extern will be required to complete a minimum of 200 hours with a maximum of 320.

Addressing Anticipated Challenges:

ReadyCT recognizes the difficulty in ensuring that participants remain committed to the work of the externship and will plan to address this in several ways. First, we will create an application process that will help ensure participants have sufficient motivation and district support to successfully participate. The Connecticut State Department of Education (CSDE) in collaboration with The Connecticut Business and Industry Association (CBIA) will ensure carefully arranged placements through an in-depth assessment of the educator's qualifications and needs. The potential extern will complete a background statement form to be reviewed along with an updated resume. Second, a list of questions will be provided for the educator to carefully consider, prior to participation to ensure the best possible experience is provided. Furthermore, for the purpose of ensuring the potential employer host is well-prepared for the externship and is motivated, a list of considerations will be provided for review, such as a list of suggested activities for the extern, as well as the fact that this is a long-term benefit of preparing the future workforce to enter their field. Third, subsequent to a formal interview between the educator and employer host, ReadyCT will ask participants to sign a written agreement contract that requires program completion and establishes expectations and projects the extern will complete during the externship. The contract will be referred to by both parties throughout the externship to ensure the externship is being carried out accordingly.

For the purpose of developing an effective lesson plan, the extern will be required to complete a daily journal entry, reflecting on how what they have learned at the externship is relevant and can be applied to the classroom. Additionally, a work-place learning audit form will be provided with the intent of aiding the extern in reflecting on their experience and how it is relevant to course curriculum, and particularly how it can be implemented into CS curriculum to engage those who feel less inclined to consider themselves capable in STEM/CS, such as females and underrepresented minorities.

A stipend between \$4,000 and \$6,400 will be paid to each extern upon completion of the externship. Furthermore, the grant will cover worker's compensation and liability insurance with no cost to the employer host.

The Partnerships (and Sustainability Plan):

ReadyCT will collaborate with the Connecticut Business and Industry Association (CBIA) to establish employer connections and the Connecticut State Department of Education (CSDE) Academic Office for evaluation of educators, coursework, and student outcomes.

We believe that our partnership with CBIA will establish a strong connection with quality employers and provide effective extern placements. Through our partnership with CSDE Academic Office we can ensure a quality assessment of student performance and guarantee a sustainable integration of work-based learning within school curriculum through an ongoing evaluation.

Key Deliverables (over 12 months):

- Promotion and recruitment of 40 educators
- 40 assessments of qualifications and professional development needs of educators conducted
- Promotion and recruitment of at least 16 employer hosts based on educator assessments
- At least 38 Formal interviews conducted
- Official placement of at least 38 educators with employer hosts

Key Outcomes (Focus on Educator and Student Indicators):

- Should align to the NGSS assessment (CMT & CAPT Science section until new NGSS assessment is adopted)
- Student engagement/experience where applicable
- Surveys of educator/employer experience
- Increased educator retention rates
- Improvement in student performance
- Long-term employment placement/alignment with workforce needs

Budget Calculation (based on= 40 participants):

Expense	Budgeted
Materials: Background Statement Forms Journals Contracts Workplace Learning Audit forms Marketing/promotion	\$2000
Transportation Fees: 40 Round-Trip Ground Transportation Trips, inclusive of Parking	\$1000
Stipends:	\$6400*40= \$256,000
Worker's Compensation:	TBD
Liability Insurance:	TBD
Program Coordinator/Administrative Oversight:	\$18,500
Indirect (10%):	