San Juan BOCES Perkins Consortium

Background

The school districts that are members of the San Juan BOCES Perkins Consortium include Archuleta County 50JT (Pagosa Springs), Bayfield 10JT-R, Durango 9-R, and Ignacio 11JT. Of particular interest for the Perkins Field Council are the Pagosa Springs Industrial Mechanics Technology Program, the Bayfield Computer Technology Program, and the Durango Multimedia Design program. These three programs are offering students cutting edge high interest programs which require updated technologies to stay abreast of current workplace standards in the industry and the community.

The aging workforce in the Pagosa Springs region has increased the local demand for experienced welders as older workers retire. As a result, the Industrial Mechanics Tech Program at Pagosa Springs High School is a growing program which is limited to just one instructor. The purchase of the virtual welding simulator allows beginning students in the program to learn and hone skills in the classroom prior to working with the welding equipment in the shop. This new equipment allows for the program to grow without adding staff or additional space in the shop.

The Computer Information Technology Program at Bayfield High School is inspiring students to explore technology career pathways. This is a relatively new program at the school. The students are challenged with the rigors and requirements for 2D and 3D graphic design, video game design, audio and video production, as well as computer repair and networking certification. This program prepares students academically at a high level along with developing specific skill sets which are sought by industry employers.

The Multimedia Program at Durango High School is teaching computer game programming to students with a new approach. The instructor attended a workshop in July called Adventures in Alice Programming at Duke University. This design cycle approach to computer programming attracts a much broader audience of students by utilizing the more creative side of the brain. As a result of this new approach, students from all backgrounds are quickly engaged in the creation of computer software which is entertaining as well as challenging.

Community Influences

The shortage of computer programmers both locally and nationally influenced the decision to provide the ALICE professional development at Durango.

The Use of the Perkins Funds

The use of Perkins funds, which sparked the interest of the Perkins Field Council members, included the purchase of the welding simulator for Pagosa Springs, a 3D printer for Bayfield, and the Alice programming training for the instructor at Durango. All three of these projects demonstrated the practice of innovation while responding to industry demand for workers trained in these high technology areas.

Challenges

The San Juan BOCES Perkins Consortium faces a variety challenges including growth in specific industries, staffing challenges, unusual expectations in the community, and increasing opportunities for students with particular skill sets. However, the most common and difficult challenge for all of the schools in this consortium is their remote location. The schools in the San Juan area are not only physically separated from the more densely populated areas in Colorado, but are also separated from each other. This remote community lacks access to resources which are readily available along the north-south Front Range corridor, and the east-west I-70 corridor.

Students Served

The San Juan Consortium is located in Bayfield, Ignacio, Pagosa Springs, and Durango. The demographic is rural and serves following demographic profile:

SCHOOL	A/I Native	Asian	Black	Hispanic	White	F&R Eligible (Low Income)
Bayfield	3%	1%	0%	14%	80%	27%
Ignacio	33%	1%	2%	22%	38%	50%
Pagosa Springs	2%	0%	2%	24%	71%	42%
Durango	5%	1%	1%	17%	74%	23%

Key Innovations

The students in the tech lab at Bayfield were using the 3D software to design and print out special parts on the 3D printer so they could solve issues with utilizing multiple colored spools of plastic. The entire process of evaluating a problem to the designing and manufacturing of a solution was fascinating for the Perkins Field Council to watch.

All of the Perkins funded endeavors encouraged students to learn skills which will allow them to succeed in further education at the college level and in the workplace.

The high level of communication and collaboration between schools in the consortium allow for innovative practices, and for the best use of Perkins funding. There were open communications and discussions among all members of the consortium around the best use of the Perkins funds, not just for the wish lists.

All three of the CTE programs highlighted in this report support STEM skills by integrating math, science, technology, and engineering in the curricula.

Additionally, the consortium is working very hard to recruit and retain underrepresented genders in non-traditional career programs with a combination of approaches.

- The San Juan BOCES Consortium hosts a career fair at Fort Lewis College in Durango where students have the opportunity to explore non-traditional opportunities in the community, with presentations from local professionals.

- Non-traditional role models are teaching Agriculture and Welding in the classrooms at Pagosa Springs, and Construction Trades in the classroom at Ignacio.

- Professional development around non-traditional approaches to programming (Alice Project) has been provided and the teacher at Durango High is implementing the new curriculum successfully.

- Ignacio High School is providing a "Give it a Try Day" where boys connect with consumer science and girls focus on trade skills.

- The Computer Technology Program at Bayfield is using new technology to entice the non-traditional students to explore engineering design concepts.

Key Factors to Implementation

Training

All of the programs require professional development for teachers, with special attention to the technical side of the new equipment being utilized in the programs.

Challenges

The welding simulation equipment at Pagosa Springs High School was sensitive to the metal desks in the classroom and the teacher was innovative in her approach to setting up her workstations to make the new technology available for students.

Support Systems

Administrators at all schools have made special efforts to design the master schedule of courses so that it enables students to explore their passions and fully develop their ICAPs.

Advisory committees at all schools are providing guidance and input to CTE programs so that local business and industry needs are being met.

RESULTS

Outcomes

Students at all three programs became highly engaged in their learning. During the visit to classrooms at the schools, students were actively working on projects with enthusiasm. In addition, many students were coming into the classrooms to work during their lunch and free time because they enjoyed working with the new technologies. Many students were working on certifications which could be used to further their employability after school completion. It was very clear that higher level thinking skills were required in order for students to solve the complex and challenging real-world problems in their work.

Teachers in all of the programs were very thankful for the resources, and were utilizing new curriculum to fully integrate the 21st century skills of communication and collaboration as they orchestrated their students to work individually and in groups.

How Programs Strengthened

The CTE programs were strengthened with the focus on problem solving and by utilizing industry standard technology in their projects.

Can This Be Replicated?

These programs could be easily replicated in the more rural and remote areas of the state where access to resources is limited.

Words of Advice

The advice from the schools would be to give the teachers tools and resources which are needed to replicate real-world projects in the classroom.
In addition, the practice of attracting and hiring staff who have as much real world practical experience as possible in their discipline would make replicating these programs much more feasible.

Images from 2012 SkillsUSA State Leadership Conference