Grant Title: **Accelerated Pathways in Advanced Manufacturing (APAM)**

Author: **Community College of Rhode Island**

Link: http://www.ccri.edu/

Document: Accelerated Learning Program - Part II

DOL Disclaimer Statement:

RHODE ISLAND BOARD OF EDUCATION
OFFICE OF HIGHER EDUCATION
80 WASHINGTON STREET, SUITE 524
PROVIDENCE, RHODE ISLAND 02903

To: Sarah Griffen, R.I Department of Labor and Training

From: Susan LaPanne, Associate Commissioner, R.I. Office of Higher Education

Date: December 24, 2013

Re: Clarification of RI State Purchasing Regulations

At the request of Associate Commissioner Deborah Grossman-Garber, I am writing to clarify the Rhode Island's purchasing regulations with regard to the procurement of a written evaluation plan for the TAACCCT III proposal. It is my understanding that this proposal must be submitted by the state to the U.S. Department of Labor in mid-January 2014. This letter is to confirm that the state has delegated authority to OHE and to CCRI to commit up to $5,000 to procure services for the writing of the proposal's evaluation plan. I will approve an amount up to $5,000 for this purpose.

Once the TAACCCT III proposal is approved, state regulations dictate that the grantee works through the RI Department of Administration to issue a request for proposal for an open competition to identify the evaluator of the TAACCCT III grant. This memo is to clarify that no entity who may have been involved with the preparation and submission of the TAACCCT III proposal will be disadvantaged in any way from competing for and/or winning the evaluation contract.

If you have further questions, please do not hesitate to contact me.

CCRI's ***Evidence-Based Design for Educating Adults*** (E-BDEA) originated from the work created by the National Center for the Study of Adult Learning and Literacy (NCSALL). NCSALL existed as a partnership of multiple organizations, including Harvard Graduate School of Education, Brown University, the U.S. Department of Education's Office of Educational Research and Improvement, etc. NCSALL partnered with World Education from 1996 to 2007 via federally funded initiative. Its primary mission included conducting research to connect theory with practice for enhancing adult education programming. NCSALL's research publications include works faculty from Harvard's School of Graduation Education, School of Public Health, Project Zero along with faculty from Brown University and World Education. (See http://www.ncsall.net).

CCRI's evolving model added two key areas of input on to NCSALL's original design that included the following three components: Basic and Applied Research, Practitioner Knowledge, and Program Assessments and Evaluations. CCRI's two additions (Input from Key Stakeholders and Potential Innovations) reflect AACC's strategy of "*incorporating design principles that emerge from community college research and practice.*" (See above listing of AACC recommended strategies.)

- CCRI's proposed Methodology and Work Plan embody AACC's clarion call for *Reclaiming the American Dream;* our proposed strategies and activities evoke fundamental institutional changes leading to a new set of Three Rs: Redesign students' educational experience, Reinvest institutional roles, and Reset the system.

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Descriptions of each of the components of our Program Model Strategy incorporate how these complementary guiding principles informed our selection of specific strategies.

CCRI Ready to Work Grant – Statement of Work

EXPRESS PATHWAYS to ADVANCED MANUFACTURING (EPAM)

i. Statement of Need Targeted Industries and Occupations

Since the financial crisis began in 2007 and with the severe recession that followed, Rhode Island (RI) has faced significant unemployment challenges compared with the rest of the nation. Examples of these challenges over the last seven years include losing 20.6 percent of its manufacturing jobs, private sector employment declining by 7.36% and a loss of about 3,500 public sector jobs.[1] The most recent RI Department of Labor's 2013 annual average indicates 86,114 Rhode Islanders per month were out of work, gave up looking for work, or were working part time. For April 2014 the RI Department of Labor and Training reported RI held the highest unemployment rate among the fifty states and has surpassed both the national and New England rates since 2005.[2]

RI's shoreline and extensive coastal access to support shipping/exporting goods places the state in a strong position to grow its manufacturing sector. The rising role of technology, which is considered a "cross cutting" industry, has elevated productivity via computerized, sophisticated processes enabling production of a wide variety of manufactured goods. Manufacturing has moved from manual mills and lathes to computerized numerical control equipment and 3-D printers, a field known as Advanced Manufacturing, which has been identified by the President's High Growth Training Initiative as "New and Emerging" or will achieve "Substantial Growth."[3] Thirteen employment sectors within the state experienced growth during 2013, including manufacturing which added 400 new jobs for a total employment sector of approximately 40,100 people.[4] The annual growth rate of gross state product is forecasted to be 2.2% from 2012 to 2017 compared to 0.0% from 2007 to 2012.[5] Manufacturing represents approximately 8% (1,513

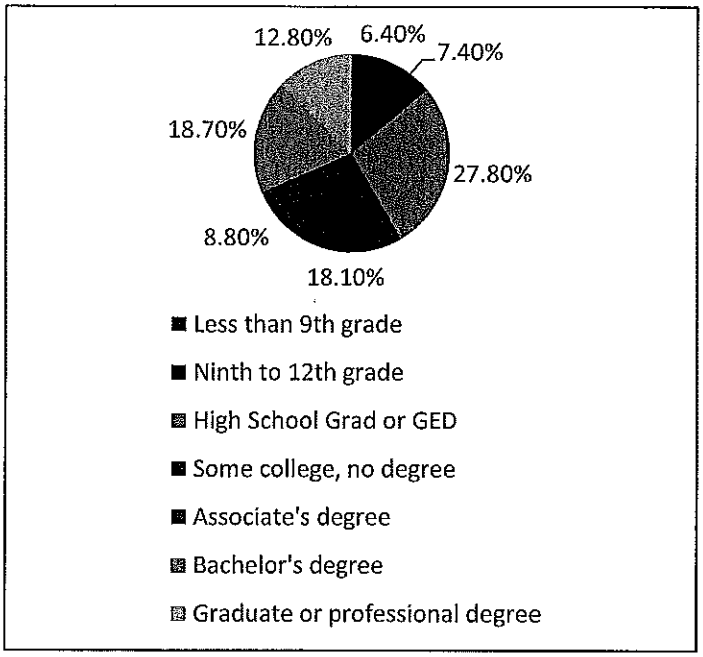
General Dynamics/Electric Boat (EB) and the Workforce Partnership of Greater Rhode Island (WPGRI) as primary partners.[13] Additional partners include the RI Vet Success, netWORKri and the RI Department of Human Services. Signed letters of support are attached.

Polaris MEP, located in Providence, a non-profit organization established in 1996, is funded in part through the National Institute of Standards and Technology. Its mission is to sustain quality manufacturing in RI. As a statewide organization, Polaris MEP provides manufacturing business improvement programs to over 750 of the state's manufacturing businesses in order to assist them in remaining current and competitive, qualities that are essential for achieving sustainable and profitable growth

EB, one of the leading manufacturing employers in the state, was established in 1899 as a division of General Dynamics Corporation. It has been the primary builder of submarines for the United States Navy establishing standards of excellence in the design, construction and lifecycle support of subs. Its automated hull-fabrication and outfitting facilities are located in Quonset Point in North Kingstown, RI with additional operations in Groton, CT (approximately 52 miles south of Quonset Point). EB's current workforce of more than 12,000 employees includes 2,767 at Quonset Point of which 2,436 are Rhode Islanders. The company employs 48 employees in an engineering office in Newport, and an additional 1,434 Rhode Islanders in the CT facilities.[14]

President Obama's signing of the National Defense Authorization Act for 2014 in December of 2013 earmarked $5.8 billion in defense spending for RI's economy to build two Virginia-class submarines. In April 2014, U.S. Senator Jack Reed announced the Navy had awarded a $17.6 billion contract to General Dynamics Electric Boat to build ten Virginia-class attack submarines. As a result of the new contract, EB plans to hire an additional 600 workers by December 2014.[15] By the end of the decade EB will employ approximately 6,000 people – an increase of 2600

Island Department of Labor and Training (DLT) 43% of Rhode Island's jobless residents carry the designation of "long-term unemployed."



Education Attainment of Working Age RI (age 25+), 2012**Source:** US Census Bureau, 2012 American Community Survey. 1 year estimates

The predictions for job openings in manufacturing can serve as new employment opportunities for the long-term unemployed: The RI DLT's labor market information has predicted that employers in AM need to fill more than 10,100 positions between 2010 and 2020. More than 50% of all job growth categories projected through 2020 will require some form of post-secondary education (Table 2). This qualified worker shortage has the rippling effect of reducing productivity and profit, affecting the overall economy of the state and hindering job creation.

The U.S. Department of Labor reports the mean age of the Rhode Island manufacturing work force rose from 40.5 years in 2000 to 44.1 years in 2011. The average age of a skilled worker with technical training and industry certification or a bachelor's degree in a manufacturing related field is 56.[20] The educational attainment of the labor force employed in manufacturing in RI is significantly lower than that of competing states (MA, CT, NH).[21] According to a 2011 report by the RI Manufacturers Association and Bryant University, "Qualified jobs in manufacturing require certain skill sets, particularly math, science and computer technology, There is always a shortage of qualified workers for such jobs in RI." In summary, the Ready To

to enable manufacturers and community-based organizations to partner with CCRI to offer training and provide employment opportunities by creating a pipeline of workers with skills matched to industry needs.

Methodology & Work Plan

Overview. CCRI's Project Design is based on recommendations from the American Association of Community Colleges' (AACC) 2012 Report: ***Reclaiming the American Dream: A Report from the 21st Century Commission on the Future of Community Colleges*** and CCRI's ***Evidence-Based Design for Educating Adults***. These guiding principles have strong synergistic alignment with the gestalt goal of the Ready To Work (RTW) Initiative:

- Close the American skills gaps by focusing career & technical education on preparing students with knowledge & skills required for existing & future jobs in regional & global economies
- Construct coherent, structured pathways to certificate and degree completion, ensuring students' opportunities for career advancement and upward mobility through thoughtfully designed industry-recognized credentials that reflect attainment of the knowledge and skills required at different stages of one's career
- Redesign developmental education fundamentally, creating new evidence-based pathways that accelerate student's progress toward successful college-level work
- Incorporate design principles emerging from community college research and practice: acceleration, contextualization, collaborative learning, & integrated student and academic support
- Create partnerships or consortia for the development and support of student data systems, data analytics, educational diagnostics, learning management systems, institutional research, and professional development
- Ensure that credentials represent real knowledge and skills by implementing frameworks for learning outcomes assessment and quality assurance

CCRI's ***Evidence-Based Design for Educating Adults*** (E-BDEA) originated from the work created by the federally-funded National Center for the Study of Adult Learning and Literacy (NCSALL). NCSALL existed as a partnership of multiple organizations, including Harvard Graduate School of Education, Brown University, the U.S. Department of Education's Office of Educational Research and Improvement, etc. Its primary mission included conducting research to connect theory with practice for enhancing adult education programming. CCRI's evolving model added two key areas of input on to NCSALL's original design that included the following

CCRI's Methodology and Work Plan embody AACC's clarion call for *Reclaiming the American Dream;* our Plan evokes fundamental institutional changes leading to a new set of Three Rs: ***Redesign*** students' educational experience, ***Reinvest*** institutional roles, and ***Reset*** the system.

i. Program Model/Strategy

a. Outreach & Recruitment

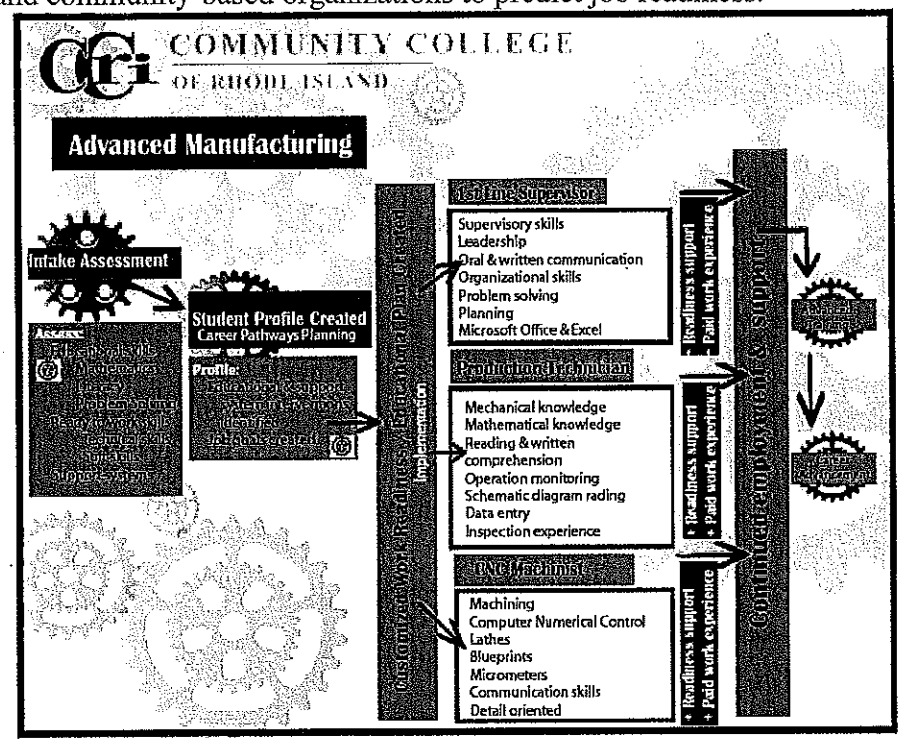
CCRI's outreach and recruitment strategies feature a combination of new and traditional approaches. Mindful that adults experiencing long-term unemployment – especially those who have little experience with post-secondary education – are not fully aware of the possibilities that exist to prepare for new career paths, the college will undertake a new recruitment campaign that can best be described as, "*We Will Find You!*" Phase I of our introduction of simulation as an emerging pedagogy for adult learners consists of a utilizing a mobile classroom unit.

Mobility will allow us to literally bring the college and its programs to geographic areas within the State that post high unemployment rates. Our computer-equipped mobile learning environments can support instruction as well as recruitment, offering interested participants the opportunity to learn about career pathways in Advanced Manufacturing as well as other fields. The Project Manager will convene our partners to create a well-coordinated statewide travel plan with scheduled stops at the state's One-Stop Centers, key community-based organizations, etc. Our computerized contextualized assessments can be completed at any location, and interested participants can schedule individualized follow-up counseling sessions to create electronically stored Personal Learning Plans (PLPs) that include goals for enrolling in one of the accelerated career pathway programs in AM.

The college will augment this innovative approach with social media campaigns, announcing multiple opportunities within local community centers, faith-based settings, Veterans facilities,

trained at a faster pace in order to fill new positions and replace retiring workers.[23] Time compression is one of the benefits of applying simulation to training.

Resulting Gap: Currently there is a significant gap in the assessment protocols being utilized in state agencies and community-based organizations to predict job readiness.



Program Strategy (1):

Create a more robust set of assessment protocols that can be:

- Customized for individual job postings, assessing targeted skill requirements
- Tailored to more closely align with the actual skill demands on the job
- Broadened to include a more comprehensive profile of the workforce needs of the 21st Century; i.e., include soft skills as well as educational, technical skill levels

CCRI faculty with backgrounds in adult literacy and learning will use contextualized materials that inform on-the-job procedures to create Informal Reading Inventories and Math Assessments to measure candidates' level of readiness for employment. Intake information will also include information on employment status, enabling the college to clearly identify those who qualify as long-term unemployed.

c. **Rapid Reemployment and Training Strategy**

Program Strategy (2):

participants to apply skills in a team-oriented, multi-shift environment. Our proposed ***Integrated Simulation Laboratory*** will allow us to create assessment and training modules that are aligned with the prerequisite skill sets called for in individual job postings. Working with our industry partners, we will create rating instruments that can capture the results of observing potential candidates' performance in both the technical and soft skill areas as they carry out work assignments in a hands-on, team approach environment.

Consultations with our industry partners identified the following sub-categories of essential skills necessary to meet a company's production goals within budget and on time:

- Workplace Readiness: Attendance & Safety Knowledge and Awareness
- Technical Knowledge/Productivity: Technical Proficiency, Procedural Compliance, & Achieves 1st Time Quality on Completed Work
- Cooperation/Teamwork: Accepts Personal Responsibility/Demonstrates Personal, Social Skills & Cultural Competence
- Ability to Learn: Solid Foundations in Reading, Math, & Technical Skills

Resulting Gap: Until recently, most of the focus on career preparation has been on the educational or technical skills needed for the job. Within the last several years, there has emerged an increasing awareness of the need to focus on what have been labeled as "soft skills." The rapidly changing nature of the job market driven by a global economy combined with an intergenerational workforce that spans four generations has necessitated the need for a clearer articulation of the behaviors expected within the workplace. Here lies an opportunity to connect the two key sets of technical and soft skill areas, demonstrating their connectedness through an ***Integrated Simulation Laboratory,*** a contextualized learning environment that emphasizes hands-on learning with real world applications.

Program Strategy 3: Create simulated on-the-job assignments that mirror tasks associated with different job descriptions within the industry.

Simulation has been described as "a pedagogy emerging from the shadows."[24] Simulation is an extension of experiential learning, a model articulated by Kolb as appropriate for continuing professional development and lifelong learning suited for adult learners.[25] *Learning by doing* incorporates the following sequence of activities:

- Concrete Experience (Doing/having an experience)
- Reflective Observation (Reviewing/reflecting on the experience)
- Abstract Conceptualization (Concluding/learning from the experience)

approaches to developing college-level skills in writing and math using the CCBC ALP model for writing and the Virginia Community Colleges' approach to modular instruction in math.[28] General Dynamics/Electric Boat (EB), a key partner in the RTW proposal and one of the largest employers in AM in RI, provided the following distribution of its hiring needs: 75% entry-level positions (20% of these in the Welding Core), 15% semi-skilled positions, and the remaining 10% in the higher-level skilled positions. CCRI envisions that within the first 12-18 months of implementation, the target audience will be entry-level workers. This projection is based on a combination of employer needs as well as the data that shows that more than 50% of the long-term unemployed in RI hold a high school degree or less. The preponderance of entry-level positions will focus on welding, pipefitting, sheet metal, and shipfitting skills. Completing learning modules within the ***ISL*** serves as a great segue into actual job placement opportunities. Once candidates have satisfactorily met the goals of their PLPs within the ***ISL***, they will be referred to companies and placed in On-The-Job Training or Apprenticeships.

(EB) has a high percentage employee retention rate (85%), creating many opportunities for promotion and frequent options for salary adjustments. A component of each participant's PLP consists of outlining both short-term (6 months) and long-term goals (7-24 months) for acquiring additional skills to increase one's resiliency and ability to anticipate/be prepared for changes in the industry.

Resulting Gap: There are growing numbers of good paying jobs with strong opportunities for internal promotion within the Advanced Manufacturing Industry in RI, but there are relatively few educational and training opportunities that lead to rapid employment with opportunities for continued learning and advancement.

Program Strategy 4: Create customized interventions and accelerated pathways to industry-recognized credentials, degrees, or certificates.

degree can observe employees working on projects individually and on teams as a way of developing the observational skills and feedback strategies for assisting team members to develop their individual and collective skills. Traditional approaches to manufacturing education do not adequately prepare candidates for the complexity of modern factories. Students typically learn a variety of skills/trades in isolation without acquiring an understanding of how and when they apply to complex factory situations.[29] At its best, simulation-based training helps trainees see how unhappy outcomes happen, learn directly how to prevent them, and lock on how to fix them.[30]

d. Supportive Services and Specialized Strategies

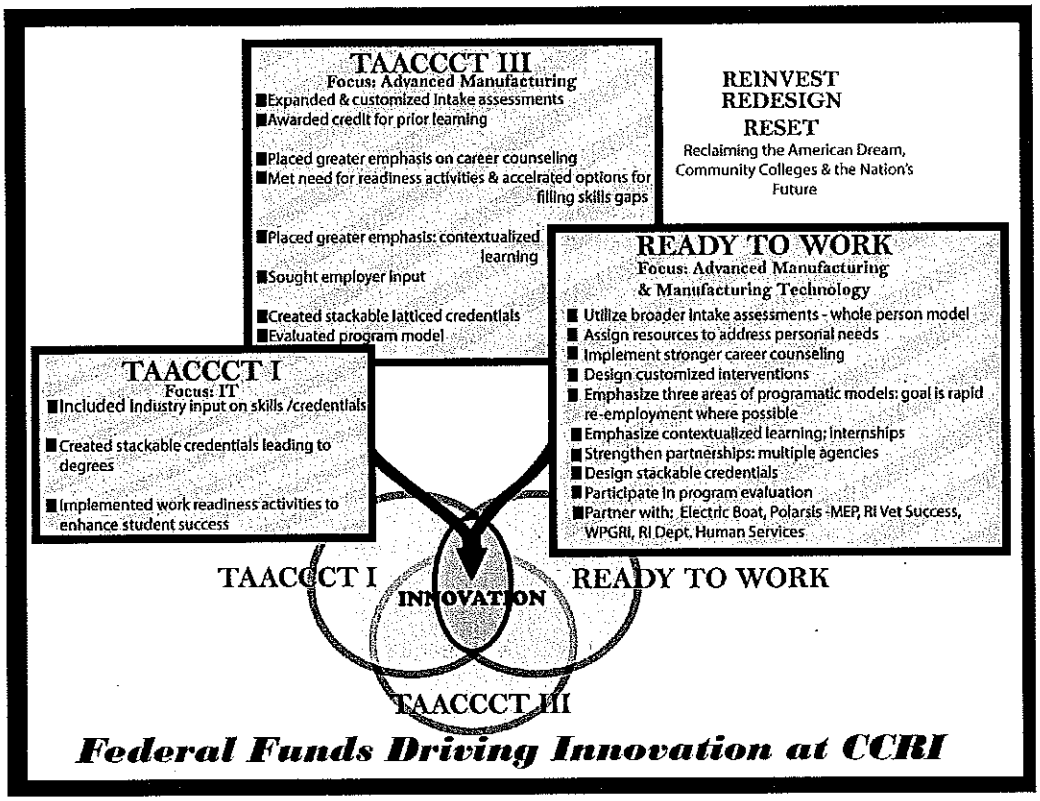
Specialized Strategies: Specialized instructional strategies will include the development and revision of existing curriculum to include:

- Creating accelerated, multiple pathways to mastering job readiness skills in the areas of math, reading, and technical writing
- Developing customized training to link specific instructional interventions in both the technical and soft skilled areas assessed through the ***ISL*** with the job specifications of job postings; e.g., welding, sheetmetal, shipfitting, pipe fitting, etc. Creating industry-recognized certificates/credentials that are stackable, leading to associate and baccalaureate degrees
- Tailoring existing CCRI associate degrees to fit the needs of the Advanced Manufacturing industry

Supportive Services: Currently RI offers a variety of support services to assist adults in gaining or regaining their economic equilibrium. Existing services offered through WIB's netWORKri and the Department of Human Services offer assistance in critical areas such as health care, child care/dependent care, transportation assistance. The current level of services have not proven effective in combating RI's high unemployment rate.

Resulting Gap: Staff at these facilities note that significant gaps exist between available services and the needs of their clients.

Program Strategy (5): Build on existing support services to create customized, more robust individualized support services to assist participants persisting to their goals.



e. Job Placement Strategy

Our job placement strategy includes the following key components that will continually be informed and guided by our key partners:

- Ensure that all participants achieve mastery of the AM Core Concepts
  - Participants demonstrate mastery through performance in computer-simulated environments and in the ***ISL***
  - ***ISL*** completers will receive the nationally recognized certificate of Workforce Readiness?
  - Successful exit from the ***ISL*** will segue into Registered Apprenticeship positions or OTJ training in sites previously identified with our industry partners
  - Case managers will contact graduates every three months to review their performance and invite them to pursue additional trainings to ensure job security

i. Project Work Plan

Start-Up Activity: Recruit staff for key positions essential for creating and implementing the Strategies:			
COSTS			
Strategy Total	$1,082,667	Year 1 $265,648	Year 3 $272,286
Equipment	$$6,000	Year 2 $265,889	Year 4 $278,844
	Activity 1	Activity 2	Activity 3

Strategy Total Equipment	**$967,671** **$4,000**	**Year 2 $238,440**	**Year 4 $248,233**	
	Activity 1	**Activity 2**	**Activity 3**	**Activity 4**
	Utilize industry job descriptions – create a series of tasks for completion within ISL	Create rating instruments to measure: quality, time to completion, cost factors associated with job readiness	Create research mechanisms to correlate rating scores with readiness for employment as defined by industry partners	Hire Curriculum Designer Hire Industrial Psychologist
Implementer	CCRI	CCRI, & Industry Partners	CCRI, & Industry Partners	CCRI
Start Date	3/2015	3/2015	5/2015	1/2015
Time Period	1/2015 – 9/2015	3/2015 – 6/2015	5/2015 – 1/2016	1/2015-5/2015
Milestones	-Contact employers to acquire job descriptions (1/2015) -Faculty & employers outline required tasks to accomplish skills (3/2015) -Create series of tasks (3/2015) -Incorporate tasks into curriculum (4/2015)	-Determine measures /benchmarks to include in instrument (4/2015) -Create instrument (5/2015) -Pilot instrument (6/2015)	-Industry partners define readiness scores (6/2015) -Research mechanisms created (8/2015) -Research mechanisms piloted (9/2015) -Industry partner feedback (1/2016)	-Curriculum Designer hired (3/2015) -Industrial Psychologist hired (5/2015)

<u>Strategy Four</u>: Create customized interventions and accelerated pathways to industry recognized credentials, certificates or degree programs

<u>COSTS</u> Strategy Total Equipment	 **$553,525** **$18,000**	**Year 1 $0** **Year 2 $109,620**	**Year 3 $219,546** **Year 4 $224,359**	
	Activity 1	**Activity 2**	**Activity 3**	**Activity 4**
	Activity 1 Create accelerated pathways to credentials, certificates, degrees	**Activity 2** Create variety of ways participants can access customized interventions to bridge gaps between skill profile & job demands	Create menu of intervention programming Short term learning modules Hybrid/online learning SL experience OJT Training	Hire Assistant dean Academic Affairs
Implementer	CCRI	CCRI, & Industry Partners	CCRI, & Industry Partners	CCRI
Start Date	12/2014	1/2015	3/2015	10/2016
Time Period	12/2014 – 8/2015	1//2015 – 7/2015	3/2015 – 10/2015	10/2016-1/2017
Milestones	-Revise current CCRI programming for "goodness of fit" (2/2015) -Research PLA credit options for pathways (4/2015) -Courses or curriculum modules created based on industry need 6/2015) --New Certificate programs developed and approved (6/2015) --Marketing materials to expand use of pathway programs created (6/2015) -Create state model for Academic Innovation Incubator	Convene partners to discuss possible customized solutions (2/2015) -Establish access pathways (7/2015)	-Create list of intervention programs (3/2015) - Crosswalk list with process for access (4/2015)	-Assistant dean hired 1/2017

COSTS			
Strategy Total	$12,000	Year 1 $0	Year 3 $5,000
Equipment	$0	Year 2 $2,000	Year 4 $5,000

	Activity 1	Activity 2	Activity 3
	Hire doctorally prepared faculty member-background in research/industrial psychology to create process/methods for evaluating effectiveness of RTW logic model	Create protocols to use to guide reflection components for each learning simulated experience	Create methods for recording reflection discussion/milestones for tracking progress toward integration of key skills
Implementer	CCRI	CCRI	CCRI,
Start Date	6/2016	6/2016	6/2016
Time Period	6/2016 – 8/2016	6/2016 – 12/2016	6/2016 – 10/2018
Milestones	-Faculty member hired (8/2016)	- Academic designer create draft protocols (7 /2016) -Review protocols with faculty and industry partners (9/2016) - Implement protocols (12/-2016)	-Methods created for tracking progress (8/2016) -Track progress & collect data (ongoing) -Utilization of data for improvement (ongoing)

i. Organizational Capacity

ii. Organizational chart

The College's Vice President for Academic Affairs, Dr. Gregory Lamontagne, will serve as the Principal Investigator of this project. Dr. Lamontagne has significant experience in managing large federal grants; e.g., Greg fill in. The RTW Project Manager (PM) will report directly to the VPAA, and will be a master's prepared professional with 10 or more years' leadership experience, including managing large complex projects that include multiple stakeholders and partners. The PM, supported an Assistant PM will have direct responsibility for coordinating all aspects of the project.

iii. Project staffing plan

The staffing plan consists of professionals with backgrounds and experience in Research (theoretical and applied), Curriculum Development, Experiential/Simulated Learning, Recruitment and Job Development, Clerical & Student Support Services, Faculty and

[1] Brown University: The Economic Impact : http://brown.edu/about/reports/economic-impact/intro
[2] RI Workforce Partnership: Workforce Investment Plan for the greater RI Workforce Investment Area 7/1/2012 to 6/30/2017
[3] GIS Impact; Johnson S., Marlow S. : http://proceedings.esri.com/library/userconf/proc05/papers/pap1432.pdf
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[5] New England Economic Partnership May 2013: Rhode Island; Mazze, E., Tebaldi, E.
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[10] RI DOL: Labor Supply & Demand - First Quarter 2014
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[14] Providence Journal; April 28, 2014: http://www.providencejournal.com/breaking-news/content/20140428-electric-boat-wins-17.6-billion-contract-for-10-submarines.ece
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[29] A Web Based Simulation Environment for Manufacturing Education, Rickel, J., Dessousky, M., Kazlauskas, E., Sadagopan, N., Shaw, E., Johnson, L. ; p.1
[30] Simulation Brings Training to Life, Gehman, G.; Automation World, July 9, 2013