Contextualized Teaching and Learning 2.0:
Scaling the Work

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The!Career!Ladders!Project!

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Contextualized Teaching and Learning (CTL)

Many people learn better and faster, and retain information longer, when they are taught concepts in context.

- Makes it relevant
- Engages and motivates hard-to-reach students
- Increases learner confidence & enthusiasm
- Enhances interest in long-term goals & education

Center for Student Success, Research & Planning Group. 
*Basic Skills as a Foundation for Student Success in CA Community Colleges*, p. 58.
Contextualized Teaching and Learning (CTL)

- Strategies to link essential skills & academic or occupational content
  - concrete applications
  - specific context of interest to the student

Includes:
- Design of curricula
  - integration of essential skills & content
- Teaching
  - use of cases, project-based learning and other student-centered practices
- Assessment
  - examining application of knowledge and the transfer of skills
Different ways to accomplish CTL

- Infused academic courses
- Infused career technical courses
- Linked courses or learning communities
- Team teaching of integrated academic and occupational courses

D. Perin. Academic-Occupational Integration as a Reform Strategy for the Community College: Classroom Perspectives. Teachers College Record, vol. 103 2010

Evidence in CA Community Colleges

Students in contextual math compared to standard math:

- 327% more likely to pass contextual course
- 387% more likely to pass degree applicable coursework in the same semester
- 400% as likely to pass transfer-level course in same semester

Contextualized students also more likely to complete degree applicable as well as transfer-level courses in subsequent term.

These effects more pronounced for Black and Hispanic students.
A Key Element is Faculty Collaboration

Form Team that becomes a “Faculty Learning Community”

Meet Regularly / On-going Communication

Adequate time/resource for front end development

Synchronize syllabi – progression of skills

Joint Projects

Spend time in each other’s classes
Define the following terms.

12. Carcinogen: __________________________________________________
13. Mutagen: ____________________________________________________
14. Teratogen: _________________________________________________
15. Sensitization: _____________________________________________
16. PPE: _______________________________________________________
17. NFPA: _____________________________________________________
18. Flashpoint: _______________________________________________
19. HEPA: _____________________________________________________
20. Vapor density: _____________________________________________
21. Specific gravity: ___________________________________________
22. Ceiling: ___________________________________________________
23. STEL: ____________________________________________________
24. TWA: _____________________________________________________
25. Polycarbonate: ____________________________________________

Bonus Questions

26. In how many minutes is STEL usually measured?

27. In how many hours is TWA usually measured?
4. a. A welder saws a 3.570 piece from this bar. Find, to the nearest hundredth inch, the length of the remaining bar. Allow a cutting loss of 0.1250

b. From the remaining bar, 2 more cuts are made: 6.450 and 1.360. Loss for each cut is still 0.1250. What length of bar now remains? 

___________
4. Twenty-two pieces, each $6\frac{1}{2}$" long, are cut from this steel angle. There is $\frac{1}{8}$" kerf on each cut. How much angle remains after the 22 pieces are cut?

5. Seven pieces of $\frac{1}{2}$" round stock, each 3" long, are cut from a bar. How much material is required? Allow $\frac{1}{8}$" waste for each cut.
### Practical Problems

1. Find the length of slot 2.

2. Find the height of a stack containing 13 of these steel shims.

3. Cross-bar members are cut from flat stock. What length of 5" flat stock is used to make 31 of these members? Disregard waste caused by the width of the cuts.
Iron Hearts
Iron Hearts
Iron Hearts
Technique

• Fusion of different thicknesses of metal
• Fusion of different base metals
• Using heat to draw out metal
• Using different rods in arc welding
• Using different arc processes
  – Shielded metal arc welding
  – Tungsten inert gas welding
  – Plasma arc cutting
  – Air carbon arc gouging
Skills

• Better understanding of the weld puddle
• Welding dissimilar thicknesses of metal
• Seeing different melting points when fusing dissimilar base metal
• Utilizing different types of welding rod
  – 6010 for open joints
  – 6013 for sheet metal
  – 7018 for thicker metal applications
  – CUSI filler rod to fuse copper to carbon steel
• Utilizing various welding and cutting equipment
• Value of good fit-up
• Importance of arc length
  – Using the heat for destruction or control the length to maintain low amperage
  – Long arcing the 6010 rod to achieve the “bleeding heart” effect
  – Staying in the open gap to avoid melting the base metal
Confidence

• **Empowerment**
  – Never pushed themselves
  – Amazed at what they could accomplish

• **Forced**
  – Had to weld out of position
  – Had to weld badly fitted joints
  – Used 6010 rod on open gaps

• **Sense of accomplishment**
  – Each piece received recognition for the techniques that were employed for the final outcome
  – Brought a sense of camaraderie amongst the students

• **Curiosity**
  – Process of fusion and what it entails
  – Welding adjectives to express themselves when writing about the experience
Matthew’s Heart

“Forming the heart brought more of an excitement towards the welding process. The more I learned, the greater the tactile feeling I acquired, the more inspired I became.”
Monica’s Heart

“My journey started with a feeling of intimidation and ended with a feeling of accomplishment...I can do this and I made it mine!”
Brian’s Heart

“I could shape it anyway I wanted, nothing was impossible. It was great to work through the entire process of fabricating metal, the fire, the forming, the fusing... the freedom.”
Juan Carlos’ Heart

“Tough times do not define
I feel the heat of steel
The glow, the thrill of hot steel”

I felt accomplished, something great in my life – learning, lucky to be in CAA program – one of my friends is learning welding but his path that lead him to welding is because he’s in jail.
<table>
<thead>
<tr>
<th>Element</th>
<th>Range of Practice</th>
<th>Ongoing Implementation</th>
<th>Institutionalization/Dissimination</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Contextualization &amp; Career Pathway</strong></td>
<td>- Identify a career pathway, ICTE focus! context to use for contextualization! - Revise existing, or create new, courses/lessons! to incorporate relevant occupation-related material + skills!</td>
<td>- Revise curriculum to reflect faculty exchange and to meet career pathway goals! - Integrate potential modes of contextualized courses: infused, linked, integrated, ISL, team @ teach/IBest!</td>
<td>- Define and map ICTE pathways clearly! - Award Industry @ recognized certificates!</td>
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<tr>
<td><strong>Faculty Collaboration</strong></td>
<td>- Identify departments &amp; faculty to be involved in CTL work! (ICTE, Basic Skills, ESL, and Counseling)! - Share course information, align syllabi, develop joint lessons! and establish regular meetings! schedule!</td>
<td>- Meet regularly to discuss joint projects, student progress, challenges or other important information! - Revise lessons based on insights gained from close collaboration!</td>
<td>- Identify experienced “Champions”! who can be supported to train other college faculty in ICTL theory &amp; practice, and assist in ICTL development on campus! - Establish and expand ICTL community of practice (campus, regional, state, national)!</td>
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<tr>
<td><strong>Skills Needs &amp; Assessment</strong></td>
<td>- Identify skills! (academic + soft) required for student success! in ICTE programs! - Develop or revise SLO’s to reflect ICTL objectives!</td>
<td>- Refine curriculum based on SLO assessment! with regard to student comprehension and success! - Collect student outcome data to assess effectiveness of ICTL approach!</td>
<td>- Develop forms of assessment that align more closely with ICTE pathways! — include student life! knowledge + work based skills as criteria for assessment! - Build case for institutionalization using data! collected to demonstrate impact of ICTL!</td>
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<tr>
<td><strong>Teaching Strategies</strong></td>
<td>- Integrate ICTE content and requirements! into ICTL lessons! - Integrate project based learning into the curriculum!</td>
<td>- Implement project based learning across disciplines! to create an integrated learning! community! - Ensure that ICTE faculty reinforce/integrate skills and strategies addressed in the basic! skills classes!</td>
<td>- Incorporate effective ICTL teaching practices! (project/ work based, cross-discipline) into ICTE pathways!</td>
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<td><strong>Contextualized Counseling</strong></td>
<td>- Develop supplementary courses! / workshops incorporating “soft skills”! (resume, interviewing, etc.) + college! success, tailored to specific occupation! for sector!</td>
<td>- ICTE &amp; Basic Skills faculty reinforce/integrate skills and strategies addressed in the ICTL curriculum! - Sector based employers’ group meets regularly to provide ongoing feedback on effectiveness of curriculum in addressing workplace/occupational skills!</td>
<td>- Adopt integrated contextualized counseling! approach as standard practice in ICTE pathways!</td>
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<td><strong>Employer! Industry Engagement</strong></td>
<td>- Form focus groups with industry, labor, and faculty to shape curriculum! around skills! required in targeted occupations! - Create Advisory Committees from focus! groups! to link to existing industry sector! group!</td>
<td>- Sector based employers’ group meets regularly to provide ongoing feedback on effectiveness of curriculum in addressing workplace/occupational skills!</td>
<td>- Industry @ recognized certifications incorporate basic skills life skills as key elements!</td>
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<td><strong>Institutional Support</strong></td>
<td>- Secure institutional support for curriculum! development! &amp; flexibility in faculty! assignments, and scheduling classes!</td>
<td>- Block schedule courses! to allow a student to enroll into courses! that are back to back, complementary! and supportive to their career! pathway!</td>
<td>- Adopt ICTL model as key element in standard approach to integrated ICTE pathways!</td>
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Elements of CTL 2.0

• Train the Trainer - Build local capacity
• Webinars
• Rubric – Stages of CTL Development
• Videos - Teaching practice + faculty collaboration
• Community of Practice
• Web-based resources
The Counselor’s Role
Counselor’s Role

• Matriculation Process
• Dedicated Counselor
• Classroom Presence
• Collaboration with other faculty, counselors, and colleges
The counselor is the glue that helps hold the PATHWAY program together.
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