Creating Student Engagement Through Experiential Learning Tools
Welcome & Introduction
A little about Realityworks

**DISTRIBUTION INTO EDUCATION**
- 67% of school districts in the U.S.
- 90 countries worldwide
- 31,000 institutions
- 6,000,000 students served through the use of our products

**EDUCATION PARTNER**
- Association for Career and Technical Education Board (NACTE)
- Chair of Industry Workforce Needs Coalition (IWNC)
- National Association of Agriculture Educators Member (NAAE)
- 100+ education trade shows (local, state, national)

**EDUCATIONAL FOCUS**
- Interactive Learning Aids and Curriculum
Creating Student Engagement Through Experiential Learning Tools
Creating Student Engagement Through Experiential Learning Tools
Education Rethinking
If you want a new idea, look in an old book.
Tell me and I’ll forget.

Show me and I may remember

Involve me and I will learn.
Today’s Learner

Motivated by doing

• Today’s millennial generation do not trust what is said, but will trust what they can do themselves. Hands On Learning is KEY!

Want immediate feedback

• 70% of teens (aged 13-17) and 79 percent of young adults (aged 18-24) own smartphones.¹ Technology and Feedback helps LEARNING!

21st Century Interaction

• 84% of 12 to 17 year-olds own one or more personal media devices.² They are good at using technology to gain better UNDERSTANDING!

² http://oai.wsu.edu/Teaching_Resources/teaching_millennial_students/resources.html
# Smart Teaching

<table>
<thead>
<tr>
<th>50%</th>
<th>Half of our brain focuses on processing visual information.</th>
</tr>
</thead>
<tbody>
<tr>
<td>SIXTY THOUSAND TIMES</td>
<td>We process visuals much faster than we process text.</td>
</tr>
<tr>
<td>90%</td>
<td>We all forget ninety percent of what we learn in a month, most of us in 1 hour</td>
</tr>
<tr>
<td>SIX TRIGGERS</td>
<td>Getting and keeping the attention of students is critical</td>
</tr>
</tbody>
</table>
Old Education Models

21st Century Education Model

Creating Student Engagement Through Experiential Learning Tools
The world’s largest taxi company, owns no vehicles.

The world’s most popular media owner, creates no content.

The most valuable retailer, has no inventory.

The world’s largest accommodation provider, owns no real estate.

~ Tom Goodwin
The world’s best instructors, use no textbooks

They engage through:
- Hands on learning
- Experiencing learning concepts
- Simulate the outcomes of real life
- Change the way things are done
- They involve and empower
Today’s Welding Scene
WELDING TRENDS = SKILLS GAP
2016 & BEYOND

The Industry Facts:

- 450,000 workers are needed to fill the demands of fabrication & construction industries\(^1\)

- 81% of manufacturers polled reported they can’t find enough skilled workers according to the National Association of Manufacturers\(^2\)

Five Areas of Welding Growth:

- Agriculture
- Highway Infrastructure
- Rail Transportation
- Production/Manufacturing
- Petro-Chemical / Energy

“With welders retiring at twice the pace of new welders coming into the field, it’s anticipated that in the years to come, we will have a significant shortfall of qualified welders.”

By 2025 there will be a need for 400,000 replacement and new welding professionals.
Today's high school welding lab

8 – welding booths per school on average
22 – average number of students/class
33% – students with cognitive disabilities

• Instructors are trained as CTE educators
  – May not be specified disciplines (like welding)
• Lack instructional materials
• Classroom management can be an issue
Using Welding Simulation to Enhance Learning
RealCareer Welding Solutions

The 21st Century Welding Training Method

SIMULATE

REPLICATE

EVALUATE

guideWELD®

VR
Virtual Reality Welding Simulation

guideWELD®
LIVE
Real Welding Guidance System

BEND TESTER &
WELD DEFECTS KIT
Inspection Kits

Creating Student Engagement Through Experiential Learning Tools

www.realityworks.com
Hardware + Software + Curriculum

- Technique guidance
- Technique assessments
- GMAW & SMAW available
- Three levels of difficulty (Novice, Intermediate, Advanced)
- Teacher customizable
- Local install / no licenses

$4,900.00/unit with one welding gun
$6,400.00/unit with GMAW & SMAW guns
Virtual Reality Integrated Weld Training

- Study by Iowa State University
- Dept. of Industrial and Manufacturing Systems Engineering
- by Richard Stone, Ph.D.
Simulators create more welders in less time

Simulators create more welders in less time

65% increase in qualified participants

28% Less Time

...And with less cost

“welding simulation has decreased our consumable and welding costs by about 70% for our program.”

George Karr,
Welding and Technology Instructor
Hollenstein Career & Technology Center, Fort Worth, TX
Creating Student Engagement Through Experiential Learning Tools
guideWELDLIVE

- Real time corrective feedback in every welding booth for MIG & STICK
- Feedback comes from nine default WPS’s with customization available.
- Guidance on proper technique
  - Work Angle
  - Travel Angle
  - Speed

COST: $6,500.00/unit
Creating Student Engagement Through Experiential Learning Tools
RealCareer™ Weld Defects Kit

Visual inspection training
• Teach students the most reoccurring visual defects and discontinuities

Train how to identify defects
• Be able to correct the defects by knowing what the issue is

Reduce future defect issues
• Understand causes of defects through welder technique or welding machine
RealCareer™ Weld Defects Kit

Kit includes:
• 1 Quality weld model
• 12 Weld defect models
• Weld effect definition insert
• Instructor Guide
• Case for all welding models
• Weld Defects Curriculum (Online)
• 10 Sets of student flash cards
• 5 Classroom posters

COST: $995/unit
RealCareer™ Bend Tester

Train Welding Qualification
• Better prepare students for becoming certified welders by practicing guided bend testing

Identify Qualification
• See the true quality of welding ability and validate welds through destructive weld testing and proper procedures.

Train how to:
• Prepare your metal for testing
• Proper welding skills for testing
• Cut & Bend your metal for qualification testing
• Understand if your weld would pass qualification specifications
RealCareer™ Bend Tester

Product Includes:

• Guided Bend Tester Complies with AWS D1.1 code
• 3 plunger sizes & 3 Roller Settings
  • ½, 1, 1 ½ inch
• 2 Bend Testing Posters
• Curriculum (8 Lessons)
• 8 ton jack
• 1 year warranty

COST: $2,500/unit
RealCareer™ Employability Skills

Curriculum:
• Teach a complete unit on employability skills
• Generate real-life discussions

Lessons Include:
• Problem Solving & Time Management
• Interviews & Work Ethic
• Self-Confidence & Stress Management

Product includes:
• 19-lesson Teacher Guide
• 19 Career Workplace Scenario Cards
• Set of 20 Student Workbooks
• 33 Presentation slides

COST: starting at $499
Creating Student Engagement Through Experiential Learning Tools

Classroom Setup Example
This classroom mockup illustration was created only as a visual example (scale, models and layout are generic representations). Implement these welding educational tools into your program using the following information as a guide.

Live Welding Booths
guideWELD® LIVE real welding guidance system
- Provide in-helmet instruction for consistent technique during live Stick and MIG welding
- Enables self-learning through immediate technique correction
- Build welders’ confidence and reduce classroom management concerns

Destructive Weld Testing
RealCareer™ Bend Tester
- Prepare welders to conduct quality welds
- Teach welders how to correct defects when welding

Visual Weld Inspection
RealCareer™ Weld Defects Kit
- Inspect common weld defects and discontinuities
- Teach welders how to correct defects when welding

Welding Simulation Lab
guideWELD® VR welding simulator
- Engage users in a safe, virtual Stick and MIG welding environment
- Advance basic welding skills and build correct muscle memory techniques
- Save on classroom consumables
RealCareer®
Electrical Wiring Kit
RealCareer™ Electrical Wiring Kit
Use the RealCareer Electrical Wiring Kit to:
- Demonstrate proper wiring skills on a portable Wall Panel
- Provide hands-on practice wiring common electrical circuits
- Safely identify issues at a glance with the Assessment Kit

Curriculum topics covered:
- 16 exercises for skill development
- Electrical wiring safety
- Basic wiring skills
- Introductory electrical theory
- Outlet, light, and switch circuits
- Use Assessment Kit to assess proper wiring
- Introduce standard electrical symbols

$599.00  SKU: 57010201
Electrical Components

Wall Panel Demonstrator includes:

1. RealCareer Wall Panel Demonstrator
2. Electrical Wiring Components:
   - (2) Single Pole Switches
   - (2) 3-Way Switch
   - (3) 15A Duplex Receptacles
   - (2) Ceramic Lamp Holders
   - (1) Ceramic Lamp Holder, with pull chain
   - (20 feet) 14-2 NM-B w/Ground Wire
   - (13 feet) 14-3 NM-B w/Ground Wire
   - (25) Standard Wire Connectors
   - (1) Roll Black Electrical Tape
   - (2) Single gang outlet wall plate
   - (2) Single gang switch wall plate
   - (1) Double gang switch wall plate
<table>
<thead>
<tr>
<th>Lessons</th>
<th>Title</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td><strong>Safety</strong> – Personal safety, personal protective equipment, circuit safety, end user safety</td>
</tr>
<tr>
<td>2</td>
<td><strong>Electrical Principles</strong> – Current, Voltage, Series and Parallel Circuits, and Power</td>
</tr>
<tr>
<td>3</td>
<td><strong>Basic Wiring Skills</strong> – the home electrical system, fixtures, wire, reading prints, and troubleshooting</td>
</tr>
<tr>
<td></td>
<td><strong>Exercises (with Electrical Wiring Kit accessories)</strong></td>
</tr>
<tr>
<td>1</td>
<td>Wiring a single outlet</td>
</tr>
<tr>
<td>2</td>
<td>Wiring two outlets in different boxes</td>
</tr>
<tr>
<td>3</td>
<td>Single-Pole Switch controlling a single light</td>
</tr>
<tr>
<td>4</td>
<td>Single Pole Switch controlling two lights</td>
</tr>
<tr>
<td>5</td>
<td>Two Single Pole Switches controlling two lights</td>
</tr>
<tr>
<td>6</td>
<td>How to wire outlet, light with pull chain – power through outlet</td>
</tr>
<tr>
<td>7</td>
<td>How to wire a single pole switch, light, and outlet using 14-3</td>
</tr>
<tr>
<td>8</td>
<td>How to wire Outlet and Switch in double gang box with a light in another box, power from light</td>
</tr>
<tr>
<td>9</td>
<td>How to wire 3-way switches with 1 light</td>
</tr>
<tr>
<td>10</td>
<td>How to wire 3-way switches with 1 light, power through light</td>
</tr>
<tr>
<td>11</td>
<td>How to wire 3-way switches with 1 light, with power entry through both switches first</td>
</tr>
<tr>
<td>12</td>
<td>How to wire 3-way switches with 1 light, with power entry through light first then switches in series</td>
</tr>
<tr>
<td></td>
<td><strong>Enhancement Exercises (extra wiring accessories needed)</strong></td>
</tr>
<tr>
<td>1</td>
<td>How to wire two single-pole switches with 2 lights, with power entry through a light first</td>
</tr>
<tr>
<td>2</td>
<td>How to wire 3-way switches with 2 lights, with power entry through both switches first</td>
</tr>
<tr>
<td>3</td>
<td>How to wire 3-way switch with 2 lights and 2 outlets, power through switch</td>
</tr>
<tr>
<td>4</td>
<td>How to wire a split-circuit outlet</td>
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</tbody>
</table>
Ways our tools help CTE

• Recruit, develop interest, provide opportunity, & train skills

• Manage expanding need for skilled workers
  • pre-qualify students
  • Extend the “shop” to the lab setting allowing for more training resources
  • Leverage technology to provide real-time feedback and assessment

• Increase skill development while reducing cost & training time
  • Customer with 10 simulators has saved up to 70% of consumable costs by adding simulators

• Leading technology is an attractive community outreach strategy too…
  • Gain support for programs
  • Show the value of CTE
  • Attraction for/to industry partnerships
Animal & Plant Science Models
“Priscilla” the Pig Model

- Pig model with removable features
  - Internal and external anatomy of the pig
  - Cross-sectional split for internal organ viewing
  - Includes reproductive, digestive, and nervous systems

Removable parts: 17
Dimensions: 10”x19”x40”
“Claire” the Cow Model

- Cow model with removable features
  - Internal and external anatomy of the cow
  - Cross-sectional split for internal organ viewing
  - Includes reproductive, digestive, and nervous systems

Removable parts: 13
Dimensions: 10”x21”x33.5”
“Hattie” the Horse Model

- Horse model with removable features
  - Internal and external anatomy of the cow
  - Cross-sectional split for internal organ viewing
  - Includes reproductive, digestive, and nervous systems

Removable parts: 11
Dimensions: 8”x24”x27”
“Chippy” the Chicken Model

• Chicken model with removable features
  – Internal and external anatomy of the chicken
  – Cross-sectional split for internal organ viewing
  – Includes reproductive, digestive, and nervous systems
Removable parts: 7
Dimensions: 11”x10”x15”
Cow Ruminant Model

- Cow Ruminant digestive system with removable features
  - Internal and external details of the ruminant system
  - Cross-sectional split of the internal organ viewing
  - Includes detailed texture replica of each of the ruminant compartments

Removable parts: 3
Dimensions: 11”x7”x14”
Horse Stomach Model

- Horse Stomach with removable features
  - Internal and external details of the horse stomach
  - Cross-sectional split for internal organ viewing
  - Includes detailed textured replica of the digestive system
Removable parts: 2
Dimensions: 19”x14”x9”
Pig Stomach Model

- Pig Stomach with removable features
  - Internal and external details of the pig stomach
  - Cross-sectional split for internal organ viewing
  - Includes detailed textured replica of the digestive system

Removable parts: 2
Dimensions: 11”x7”x15”
Plant Science Kit

• Learning aids and curriculum resources to engage students in plant science concepts.
  – Plant Science Curriculum
  – Flashcards on Plant ID (60)
  – Models
    • Leaf structure model
    • Plant cell model
  – Plant Science Posters (4)
    • Parts of a leaf/root/stem, Plant ID features (shape) Plant ID (margin, venation), Parts of a flower
Plant Science Curriculum

Lesson 1 – Introduction to Plant Science
Lesson 2 – Plant Cells – parts of a cell, plant parts
Lesson 3 – Leaves, Roots and Stems – parts of leaves/roots/stems
Lesson 4 – Flowering plants – parts of a flower
Lesson 5 – Plant identification features – shape, margin, venation
Lesson 6 – Photosynthesis, Respiration and Transpiration – seeds, germination and photosynthesis/respiration/transpiration
Lesson 7 – Career exploration in horticulture, agronomy, greenhouse, nursing management and plant research
Dicot Flower Model

- Learning aid that allows users an up close understand of the parts of a flower
  - Real-life Replica
  - Cross-sectional split for plant system viewing
Removable parts: 8
Dimensions: 12”x 5” x 8”
Dicot Stem Model

- Oversized plant stem model that allows user to gain great in-depth knowledge of the inner workings of the plant systems.
  - Cutaway view of the plant stem
  
Removable parts: None

Dimensions: 10”x21”x33.5”
Tell me and I’ll forget.

Show me and I may remember

Involve me and I will learn.

Use learning aids that engage and involve your students!
“AGRICULTURE IS THE MOST HEALTHFUL, MOST USEFUL AND MOST NOBLE EMPLOYMENT OF MAN.”

-GEORGE WASHINGTON
For more information please contact Realityworks, Inc. through email at information@realityworks.com or call toll free at 800.830.1416

Realityworks
Live it. Learn it.
...an employee-owned company