**Enduring Understandings / Big Ideas:** Computer Aided Design (CAD) is used by Designers, Engineers, and Architects to create technical drawings used to communicate design solutions. CAD software is used to develop visual representation of design ideas in 2D and 3D drawings.

**Essential Questions:** Why do international CAD standards when creating drawings to communicate design solutions? What are the advantages of using a CAD system to create, view, and manage design drawings? What are the types of drawings created using CAD software applications?

<table>
<thead>
<tr>
<th>Learning Competencies - What the students will know and be able to do upon completion of the unit</th>
<th>Supportive Teaching / Learning Activities</th>
<th>Assessments</th>
<th>Resources</th>
<th>PDE Academic Standards/ Common Core Standards</th>
</tr>
</thead>
</table>
| Students will apply the Technological Problem Solving Method to solve a design challenge. | **Teaching Strategies -**  
Large Group Demos  
Small Group Instruction  
Individualized Instruction  
Multimedia Presentations  
Interactive Comp. Software  
Journal Writing  
Hands-On Activities  
Cooperative Learning | **Formative:**  
Check for understanding questions will be utilized during large group instruction.  
Students will be asked open-ended questions during small group and individualized instruction to check for understanding.  
Students will be required to complete electronic journal questions that are assessed during multimedia presentations.  
Students will demonstrate proper use of tools and design concepts while completing design challenges.  
Students will complete journal entries. Electronic and paper journal entries will be | **Teacher Resources –**  
CAD Instructional Materials – teacher generated  
Tech Lab equipment, tools and materials  
Software Applications  
- AutoCad  
- Google SketchUp  
- Flash – Wright House Software  
**Student Resources**  
Tech Lab Equipment  
- Computer Network  
- Student Workstations  
- MS Software  
- Design Tools  
- Calculators  
Internet Access  
Research | See Addendum for details |
| Students will be able analyze the basic parts of technological system to make improvements to a design solution. | **Learning Activities – Journal Entries**  
Students will complete Journal Entries. Paper and electronic journals will be utilized during lessons and design activities. | | | |
| Students will develop fundamental drafting and design skills using a computer aided design software program. | **Design Challenges**  
Students will complete construction and CAD design challenges utilizing software applications.  
- House Design Challenge | | | |
| Students will utilize computer aided design software to design parts for a design challenge. | | | | |

**Grade:** 8  
**Subject:** Technology and Engineering Education  
**Course:** Applying Technology  
**Unit:** Technical Drawing and Computer Aided Design  
**Time frame for Completion:** 4 – 8 - 43 minute classes  
12/23/2011
Students will complete a career exploration activity and be able to identify careers related to Computer Aided Design.

Students will be able to self evaluate their work, progress, and understanding of the concepts taught in the Technical Drawing and CAD.

### Career Exploration
Students will review, reflect, and write about careers related to Computer Aided Design.

### Electronic Test
Students will complete an electronic post test.

### Self Evaluation
Students will complete a self-evaluation form at the end of the unit.

<table>
<thead>
<tr>
<th>Dragster Design Challenge</th>
<th>Wida Access Placement Test (W-APT)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Wright House Design Challenge</td>
<td></td>
</tr>
<tr>
<td>Product Design Challenge</td>
<td></td>
</tr>
</tbody>
</table>

**Summative:**
Students will complete Computer Aided Design Assignments for final evaluation.

Students will complete a set of drawings for a design challenge.

### Instructor’s Website

**Supplemental Resources:**
- ESL staff
- Bilingual dictionaries
- Alternative assessments

### ELL:
http://www.cal.org/siop: Fifty Strategies for Teaching; English Language Learners, 2nd edition; Adrienne Herrell, Michael Jordan; (Merrill/Prentice Hall, 2003)

### Reading, Writing, Speaking

### Career Education

### Common Core Standards
RST.6-8.3  RST.6-8.4  RST.6-8.7  RST.6-8.9  WHST.6-8.2  WHST.6-8.4  WHST.6-8.6  WHST.6-8.8  SL.8.1  SL.8.4  SL.8.5

### Every Teacher Teaches ESL
ELP Standard 1: English Language Learners communicate in English for social and instructional purposes within the school setting.
ELP Standard 2: English
| Language Learners communicate information, ideas, and concepts necessary for academic success in the content area of Language Arts. |  |  |  |