August 13, 2012

TO: Noreen Yamane, Chancellor  
Hawaii Community College

SUBJECT: Career & Technical Education Award

Hawaii Community College is awarded $31,000 in 2012-2013 Title I Career and Technical Education funds to support the entitled project:

Virtual Painting System $31,000

The award period for the project is from July 1, 2012 to June 30, 2013 and the award number for the project is: HAW2012/13(1)-T1-03 and should be referenced on all future correspondence and reports. These funds must be expended and goods received by June 30, 2013. A completion report is due on October 10, 2013.

Please call Dominic (Nic) Estrella at 956-3865 if you have questions.

Sincerely,

[Signature]

Peter Quigley  
Assoc. Vice President for Academic Affairs

Cc: J. Onishi, VCAA  
J. Yoshida, VCAA  
J. Hamasaki, CTE Dean  
N. Kanoho, FA  
L. Tsuhako, FA  
S. Robinson, Dir. of Academic Programs
CARL D. PERKINS VOCATIONAL AND TECHNICAL

EDUCATION ACT OF 2006

Perkins IV Intervention Strategy Proposal Form
(revised January 2012)

Strategy # HAW-2013-T1-CUR-3
Program Year 2012-13

1. College: Hawaii Community College

2. (Descriptive) Strategy Title        Virtual Painting System

3. Proposer’s Name:       Mike Saito      E-Mail: saitomic@hawaii.edu

Is this proposal a part of a multiple-year strategy?    ___ Yes    ___ No
If this is a multiple-year strategy, for what year is this proposal requesting funding?

☐ Year 1             ☐ Year 2             ☐ Year 3

5. Brief Statement of identified problem area and reason for selection:
   a) Provide relevant program and/or college data to support the need to address this problem.)
   b) Describe alignment of problem to one or more Perkins Core Indicators, and as appropriate, goals from the UHCC Strategic Plan, Achieving the Dream, and/or other UHCC projects. (See pg. 2 of Instructions)
   c) Include narrative that is supported by data. Be brief and succinct.

   The Auto Body Program has failed to meet Perkins Technical Skills Attainment Indicator 1P1 goals over the past several years, (goal vs actual / years: 90.0 vs 55.56 / '08-'09; 90.05 vs 75.00 / '09-'10; 90.10 vs 83.33 /'10-'11). The program's deficiency also contributed to the campus shortcomings in 1P1 data during 2009-10 (90.05 vs. 87.4) and 2010-11(90.10 vs. 86.80). A decline in successful completion at the end of the first year and retention into the second year (loss of 24-37%) can in part be attributed to student dissatisfaction of learning outcomes in refinishing courses taken during that second semester. This negatively impacts the program’s efforts to meet UHCC Strategic Goals to increase Hawaii’s Educational Capitol by increasing participation and completion, and producing graduates with high skills for placement in high wage jobs.

   Automotive Refinishing is the area of the curriculum that generates the highest student interest and is considered one of the main skill areas in the collision repair industry. However it is also a challenging skill to develop and requires manual dexterity and agility along with acute hand and eye coordination with the operator having the ability to recognize visual clues and making
instantaneous adjustments to avoid mistakes. Students learning spray
painting procedures complain of the constraints to developing skills due to the
high cost of materials and actual spray time allowed to develop competency in
applying the various coatings. Current training methods, high cost, and limited
time on task hinders student skill development that meets their expectations
and workforce training objectives.

6. Brief Strategy Description: (Typically no more than one or two paragraphs)
   • Answer the question: What do you want to do based on information provided in item
     #5 above?
   • If this strategy is a continuation of a current strategy, indicate rationale for
     continuance. Strategies will not be considered for continued funding unless
     supporting data and rationale demonstrate impact effectiveness.
   • Include supporting data i.e. effectiveness measures. Data on student needs, student
     impact (number served last year and anticipated number to be served in current
     year), and effectiveness must be provided below.
   • Evidence of industry support.
   • Include a short description on all proposed personnel to be paid for by these funds.
     The description should include:
     o the position(s) FTE,
     o if the hire will be regular or casual,
     o the position's/positions' classification(s) (e.g., counselor, lecturer, APT, etc.),
     o the position's/positions' job duties and how the duties will benefit the project,
     o the intended number of months of funding for each position. Please take into
       consideration the recruitment time for new hires.
   • Itemize supplies valued at more than $500 and have a shelf life of 1 year or longer.
   • Itemize equipment, whose description is an article of nonexpendable, tangible
     personal property having a useful life of more than one year and an acquisition cost
     which equals or exceeds $5,000.
   • For travel, provide a breakdown the estimated cost including airfare, lodging, per
     diem, conference fees, and ground transportation. Include the conference name,
     description, location, and dates. If possible, include the conference flyer and/or
     agenda.
   • For services, if the name of the specific vendor is known, please include that
     information. Also include a breakdown of service cost (cost per day, hour, etc.)
   • For software, include the type of software package, the estimated costs and how the
     software will enhance the project.

An analysis of past assessments reveal weakness in targeted skills
development areas when compared with knowledge attainment measurements
in those courses where the student must demonstrate proficiency in applying
paint materials. The correlation between not achieving the desired proficiency
and grades can likely be attributed to the constrained time on task. It is
anticipated that all students, and in particular special needs students,
challenged with developing hand skills will increase the level of performance to
be able to demonstrate proficiency that will result in less frustration and raising
grades that meet 1P1 Technical Skills Attainment objectives. Students
frustrated with their inability to meet targeted goals lose interest and exit the
program prematurely leading to negative 1P1 data.
The project strategy is to purchase a virtual painting system that allows students more opportunity to practice and develop correct hand skill and spray gun manipulation techniques prior to use of actual paint materials. Thus increasing time on task in a more relaxed environment without the pressures of actual painting or the need to expend materials. Students practicing in this virtual environment, much like their familiar video games, will view colored three dimensional simulations and receive computer generated reports of their spraying. The instant feedback will enable the student to make immediate corrective actions. Reduction of sprayed materials will also lower consumption of costly materials, negate generating unnecessary hazardous waste, lessen maintenance costs for filter replacements and overall reduce our carbon footprint and contribute to a sustainable environment.

All students (18-20 per semester) will be required to demonstrate competency and achieve national standards of 65% or higher transfer efficiency using correct spray gun adjustments and application techniques based on computerized data output from the virtual painting system. Virtual trainers are being used successfully in manufacturing, CTE programs, military training, and aftermarket service and repair. The ABRP Program Advisory Council has also voiced support for this trainer as a cost effective non-polluting instrument to improve student attainment.

The virtual painting system is an electrically powered, portable self contained cabinet that requires an 8’x8’x8’ space to operate in. There are no special environmental, power or storage requirements for the use of the system. The system selected will have 3D colored capability with real time visual feedback. The unit under consideration contains the following items:

- Stand with tracking device
- Face Mounted Display (FMD) with sensor
- Custom Spray Gun with incorporated sensor
- Custom ATA portable shipping case
- Touch screen monitor
- PC with keyboard and mouse
  - INTEL CORE i7-930 2.80GHZ
  - 4GB PC3-10666 1333MHZ
  - 250GB SATA300 7200RPM 16MB
  - Windows 7 Pro
  - 2 Quadro FX 3700 256MB GDDR3
  - DVD+RW Dual Layer
  - USB Keyboard & USB Optical Mouse
  - Other components (e.g. cables)

7. Calendar of Planned Activities: (add or delete rows as appropriate)
In chronological order, briefly describe the procedures/activities planned to achieve stated goal(s) or outcome(s)

<table>
<thead>
<tr>
<th>Activity</th>
<th>Month(s) the Activity will take place</th>
</tr>
</thead>
<tbody>
<tr>
<td>Spec system requirements and call for bids</td>
<td>Pending award Spring / Summer 2012</td>
</tr>
<tr>
<td>Accept delivery. Set up, train, and initiate use</td>
<td>Pending delivery Fall 2012</td>
</tr>
<tr>
<td>Develop assessment rubric</td>
<td>Pending training Fall 2012</td>
</tr>
<tr>
<td>Evaluation and process improvement</td>
<td>Spring 2013</td>
</tr>
</tbody>
</table>

8. Effectiveness Measures: (Refer to the identified problem – item #5, and describe the anticipated quantitative outcomes expected from the implementation of the strategy. Where appropriate, indicate the effectiveness measures that will be reported after year one, year two, etc.) **State the effectiveness measures clearly and in assessable terms.** The outcomes stated here must be addressed later in the completion report. Confer with your IR office to ensure the appropriateness of the measurement of outcomes.

All students enrolled in the Spring 2013 ABRP 30 series courses will receive instruction and practice on the virtual trainer to develop refinish skills. All students (100%) completing the virtual training will meet competency goals for correct application and mandated federal requirements for transfer efficiency (minimum 65% for HVLP spray guns) based on computerized data output from the virtual painting system.

The first cohort to complete training using the virtual painting system will achieve 85% of the Perkins 1P1 Technical Skills Attainment Indicator. This performance will only reflect the cohort group as the program data is skewed by the two cohort make-up of the program wherein one cohort group will not have received training with the virtual painting system. One year after the initial implementation of the trainer, after the second cohort has utilized the trainer, the program will meet Perkins 1P1 Core indicator goals for that year.

It is anticipated that student retention from first to second year will improve as a result increased student satisfaction, and success, measured by 1P1 Technical Skills Attainment data.

As a collateral benefit a targeted 25-30% cost reduction in paint related materials (primers, paints, hardeners, and solvents) is anticipated, along with a similar
reduction of filtration media, booth coating, recycling supplies, and hazardous material wastes.

9. Budget Summary: (Insert or delete rows as needed.) For system projects, the budget must include a breakdown of costs by campus along with a total system budget.

<table>
<thead>
<tr>
<th>Description</th>
<th>Budget</th>
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<tbody>
<tr>
<td></td>
<td>Total</td>
</tr>
<tr>
<td>A PERSONNEL (Indicate fringe* percentage and cost as a separate line item)</td>
<td></td>
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<td>A-L</td>
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<td>A-1</td>
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<td>A-O</td>
<td></td>
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<tr>
<td><strong>TOTAL PERSONNEL SERVICES</strong></td>
<td></td>
</tr>
<tr>
<td>B OTHER CURRENT EXPENSES (Supplies over $500, describe item in Budget Elements)</td>
<td></td>
</tr>
<tr>
<td>Installation &amp; Training</td>
<td>$5,000.00</td>
</tr>
<tr>
<td>C EQUIPMENT (Itemize)</td>
<td></td>
</tr>
<tr>
<td>Virtual Paint System</td>
<td>$25,000.00</td>
</tr>
<tr>
<td>Includes 1 yr. tech support</td>
<td></td>
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<tr>
<td>Freight</td>
<td>$1,000.00</td>
</tr>
<tr>
<td><strong>TOTAL EQUIPMENT</strong></td>
<td>$26,000.00</td>
</tr>
<tr>
<td>M MOTOR VEHICLES</td>
<td></td>
</tr>
<tr>
<td><strong>TOTAL OPERATING COSTS</strong></td>
<td>$31,000.00</td>
</tr>
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</table>
Fringe Benefits Rates (as of July 15, 2011)

<table>
<thead>
<tr>
<th>Category</th>
<th>Rate</th>
</tr>
</thead>
<tbody>
<tr>
<td>Faculty/Staff</td>
<td>40.25%</td>
</tr>
<tr>
<td>APT</td>
<td>40.25%</td>
</tr>
<tr>
<td>Casual Hire/Overload</td>
<td>2.17%</td>
</tr>
<tr>
<td>Student</td>
<td>0.52%</td>
</tr>
</tbody>
</table>

10. Certifications:

I certify that this proposal, budget, and certifications are accurate and complete and that this project will be conducted in accordance to Perkins policies and Federal, State, and University regulations and requirements.

I also certify that I have consulted with the appropriate Institutional Research, Business Office and Human Resources Office personnel and that they have reviewed all budgets and resource commitments and have found that they comply with Perkins, Federal, State, and University requirements and policies.

Proposer's Signature: ___________________________ Date: ____________
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Proposer's Signature: [Signature]
Date: 9-27-12