Annual Report for Assessment of Outcomes 2011-2012

Please address the questions below
send to *learningassessment@pcc.edu* by **June 22, 2012;** with Annual Report in the subject line

Note: Information provided in this report may be inserted into or summarized in Section 2C (LDC/DE)) or 6B (CTE) of the Program Review Outline.

Program: Dental Laboratory Technology

Introductory Note to Learning Assessment Council: The PCC Dental Laboratory Technology Program is a fast paced two year program with complex assessment processes occurring throughout the student's training. Graduates learn to fabricate dentures in the first year of training and are competent enough with these procedures to begin working in dental labs at the end of the first year. The second year of training involves learning fabrication of removable prosthesis such as partial dentures, crown and bridge and orthodontic appliances.

While completing this report, the DA SAC came to realize that utilizing student assessment results for improvement of curriculum development in the future should be done systematically and in depth. For these reasons, the SAC has decided to report on three of the program outcomes each biennium and the other three outcomes in the interim biennium. Furthermore, while multiple assessment methods are used in demonstrating competency for each outcome, the SAC will choose one assessment tool to present each year to the Learning Assessment Council with detailed data. This approach will benefit the SAC members by focusing on one area at a time in depth and improving curriculum delivery in a systematic way. The DLT Outcomes to be assessed this year will be Outcomes #1, 2, and 4.

1. **Describe changes that have been implemented towards improving students' attainment of outcomes that resulted from outcome assessments carried out in 2010-2011. These may include but are not limited to changes to content, materials, instruction, pedagogy etc.**

Several areas of improvement were identified while assessing the attainment of program outcomes of the 2010-11 graduates. The changes include:

1. Visual presenter, computer and video camera installed in Laboratory to allow all students to have better accessibility for viewing demos.

2. Videos saved and catalogued for students to access for review of demo procedures when needed.

3. Off-Site laboratory tours and demonstration were arranged for viewing technology not available at the college.

For <u>each outcome assessed this year</u>: Each of the three outcomes addressed this year will have its own report for these four questions (based on the one assessment tool chosen by the faculty to represent outcome attainment).

OUTCOME #1 <u>Demonstrate basic dental laboratory techniques in the design and fabrication of complete dentures, crowns and bridges, ceramic, and basic orthodontic appliances.</u>

2. Describe the assessment design (tool and processes) used. Include relevant information about:

   - The nature of the assessment (e.g., written work, project, portfolio, exam, survey, performance etc.) and if it is direct (assesses evidence mastery of outcomes) or indirect (student's perception of mastery). Please give rationale for indirect assessments (direct assessments are preferable).

     Students were assessed on the final product of a complete denture fabrication completed at the end of their first term of training. The assessment tool used was a detailed rubric that evaluated basic areas for each denture arch. Each area was further broken down into basic areas of critique that would affect the final product. These basic areas reflect expectations of beginning students One point was awarded for each area demonstrated at the beginning level and "0" points awarded for areas not demonstrated.

   - The student sample assessed (including sample size relative to the targeted student population for the assessment activity) process and rationale for selection of the student sample. Why was this group of students and/or courses chosen?

     All twenty three first year dental laboratory students comprise the student sample assessed. Results of the data are presented for 22 students, due to the fact that one student withdrew from the program before the end of the term when the final project was due.

   - Any rubrics, checklists, surveys or other tools that were used to evaluate the student work. (Please include with your report). Where appropriate, identify benchmarks.

     Please see the rubric and data results below.

   - How you analyzed results, including steps taken to ensure that results are reliable (consistent from one evaluator to another.

     One instructor evaluated all of the students' work. This allowed for consistency of evaluation. The examiner is a thirty year veteran instructor of the program and is the sole instructor teaching the denture technique. Reliable results occur during grading.

3. Provide information about the results (i.e., what did you learn about how well students are meeting the outcomes)?

   - If scored (e.g., if a rubric or other scaled tool is used), please report the data, and relate to any appropriate benchmarks.

     It is expected that students will achieve 75% accuracy on the completed project. The dental laboratory technology students have highly diverse demographic backgrounds. The field appeals to students with English as a second language, due to the fact that dental lab technicians work independently in an environment where conversing with others is not necessary. During their training it becomes apparent that students who have English as their second language sometimes struggle in understanding instructions. This is apparent in the results for most of the students who achieved less than 75% for this project.

- Results should be broken down in a way that is meaningful and useful for making improvements to teaching/learning. Please show those specific results.
  Please refer to the Rubric below.

4. Identify any changes that should, as a result of this assessment, be implemented to help improve students' attainment of outcomes. (These may include, but are not limited to, changes in curriculum, content, materials, instruction, pedagogy etc).
   Changes planned to improve student understanding of instructions and final product completion will include smaller group individualized demonstrations for those needing additional instruction. In addition, the results indicate that students sitting at the bench seats 1,2, and 3 (which are located closest to the instructor bench) may be more apt to request help due to the close proximity to the instructors. Future lab sessions will involve instructors rotating throughout the lab more frequently so that students do not always need to leave their bench to ask a question.

5. Reflect on the effectiveness of this assessment tool and assessment process. Please describe any changes to assessment methodology that would lead to more meaningful results if this assessment were to be repeated (or adapted to another outcome). Is there a different kind of assessment tool or process that the SAC would like to use for this outcome in the future? If the assessment tool and processes does not need to be revised, please indicate this.
   The assessment tool has proven effective over the years. The detail recorded and assessed allows for consistency in grading and provides an outline of clear expectations for students to follow during self-assessment of their own work. No changes to the tool are expected at this time.

Dental Laboratory Technology Program 2012 Learning Assessment Council Report

Outcome # 1 Assessment Tool: Finished Denture

Student	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23
Mandibular																							
Occlusal View																							
Rim Uniformly 8mm wide	1	1	1	1	1	0	1	1	1	1	1	1	1	1	1	1		1	0	1	1	1	1
Posterior centered over ridge crest	5	5	5	5	5	0	5	5	5	5	0	5	5	0	5	5		5	5	0	0	5	0
Facial contour follows Periphery	5	5	5	5	5	0	0	0	0	0	0	5	5	0	0	0		5	0	0	5	5	5
Anterior View																							
Rim height 18mm, 4-6mm from midline	5	5	5	5	5	5	5	5	5	5	5	5	5	5	5	5		5	5	5	5	0	5
Rim balnaced L/R & Parallel to Ridge	5	5	5	5	5	5	5	5	5	0	5	5	5	5	5	5		5	5	5	5	5	5
Wax tapered smoothly to periphery	1	1	1	1	0	0	1	0	1	0	0	0	1	0	1	0		1	1	1	1	0	0
Wax free of bubbles, debris, anom.	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1		1	0	1	1	1	1
Profile View																							
15% angle at midline	5	5	5	5	5	5	5	5	5	0	0	5	5	5	5	5		5	0	5	5	5	5
Rim parallel to ridge (ant/post)	5	5	5	5	5	0	5	0	5	5	0	0	5	0	0	0		5	0	5	5	5	5
Wax tapered smoothly to periphery	1	1	1	1	0	0	0	0	1	0	0	0	0	0	1	0		1	0	1	1	0	0
Wax free of bubbles, debris, anom.	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1		1	0	1	1	1	1
Lingual View																							
Wax tapered smoothly to baseplate	1	1	1	1	0	0	0	0	1	0	0	0	1	0	1	0		1	1	1	0	1	0
Wax free of bubbles, debris, anom.	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1		1	0	1	1	1	1
Maxillary																							
Occlusal View																							
Rim Uniformly 8mm wide	1	1	1	1	0	1	1	1	1	1	0	0	1	1	1	1		1	1	1	1	1	1
Posterior centered over ridge crest	5	5	5	5	5	5	5	5	5	5	5	5	5	5	5	5		5	5	5	5	5	5
Facial contour follows Periphery	5	5	5	5	0	0	0	5	5	0	0	5	5	5	5	5		5	0	5	5	0	0
Anterior View																							
Rim Height 22mm, 4-6mm from midl.	5	5	5	5	5	5	5	0	5	5	5	5	5	5	5	5		5	5	5	5	5	5
Rim balnaced L/R & Parallel to Ridge	5	5	5	5	5	5	5	0	5	5	0	0	5	5	5	5		5	5	5	5	5	5
Wax tapered smoothly to periphery	1	1	1	0	0	0	1	0	1	0	0	0	1	0	1	0		1	0	1	1	1	1
Wax free of bubbles, debris, anom.	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1		1	1	1	1	1	1
Profile View																							
5% angle at midline	5	5	5	5	0	5	5	0	5	0	0	5	5	5	5	5		5	0	0	5	5	5
Rim parallel to ridge (ant/post)	5	5	5	0	0	0	5	5	5	0	0	0	5	5	0	0		5	0	5	0	0	5
Wax tapered smoothly to periphery	1	1	1	0	0	0	1	0	1	0	0	0	1	0	1	0		1	0	0	1	1	1
Wax free of bubbles, debris, anom.	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1		1	1	1	1	1	1
Lingual View																							
Wax tapered smoothly to baseplate	1	0	0	0	0	0	0	0	1	0	0	0	0	0	1	0		1	1	0	0	0	0
Wax free of bubbles, debris, anom.	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1		1	0	1	1	1	1
SUBTOTAL POINTS	74	73	73	66	52	42	61	43	69	38	27	52	72	53	59	53	0	74	36	57	62	56	60
Aesthetics/Wkmanship	10	10	10	9	6	2	7	5	9	5	2	6	9	6	8	6		10	3	6	6	6	8
Total Points Received	84	83	83	75	58	44	68	48	78	43	29	58	81	59	67	59	0	84	39	63	68	62	68
% RECEIVED	100%	99%	99%	89%	69%	52%	81%	57%	93%	51%	35%	69%	96%	70%	80%	70%	0%	100%	46%	75%	81%	74%	81%

37 Maxillary + 37 Mandibular points possible

10 Aesthetics/Workmanship Points Possible (5 points/arch)

84 Total Points Possible

OUTCOME #2 Demonstrate advanced skills in more complex complete denture and fixed metal to porcelain prostheses.

2. Describe the assessment design (tool and processes) used. Include relevant information about:

   - The nature of the assessment (e.g., written work, project, portfolio, exam, survey, performance etc.) and if it is direct (assesses evidence mastery of outcomes) or indirect (student's perception of mastery). Please give rationale for indirect assessments (direct assessments are preferable).

     Students were assessed on the final product of a complete denture fabrication completed at the end of their second term of training. The assessment tool used was a detailed rubric that evaluated critical areas for each denture arch. Each critical area was further broken down into supplemental areas of critique that would affect the final product. One point was awarded for each area demonstrated and "0" points awarded for areas not demonstrated. The areas critiqued on this finished denture relied on a higher level of expertise and finished product than what was expected of the beginning student first term.

   - The student sample assessed (including sample size relative to the targeted student population for the assessment activity) process and rationale for selection of the student sample. Why was this group of students and/or courses chosen?

     Seventeen students were assessed Winter term due to attrition from the original class of twenty three.

   - Any rubrics, checklists, surveys or other tools that were used to evaluate the student work. (Please include with your report). Where appropriate, identify benchmarks.

     Please refer to the rubric below.

   - How you analyzed results, including steps taken to ensure that results are reliable (consistent from one evaluator to another.

     One instructor evaluated all of the students' work. This allowed for consistency of evaluation. The examiner is a thirty year veteran instructor of the program and is the sole instructor teaching the denture technique. Reliable results occur during grading.

3. Provide information about the results (i.e., what did you learn about how well students are meeting the outcomes)?

   - If scored (e.g., if a rubric or other scaled tool is used), please report the data, and relate to any appropriate benchmarks.

     When comparing Fall term benchmarks with the achieved Winter term benchmarks, several areas in the data stood out. Students who did well Fall Term also did well Winter Term which indicates a high level of understanding and skill ability. In contrast, student who did poorly Fall term still had the lowest scores Winter term, but in most cases had achieved improved scores over their beginning attempts. This indicates improvement in understanding and skill ability, but also areas that could be further developed.

   - Results should be broken down in a way that is meaningful and useful for making improvements to teaching/learning. Please show those specific results.

     Please refer to the rubric below.

4. Identify any changes that should, as a result of this assessment, be implemented to help improve students' attainment of outcomes. (These may include, but are not limited to, changes in curriculum, content, materials, instruction, pedagogy etc).
   The same changes indicated in #4 above will be implemented into the learning presentation design for the year 2012/2013. In addition, pairing students together in a mentoring fashion will also be considered.

5. Reflect on the effectiveness of this assessment tool and assessment process. Please describe any changes to assessment methodology that would lead to more meaningful results if this assessment were to be repeated (or adapted to another outcome). Is there a different kind of assessment tool or process that the SAC would like to use for this outcome in the future? If the assessment tool and processes does not need to be revised, please indicate this.
   No changes are anticipated to the tool at this time.

Dental Laboratory Technology Program 2012 Learning Assessment Council Report

Outcome # 1 Assessment Tool: Finished Denture

Student	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20
Maxillary																				
Non-Tissue Side																				
Vertical Dimension Maintained	1	1	1	1	1	1	1	1	1		1	1	1	1	1			1	1	1
Horizontal Dimension Maintained	1	1	1	1	1	1	1	1	1		1	1	1	1	1			1	1	1
Excessive tooth move. During process.	1	1	1	0	0	0	1	0	0		1	1	1	1	0			0	0	1
Base Thickness	1	1	1	1	1	1	1	1	1		1	1	1	1	1			1	0	1
Anatomical Contours Maintained	1	1	1	0	0	1	1	0	1		1	1	1	1	1			1	0	1
Debris Embedded in Base	1	1	0	0	0	1	1	0	1		1	1	1	1	1			1	0	1
Gypsum, pumice or high shine	1	1	1	1	0	0	0	1	0		1	0	1	1	1			1	1	0
Finish	1	0	1	0	1	0	0	0	0		0	0	0	1	1			1	0	0
Acrylic Bubbles	1	1	1	1	0	1	1	1	1		1	1	1	1	1			1	1	1
Base Trimming smooth	1	1	1	0	1	0	1	1	1		1	1	1	1	1			1	0	0
Teeth grooved or broken	1	1	1	0	0	0	1	0	0		1	1	1	1	1			1	0	1
Retention pins showing on ling.	1		1	1	0	1	1	0	1		1	1	1	1	1			1	1	1
Peripheral Roll																				
Smooth and highly polished	1	1	1	1	1	1	1	1	1		1	0	1	1	1			1	1	1
Proper Thickness	1	1	1	1	1	1	1	1	1		1	1	1	1	1			1	1	1
Peripheral Roll																				
Proper Thickness	1	1	1	1	1	1	1	1	1		1	1	1	1	1			1	1	1
Smooth	1	1	1	1	1	1	1	1	1		1	1	1	1	1			1	1	1
Tissue Side																				
Debris	1	1	1	0	0	1	1	0	0		1	1	1	1	1			1	1	0
Gypsum, pumice/high shine present	1	1	1	1	1	0	0	0	0		1	1	1	1	1			1	0	1
Surface polished or ground on	1	1	1	1	0	1	1	1	1		1	1	1	1	1			1	1	1
Palatal Seal and relief	1	1	1	1	1	1	1	1	1		1	1	1	1	1			1	0	1
Mandibular																				
Non-Tissue Side																				
Vertical Dimension Maintained	1	1	1	1	1	1	1	1	1		1	1	1	1	1			1	1	1
Horizontal Dimension Maintained	1	1	1	1	1	1	1	1	1		1	1	1	1	1			1	1	1
Excessive tooth move. During process.	1	1	1	0	0	0	1	1	1		1	1	1	1	1			1	0	1
Base Thickness	1	1	1	1	1	1	1	1	1		1	1	1	1	1			1	1	1
Anatomical Contours Maintained	1	1	1	0	0	1	1	0	1		1	1	1	1	1			1	0	1
Debris Embedded in Base	1	1	1	0	0	1	1	0	1		1	1	1	1	1			1	0	1
Gypsum, pumice or high shine	1	1	1	1	0	0	0	1	1		1	0	1	1	1			1	1	0
Finish	1	1	1	0	1	0	0	0	0		1	0	1	0	1			1	0	0
Acrylic Bubbles	1	1	1	1	0	1	1	1	0		1	1	1	1	1			1	1	1
Base Trimming smooth	1	1	1	0	1	0	0	1	1		1	1	1	1	1			1	0	1
Teeth grooved or broken	1	1	1	0	0	0	1	1	1		1	1	1	1	1			1	0	1
Retention pins showing on ling.	1	1	1	1	0	0	1	0	1		1	1	1	1	1			1	1	1
Peripheral Roll																				
Smooth and highly polished	1	1	1	1	1	1	1	1	1		1	1	1	1	1			1	1	1
Proper Thickness	1	1	1	1	1	1	1	1	1		1	1	1	1	1			1	1	1
Peripheral Roll																				
Proper Thickness	1	1	1	1	1	1	1	1	1		1	1	1	1	1			1	1	1
Smooth	1	1	1	1	1	1	1	1	1		1	1	1	1	1			1	1	1
Tissue Side																				
Debris	1	1	1	0	1	1	1	0	0		1	1	1	1	1			1	0	0
Gypsum, pumice/high shine present	1	1	1	1	1	0	0	0	0		1	0	1	1	1			1	0	1
Surface polished or ground on	1	1	1	1	0	1	1	1	1		1	1	1	1	1			1	1	1
Palatal Seal and relief	1	1	1	1	1	1	1	1	1		1	1	1	1	1			1	1	1
SUBTOTAL POINTS	40	38	39	26	23	27	33	26	30	0	39	34	39	39	39	0	0	39	23	33
Aesthetics/Wkmanship	5	5	5		0	0	4	0	3		5	3	5	4	5			5	0	4
Total Points Received	45	43	44	26	23	27	37	26	33	0	44	37	44	43	44	0	0	44	23	37
% RECEIVED	100%	96%	98%	58%	51%	60%	82%	58%	73%	0%	98%	82%	98%	96%	98%	0%	0%	98%	51%	82%

18 Maxillary + 17 Mandibular points possible 10 Aesthetics/Workmanship Points Possible (5 points/arch) 45 Total Points Possible

OUTCOME #4 Engage correct verbal, non-verbal and written communications in the dental laboratory and dental profession as both a technician and team leader.

2. Describe the assessment design (tool and processes) used. Include relevant information about:
   - The nature of the assessment (e.g., written work, project, portfolio, exam, survey, performance etc.) and if it is direct (assesses evidence mastery of outcomes) or indirect (student's perception of mastery). Please give rationale for indirect assessments (direct assessments are preferable).

     Students were required to complete research on fifteen different removable dental appliances. Upon completion of their research they presented the information in a formal paper and were graded on Illustration, Hardware Researched, Use/function of the appliances as reported by the student and also the references that were used to support their documentation. One point is awarded for each criteria area for each appliance researched (15 points possible for each criteria area).
   - The student sample assessed (including sample size relative to the targeted student population for the assessment activity) process and rationale for selection of the student sample. Why was this group of students and/or courses chosen?

     All fifteen students that comprise the second year DLT class were assessed.
   - Any rubrics, checklists, surveys or other tools that were used to evaluate the student work. (Please include with your report). Where appropriate, identify benchmarks.

     A check list for each criteria and each appliance was used indicating completion (1 point awarded) or a written comment of deficiency (no point awarded). Additionally, comments were included to the student relating to positive aspects of each area and suggestions for strengthening their work.

   - How you analyzed results, including steps taken to ensure that results are reliable (consistent from one evaluator to another.

     See comment directly above.

3. Provide information about the results (i.e., what did you learn about how well students are meeting the outcomes)?
   - If scored (e.g., if a rubric or other scaled tool is used), please report the data, and relate to any appropriate benchmarks.

     Please refer to the rubric and data results below.
   - Results should be broken down in a way that is meaningful and useful for making improvements to teaching/learning. Please show those specific results.

     Two students fell below the 75% accuracy benchmark. These two students had English as their second language. The most common area for point deductions occurred in the "Hardware" criteria section. This area is where the actual description of the appliance include materials used for fabrication are presented.

4. Identify any changes that should, as a result of this assessment, be implemented to help improve students' attainment of outcomes. (These may include, but are not limited to, changes in curriculum, content, materials, instruction, pedagogy etc).

   Future changes based on results include instructor draft review of work prior to the final paper submission as well as opportunities for students to complete peer evaluations and suggestions in the

classroom setting. For students achieving less than the expected 75% benchmark, additional time to review instructor comments and re-submission of the paper will be considered.

5. Reflect on the effectiveness of this assessment tool and assessment process. Please describe any changes to assessment methodology that would lead to more meaningful results if this assessment were to be repeated (or adapted to another outcome). Is there a different kind of assessment tool or process that the SAC would like to use for this outcome in the future? If the assessment tool and processes does not need to be revised, please indicate this.

   When presenting the assignment to students, increased instruction will occur to clarify expectations. Additionally, past student examples can be show to demonstrate student work that meets expectations, as well as examples where improvement was needed.

Dental Laboratory Technology Program 2012 Learning Assessment Council Report

Outcome # 4	Engage correct verbal, non-verbal and written communications in the detnal laboratory and dental profession as both a technician and team leader.														
Student	**Station 1**	**Station 2**	**Station 6**	**Station 9**	**Station 10**	**Station 11**	**Station 12**	**Station 13**	**Station 14**	**Station 16**	**Station 17**	**Station 20**	**Station 21**	**Station 23**	**Station 24**
Ortho Term Paper															
Presentation															
Illustration	12.5	16	15	16	16	13	16	15	15	14	15	12	15	15	12
Hardware	14	14	14	16	13	13	14	12	12	5	8.5	14	14	16	1
Use/Function	15	16	15	16	16	16	16	16	15	14	16	15	14	16	7
References	15	16	15	16	15	16	16	16	16	14	16	16	16	14	14
Total Points Received	56.5	62	59	64	60	58	62	59	58	47	55.5	57	59	61	34
% RECEIVED	88%	97%	92%	100%	94%	91%	97%	92%	91%	73%	87%	89%	92%	95%	53%

Key

16 points awarded = Acceptable as presented

15 points awarded = Minor omission (minus 1 point)

14 points awarded = Minor omissions (minus 2 points)

13 points awarded = Minor omissions (minus 3 points)

12-12.5 points awarded = Ommissions but 75% accuracy still achieved for the category

1-8.5 points awarded = Major Omissions resulting than < 75% for the category