Year Two July 1, 2012-June 30, 2013

The first year of the grant project was very fruitful with several deliverables developed and activities accomplished. Although the team members experienced challenges, professionalism and dedication to the project reigned supreme. Each person on the team deserves accolades and thanks from the region for their hard work and dedication.

STEM Teacher Training Workshop
The second high school STEM teacher workshop was held in year two. The workshop was presented using Solid Works 3-D solid modeling software. Content included basic information regarding SolidWorks software and how using it in a classroom would fit into Math and Science classes. Additional information included 2-D sketching, how to work with the software, basic part modeling, patterning, revolves and sweep features, part analysis, and shelling and ribs. Five high school teachers attended the first workshop in year one, eight teachers attended the second workshop in year two. Student evaluations of the workshop were positive as indicated through the Likert Scale evaluation portion of the student questionnaire. The lowest ranking was on the question regarding the use of Solid Works helping these Math and Science teachers collaborate with PTE teachers for provision of engaging designing activities which integrate math and science. This may be an indication of an area that could be a focus in a future grant activity. A few of the comments to questions with narrative were:

- What was most valuable to you in this workshop?
  - “Understanding of what solid works is about, its uses, and how it can be incorporated into the classroom.”
  - “Getting the hands on experience.”
  - “Developing an understanding of the basics on how to use Solid Works.”

- What might we do to make the workshop more useful in the future?
  - “More knowledge of workshop objectives prior to coming would be helpful in choosing which teachers come.”
  - “Don’t change anything—it was great.”
  - “Add another day—it was so much so fast additional time to develop understanding and skill would have helped.”

- What was your most significant take away from the workshop?
  - “The power of the Solid Works program.”
  - “That the technology at our school needs to “catch up” so that we can use programs like this more effectively.”
Online Training Modules
One of the goals for the project was to develop online Lesson modules for classroom use, based on regional manufacturer input. The original intent was to have the first modules completed by July 2012 and the final modules completed by July 2013. Delays with changes in personnel created a situation in which module development was not possible by July 2012. However, in this second year two modules will be completed and released for teacher use by July 2013. The remaining four modules are under development and expected to be released before the beginning of the 2013-2014 school year; making them part of the deliverables for year three of this project.

Content for the Lesson modules was determined through personal interviews with manufacturers who were interested in participating as determined by a survey. All of the Lessons are being developed by Lewis-Clark State College’s Automated Manufacturing Professor Robert McDonald collaboratively with Dr. Raymond Dixon from the University of Idaho.

All of the Lessons will be peer reviewed for relevance and educational soundness prior to release to teachers. After release an evaluation will be sought from teachers who have used it for feedback and evaluation.

Dissemination Activities
With any activity such as this it is important to disseminate information about the project internally to participating organizations and to external interested parties (Leana & Frits K., 2006; Rubin, 2009). Year one dissemination activities focused on regional and inter-organizational dissemination. In year two dissemination efforts focused on external entities.

In February of 2012 the project was presented at a Statewide Higher Education Economic Development conference in Boise, Idaho by Lewis-Clark State College. The conference was attended by business and industry leaders from throughout Idaho and higher education leaders from all Idaho institutions. A trifold brochure and an informative flyer were developed and distributed.

Information regarding the project was provided by Dr. Dixon and Ms. Christine Frei to four regional higher education, economic development organization, city, county leaders, at the Palouse Confluence Task Force meeting February 24, 2012. The Palouse Confluence Task Force was formed to bring together economic development organizations, cities, counties, and institutions of higher education.

The PI Dr. Linda Stricklin and Co-PI Dr. Dixon showcased the project at the 2012 annual ATE PI conference in Washington DC. The first Lesson module of the online modules was in final
stages of completion and a portion of this module was used in the showcase. In addition, the tri-fold display board developed for the Economic Summit was modified by adding information about the STEM Reflective Guides. Giveaways included personalized pens and shopping bags imprinted with information about the grant. The showcase was well received by the audience and comments were positive.

On April 7, 2013 a Poster Session “Creating a Regional Workforce for Rural Manufacturing” was presented as a part of a showcase by the University of Idaho, College of Education, to begin the 2013 national and state Educators Preparation accreditation site visit. The National Council for the Accreditation of Teacher Educators team consisted of four members and the states accreditation team consisted of 12 members.

To sustain efforts and disseminate information about the project a web site has been developed. This web site is hosted at Lewis-Clark State College and contains all information about the project. This report is a part of that web site. The web site will be maintained by Lewis-Clark State College Workforce Training for the duration of the project and beyond to ensure sustainability of access to the developed teaching tools.

To maintain information to a regional audience a report on the progress of the project is given at each of the quarterly Workforce Development Council meetings.

Dr. Raymond Dixon and Dr. Linda Stricklin are collaborating on articles for publication regarding this project. It is planned to produce at least three articles for publication to disseminate findings and lessons learned. The first article for publication has been submitted to a peer reviewed online journal for workforce education and development is presently being reviewed. Other articles will contain information regarding lessons learned from the collaborative effort, development of the STEM reflective guides and, development of the mentoring program.

**STEM Reflective Guides**

Educational activities for use in the classroom using solid modeling procedures with integration of STEM concepts have been developed by Dr. Raymond Dixon. In year two there were two guides completed. These activities are designed to help students reflect on the connections that exist in drafting and designing activities and STEM concepts learned in math and science. The guides are designed so teachers can assign activities to students for use outside of the classroom. Once activities are completed students can present what they have learned from the STEM Reflective Guide to their class. The plan is to develop more Guides for use in conjunction with the online Lesson modules. As these Guides are finalized they will be added to the dissemination web site for accessibility.

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Personnel Changes
A key person to the project retired in October of 2012. Dave Bonfield was the Executive Director of the Northwest Intermountain Manufacturer’s Association. Clearwater Economic Development Association hired a new employee, Nathan Despain, who was able to fulfill Mr. Bonfield’s role in the grant project.

Mentoring Program
An important task associated with this grant project is the development of a mentor program between local manufacturers and the high schools. A mentor handbook developed by Dr. Raymond Dixon and Dave Bonfield was completed in Year Two to guide the mentors and mentees through the process. The handbook is also designed to help with sustainability of the process through delineation of rules of engagement, length of service, contact information, etc. The mentor handbook contains a memorandum of understanding specifying goals of mentors and mentees, communication methods and contact information, agreement of reasonable response time and duration, confidentiality statement, and agreed activities for the mentor and mentee.

The active mentoring program is under development. The program will include student field trips to manufacturer’s facilities, manufacturers working with students on special projects in school classrooms and manufacturers providing students use of resources and equipment not available at the schools.

Workforce Development Council
As a part of the grant project, Clearwater Economic Development Association (CEDA) established a regional Workforce Development Council. The mission of the Council is to support and facilitate development of a business-focused, skilled workforce system that meets the needs of business and industry, enhance workplace productivity, and support opportunities for employment and entrepreneurship. The Council also serves to share upcoming workforce-related training opportunities and successful methods of attracting and retaining workforce. Members represent higher education, secondary education, manufacturing, economic development, state government, labor, and elected officials. The Workforce Development Council’s first official meeting was held on July 17, 2012, with twenty-five individuals from the Idaho counties of Latah, Lewis, Idaho, Clearwater, and Nez Perce participating. They hold meetings quarterly.

The first two Council meetings oriented members to the status of the manufacturing industry at the local, state, and national levels. At the January 2013 meeting, the Council began developing its strategy. The plan is for the strategy to be completed at the July 16, 2013 meeting of the Council. By the April 16, 2013 meeting the Council chair was identified, as well as a representative of the council to report to the CEDA Board of Directors. Important to Council
development was the transition of leadership from CEDA staff to the Council which is now in place.

A challenge is the lack of participation from the small business manufacturing sector. CEDA will be working with Council leadership to address this issue in the near future. A solution being considered is to change meeting times to accommodate private industry.

**IMail Server Group List Serve**

An IMail server group was developed in November 2012 for communications with the high school participants and mentors. It is a standalone external network with built-in anti-spam protection and filtering. The server group verifies external addresses so only addresses included on the list are able to communicate using the tool.

To establish this tool each high school’s district IT person was contacted to obtain permission for their teachers to access and use the list serve. It was piloted for communication effectiveness during the teacher training sessions with some success, but has not been used by the mentors or instructors as the mentoring program has not yet been formally instituted. It is planned to be used as the communication tool once the program is implemented.

**Evaluation**

Evaluation is a major portion of the grant. This project has been evaluated using a developmental methodology. Evaluation activities to date as of June 2013 were:

- a one day evaluation workshop to implement the evaluation design
- quarterly follow up check-in conference calls
- review of existing meeting notes, evaluation materials, and results of a short email questionnaire sent to team members
- interim evaluation data collection and reporting
- training participation information

The external evaluator, Dr. Mary Emery of South Dakota State University gathered data and artifacts from the planning team after activities were completed. Dr. Emery also performed one on one phone interviews with planning team participants and participated in conference calls with the planning team to evaluate progress of the project.

Dr. Emery noted the following:

Strengths of the project focused on innovativeness of the design and the dissemination activities to inform key players and engage additional partners and supporters. The project generated a high level of interest with manufacturers and policy makers. Challenges the project faced had to do with the time and resources necessary to coordinate a project with such a high level of

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complexity. All project members report putting more time and resources into the project than anticipated. In addition, the lack of bandwidth and somewhat up-to-date equipment within the high schools was a barrier for implementation. Given the complexity of the project, team member dedication to the project has been essential to helping the project move forward.

**Workshop evaluations:**
The workshop evaluations attained a 90% response rate. Overall, participants were pleased with the workshop. Suggestions included having access to the software before class, having more than one person from each school participate, setting a clear goal for the project within the designated time, and offering an additional two credits for participants to work on materials and lessons.

**Review of documentation:**
Meeting notes reflect the high level of dedication team members have to this project to work through issues toward final solutions.

Dr. Emery’s Year Two report indicated key project elements had been successfully addressed.

- Ms. Frei worked with partners to develop the Workforce Council.
- The DACUM project was very successful, and provided a competency profile for the entry level training of CADD Technicians.
- The initial and follow-up teacher trainings were successful as revealed by teacher evaluations of the workshops.
- The articulation meeting was very successful, as indicated by teacher evaluations and teachers are asking for additional opportunities to learn from each other in implementing the curriculum.
- Team members have also been very active with disseminating information about the project.
- The web site for dissemination was reported as professional looking and serving the purpose for which it was developed (http://www.lcsc.edu/nsf).
- Dr. Emery suggested it would be helpful to run Google analytics on the web site to see how often the site is hit and to see if we can ascertain who is coming to learn about the story.

**Review of the Workforce Council development process**
CEDA took the lead on developing a Workforce Council to provide advice on the workforce development efforts. The Council brings key players together to encourage collaboration to support workforce development goals. The CEDA Workforce Development Council Memorandum of Agreement among members of the Council lays out the scope, goals, and
responsibilities of the Council. Membership includes 10 private sector representatives as well as representatives of three high schools. Four members come from higher education representing the four major colleges and universities in the area. Both Washington and Idaho Departments of labor participate as do representatives from Valley Vision, Ida-Lew Economic Development, and the Community Action Agency. Finally, the Council includes one legislator and a representative from the Nez Perce Tribe.

Key partner feedback:
Overall people are proud of the accomplishments to date and feel confidence in the ability of the overall team to complete the project. School willingness to participate was also mentioned as a plus. The idea of growing “our own” workforce is gaining traction. Suggestions for the future include supporting related clubs in the schools, addressing technology issues in schools, finding more ways for teachers to interact with each other, expanding with more DACUMs, and working towards a Center grant. A Center grant is a NSF ATE grant for a research center designed to coordinate research and project activities.

Interim Evaluation Summary Findings:
In general those interviewed indicated strong support for the project and its accomplishments. They expressed great respect for team members and the diverse perspectives and areas of expertise at the table. Participants described how the team has worked through difficult issues to become a strong working group. Successes include the DACUM workshop, the work they have done in changing perspectives of what is possible, the formation of the Workforce Development Council, and the training with teachers.

- “When I started, there were three cultures: small business and manufacturers, economic development and higher education… there was a desire to work together but… we were not swimming up the same stream together… [communication] improved by leaps and bounds.”

Participants expressed concerns about the current transition within NIMA, the need for a better communications strategy, and the infrastructure issues at some schools.

- “Manufacturers are thrilled to see what we are doing.”
- “Kids who have been exposed to it love it. They are very good at it. Kids pick it up and run with it.”

They also commented on the effort the project requires and the need to focus ongoing support and sustainability. Overall, factors contributing to the successes include a common vision shared within the team and their commitment to making that vision a reality.

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Creating a Regional Workforce for Rural Manufacturing: Linking Technical Education systems and Students to Local Business.
A Project funded by National Science Foundation
DUE-1104078
Year Two Report

References


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