Introducing ITS in the Los Angeles Community College Region
Overview

• Role of TWI in ITS Implementation
• Impact of ITS on Pathway Strategy at LATTC
• Best practice: Partnership with SWTWC in Developing a K-16 Pathway in GIS
Transportation Workforce Institute (TWI)

- Established in 2015 through FTA Innovative Workforce Development grant funding
- Focus on addressing workforce needs of frontline occupations in transportation
- Regional convener of education and training partners; national reach
- Development and dissemination of programs, materials, and best practices
- TWI role in ITS Implementation
  - LA County regional lead in Transportation for CA Community College Chancellor’s Office Strong Workforce Initiative
  - Work with community colleges in various districts on transportation curricular and program updates
  - Lead curriculum and program developer for LA Metro’s WIN-LA Initiative
  - ITS intro built into some incumbent worker training modules
Impact of ITS on Pathway Strategy at LATTC

- ITS modules have been embedded into Automotive Technology, Truck and Bus Technologies, and Rail Vehicle Maintenance programs - these cover:
  - GPS
  - Variable Speed Limits
  - Autonomous Vehicle Technology
  - Automatic Vehicle Diagnostic Services
  - Traffic signal control
  - Automatic Number Plate Recognition
Best practice: GIS Demonstration Project in Partnership with SWTWC

• Multiple partners: University/Community College/Transportation Center
• Collaborative brought K-12, community college, and university students together
• Many Lessons learned
Bringing Transformational Technology Curriculum to Community Colleges

National Transportation Career Pathway Initiative
Tyler Reeb, Ph.D.
## Transportation Planning: Priority Occupations

<table>
<thead>
<tr>
<th>Initial Job Targets (20)</th>
<th>Final Priority List</th>
<th>Career Ladder Designation</th>
</tr>
</thead>
<tbody>
<tr>
<td>City &amp; Regional Planning Aide</td>
<td>Transportation Planner</td>
<td>Primary career goal (ideal)</td>
</tr>
<tr>
<td>Transportation Tech, Engineer</td>
<td>Urban/Regional Planner</td>
<td>Primary career (specialization)</td>
</tr>
<tr>
<td>Transportation Analyst, Planner</td>
<td>Land Use Planner</td>
<td>Primary career (specialization)</td>
</tr>
<tr>
<td>Land Use, Urban/Regional Planner</td>
<td>Environmental (Restoration) Planner</td>
<td>Primary career (specialization)</td>
</tr>
<tr>
<td>Enviro Analyst, Planner, Engineer</td>
<td>Cartographers &amp; Photogrammetrists</td>
<td>Entry level position</td>
</tr>
<tr>
<td>Cartographers &amp; Photogrammetrists</td>
<td>GIS Analyst/Technician</td>
<td>Entry level position</td>
</tr>
<tr>
<td>Surveying &amp; Mapping Technician</td>
<td></td>
<td>Entry level position</td>
</tr>
<tr>
<td>GIS Technician, Planner, Director</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Modeling Tech, Planner, Manager</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Civil Engineer &amp; Technician</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

- **Initial Job Targets (20)**: A list of initial job targets related to transportation planning.
- **Final Priority List**: A list of priority occupations finalized for transportation planning.
- **Career Ladder Designation**: A designation of career ladder for transportation planning.
Transportation Planning: Occupational Competencies

### Comparison of Competencies in Job Listings/Descriptions - APA and SCAG

<table>
<thead>
<tr>
<th>Competence Requirement</th>
<th>Total Observation</th>
<th>Percentage</th>
<th>APA</th>
<th>SCAG</th>
</tr>
</thead>
<tbody>
<tr>
<td>Analysis/Research</td>
<td>10</td>
<td>1.4%</td>
<td>8</td>
<td>10</td>
</tr>
<tr>
<td>Innovation</td>
<td>10</td>
<td>1.4%</td>
<td>8</td>
<td>10</td>
</tr>
<tr>
<td>Project Management</td>
<td>10</td>
<td>1.4%</td>
<td>8</td>
<td>10</td>
</tr>
<tr>
<td>Public Speaking</td>
<td>10</td>
<td>1.4%</td>
<td>8</td>
<td>10</td>
</tr>
<tr>
<td>Social Science</td>
<td>10</td>
<td>1.4%</td>
<td>8</td>
<td>10</td>
</tr>
<tr>
<td>Computer Science</td>
<td>10</td>
<td>1.4%</td>
<td>8</td>
<td>10</td>
</tr>
<tr>
<td>Business/Management</td>
<td>10</td>
<td>1.4%</td>
<td>8</td>
<td>10</td>
</tr>
<tr>
<td>Technology</td>
<td>10</td>
<td>1.4%</td>
<td>8</td>
<td>10</td>
</tr>
<tr>
<td>IT Operations</td>
<td>10</td>
<td>1.4%</td>
<td>8</td>
<td>10</td>
</tr>
<tr>
<td>Transportation</td>
<td>10</td>
<td>1.4%</td>
<td>8</td>
<td>10</td>
</tr>
<tr>
<td>Public Reporting</td>
<td>10</td>
<td>1.4%</td>
<td>8</td>
<td>10</td>
</tr>
<tr>
<td>Public Relations</td>
<td>10</td>
<td>1.4%</td>
<td>8</td>
<td>10</td>
</tr>
<tr>
<td>Ethics</td>
<td>10</td>
<td>1.4%</td>
<td>8</td>
<td>10</td>
</tr>
</tbody>
</table>

### Additional Data

- **Technology:**
  - 77.4% - Technology/Support systems and applications
  - 71.6% - Auto/AV infrastructure construction
  - 71.6% - Understanding and implementing the practice of software and hardware security
  - 71.6% - Understanding and implementing the practice of software and hardware security

- **Energy:**
  - 66.9% - Understanding and implementing the practice of software and hardware security

- **InITS:**
  - 59.8% - Understanding and implementing the practice of software and hardware security

- **KSA:**
  - 62.9% - Understanding and implementing the practice of software and hardware security

- **Other:**
  - 15.9% - Understanding and implementing the practice of software and hardware security

Legend:
- S: Strong
- M: Medium
- L: Limited
- L2: Very Limited

Data source:
- APA: Transportation Workforce Information System
- SCAG: Southwest Transportation Workforce Information System

### TWI

Transport Workforce Institute
Southwest Transportation Workforce Institute
Transportation Planning: Academic Program of Study

Program of Study: Transportation Planner

NCCP – Certified Planner

Transportation planning is an essential component of urban design and decision making. Transportation planners apply their skills to planning, designing, and managing transportation systems to meet the needs of communities. This program is designed to provide students with the knowledge and skills needed to become effective transportation planners.

I. Area of Emphasis: Transportation Planning

A. Core Courses

1. Introduction to Transportation Planning
2. Transportation Demand Analysis
3. Transportation Engineering and Systems
4. Urban Development and Land Use Planning
5. Transportation Finance and Economics

B. Electives

1. Environmental Planning
2. Transportation Security
3. Transportation Management
4. Transportation Technology

II. Graduate Degree: Master of Urban Planning

A. Core Courses

1. Urban Planning Theory and Practice
2. Urban Planning Law and Policy
3. Urban Planning Research Methods
4. Urban Planning Practice

B. Electives

1. Urban Planning and Development
2. Urban Planning and Sustainability
3. Urban Planning and Technology
4. Urban Planning and Finance

III. Experiential Learning Programs

A. Transportation Planning Internships

1. Sierra Club (L.A. Chapter)
2. Assoc. for Public Policy Analysis & Mgmt
3. American Planning Association
4. Global Planners Network
5. Urban Land Institute
6. SCAG, SANDAG

IV. Planning Academic Programs

CA Polytechnic Univ, Pomona (Cal Poly)
CA State University, Northridge (CSUN)
San Diego State University (SDSU)
University of California, Irvine (UCI)
University of California, LA (UCLA)
University of Southern California (USC)

V. Experiential Learning Programs

Sierra Club (L.A. Chapter)
Assoc. for Public Policy Analysis & Mgmt
American Planning Association
Global Planners Network
Urban Land Institute
SCAG, SANDAG
Transportation Planning: The Career Pathway

Planning Career Pathway
Highly vertical, hierarchal career path
Strong academic/accredited POS
Employment contingent upon degree
No effective pre-employment training
Lack of 4-year feeder programs

Job Spec Templates
Useful for documenting all disciplinary priority occupations.
Will makeup an occupational guide for highway transportation sector.
Part of deliverable package to FHWA.
The Planning Pathway Demonstration Pilot
ARC 341: GIS Metropolitan Access Planning Systems

- Hybrid Introduction to GIS/Planning  
  (launched Spring 2018: 15-weeks, 14 students)

- Launched Spring 2018 at L.A. Trade Tech College  
  (leveraging CA Strong Workforce Funds)

- Enrollment: 13 area high school students and 1 LATTC faculty

- In Partnership w/ Transp. Workforce Institute  
  (an FTA-funded Innovative Public Workforce Program)

- Connects K12 to 2-Year & 4-Year Programs  
  (Offers dual-enrollment & college credit articulation)

- Contextualized, Work-Based Learning  
  (GIS-Infused “Planning” activities & group projects)

- Promotes Transportation Career Pathways  
  (exposes students to career opportunities)
ARC 341: Student Learning Objectives

Learning Objectives

- Introduce GIS Concepts
- Operate ArcGIS Software
- Manage Geodatabases
- Coordinate Systems
- Data Collection & Mapping
- Database Queries
- Spatial Joins & Overlays
- Project Teamwork
Los Angeles Trade Technical College

- A complex metropolitan location serviced by multiple transportation modalities
Engaging Students to Learn

• Infusing planning-based projects into standard classroom curriculum

• Engaging industry support: site visits, guest speakers, technology, etc.

• Career pathway as curriculum: from college students to industry pros

“There’s a need for much greater collaboration across academia and industry than ever before, to address transportation workforce challenges and adequately prepare students for careers of the future.” (Ivey)
Arc 341: Introducing Students to Career Paths

GIS Transportation Planning Career Pathways

Geographic Information System technology is utilized by transportation planners at all levels.

Entry Level: GIS Technician
- Salary Range: $38,000 - $66,000
- Education and Industry Certification
  - Associates Degree (2 year) in Urban Studies or related specialization

Mid Level: GIS Analyst
- Salary Range: $74,776 - $97,219
- Education and Industry Certification
  - B.S./B.S. in Urban and Regional Planning with a transportation focus
  - B.A./B.S. in Urban Studies and Planning Minor in Urban and Regional Studies, Urban Sustainable Planning
  - Masters degree is highly desirable (could be substituted for 2-4 years of related work experience)

Advanced Level: Regional Planner Specialist
- Salary Range: $95,388 - $124,005
- Education and Industry Certification
  - Masters of Urban and Regional Planning (MURP)
  - Masters of Planning with a Concentration in Transportation and Infrastructure Planning
  - Certificate of Transportation Systems Professional Education in Collaboration with American Planning Association
  - Masters degree is highly desirable (could be substituted for 2-4 years of related work experience)
ARC 341: Engaging Students Outside the Classroom
### ARC 341: Student Evals & Suggestions

#### Teaching Approach

- Guest speakers were informative and conveyed a valuable industry perspective. 10% Strongly Disagree, 27% Disagree, 44% Agree, 22% Strongly Agree.
- Class activities were informative, interesting, and engaging. 10% Strongly Disagree, 27% Disagree, 44% Agree, 22% Strongly Agree.
- The instructor challenged students to do their best work. 10% Strongly Disagree, 27% Disagree, 44% Agree, 22% Strongly Agree.
- The instructor kept the class interesting by using different teaching styles and methods. 10% Strongly Disagree, 27% Disagree, 44% Agree, 22% Strongly Agree.
- The instructor appeared enthusiastic and interested. 10% Strongly Disagree, 27% Disagree, 44% Agree, 22% Strongly Agree.
- The instructor demonstrated an in-depth knowledge of the subject. 10% Strongly Disagree, 27% Disagree, 44% Agree, 22% Strongly Agree.
- The instructor encouraged discussions and responded to questions. 10% Strongly Disagree, 27% Disagree, 44% Agree, 22% Strongly Agree.
- The instructor seemed organized and prepared for class. 10% Strongly Disagree, 27% Disagree, 44% Agree, 22% Strongly Agree.
- The instructor stimulated my interest in the subject. 10% Strongly Disagree, 27% Disagree, 44% Agree, 22% Strongly Agree.

#### Self-Assessment

- I have a better understanding of the concept of a “career pathway”. 9% Strongly Disagree, 55% Disagree, 27% Agree, 22% Strongly Agree.
- I have an increased awareness of transportation planning career opportunities. 10% Strongly Disagree, 27% Disagree, 36% Agree, 22% Strongly Agree.
- I have an increased interest in a transportation planning career. 10% Strongly Disagree, 27% Disagree, 36% Agree, 22% Strongly Agree.
- I have an increased interest in GIS technology. 10% Strongly Disagree, 27% Disagree, 36% Agree, 22% Strongly Agree.
- I have a better understanding of GIS technology and its application. 10% Strongly Disagree, 27% Disagree, 36% Agree, 22% Strongly Agree.
- I spent the expected number of hours preparing and completing assignments. 10% Strongly Disagree, 27% Disagree, 36% Agree, 22% Strongly Agree.
- I feel confident that I understand the material presented. 10% Strongly Disagree, 27% Disagree, 36% Agree, 22% Strongly Agree.
- I believe I achieved the expected learning outcomes. 10% Strongly Disagree, 27% Disagree, 36% Agree, 22% Strongly Agree.
- I contributed constructively during in-class activities. 10% Strongly Disagree, 27% Disagree, 36% Agree, 22% Strongly Agree.

#### Were guest speaker presentations helpful?

- Thomas O’Brien: "Transportation and Freight Planning" 45% Helpful, 36% Very Helpful.
- Terry Bills: "GIS Jobs at Esri" 55% Helpful, 44% Very Helpful.
- Eric Shen, USC 55% Helpful, 44% Very Helpful.
- John He: "My Career Path" 36% Helpful, 64% Very Helpful.
- Tyler Reed: "Stack’s Story Map" 36% Helpful, 64% Very Helpful.

#### Overall Experience

- I felt this class was worth the time. 27% Strongly Disagree, 36% Disagree, 36% Agree, 9% Strongly Agree.
- I would recommend this class to a fellow student. 36% Strongly Agree, 36% Agree, 18% Disagree, 9% Strongly Disagree.
- I would be interested in taking another GIS class. 36% Strongly Agree, 36% Agree, 27% Disagree, 9% Strongly Disagree.
ARC 341: Student Evals & Suggestions

“Improve more physical activities and go outside more.”
“Two sessions min per week to hold concepts more effectively.”
“Make this class more fun.”
“More collaboration and discussion among the students.”
“Wanted professor to acknowledge all students.”
“More energetic and engaging.”
“More informational videos.”
“Easier access to stuff.”
“More explanations.”
“Updated version of Arc GIS (Arcmap).”
“Updated computers.”
ARC 341: Observations & Conclusions

Student Surveys
• Enjoyed technology & learning activities.
• Picked up on GIS more than “Planning”.
• Had little/no pre-knowledge of either.
• Left with little/no change to career plans.

Speaker Surveys
• Presentations were engaging and explored various kinds of careers within the transportation industry.
• Speakers has a pleasant experience presenting and making connections to the class’ curriculum.
• Instructor
  • Enjoyed teaching the class and is interested in teaching it again.
  • Believes that the curriculum and the learning materials provided by SWTWC were effective in teaching students about transportation planning career opportunities.
Planning Demo Class at LATTC

• Ginny Tsu, FHWA Office of Innovation Director, joined LATTC and SWTWC team members on May 28, 2018.

• Students presented their final presentation projects using Story Maps which focused on the transportation challenges they faced during their daily commutes to campus.

• Students were awarded certificates of completion.
Next Phase: Implementation Plan
Next Phase: Implementation Plan

• **Institutionalizing the Pilot:**
  The 9 Colleges of the LACCD

• **Replicating the Success:**
  Pima Community College, AZ

• **Planting More Seeds:**
  Expanding K-12 Partnerships

• **Crafting Articulations:**
  USC, UCLA, Cal Poly, CSULB

• **Building Institutional Bridges:**
  Connecting K-12 to 2 & 4-year programs
Join Us!

http://tiny.cc/ITS-PCB
Thank You

Tyler Reeb, Ph.D.
Southwest Transportation Workforce Center
Long Beach State University
tyler.reeb@csulb.edu
562-985-2879

Jess Guerra
Transportation Workforce Institute
Los Angeles Trade Technical College
guerraj@lattc.edu
213-763-3939