**Enduring Understandings / Big Ideas:** New ideas for games and toys are in constant demand. Designing a new product requires the use of creativity, technology, problem solving, teamwork, and the engineering design process.

**Essential Questions:**
- Why is it important for designers to visually represent design ideas in sketches, drawings, and prototypes?
- How does product design and marketing impact the success of a new toy released for the market?

### Learning Competencies -
What the students will know and be able to do upon completion of the unit

<table>
<thead>
<tr>
<th></th>
<th>Supportive Learning Activities</th>
<th>Assessments</th>
<th>Resources</th>
<th>PDE Academic Standards</th>
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</thead>
</table>
| Students     | **Teaching Strategies -**
|              | Large Group Demos
|              | Small Group Instruction
|              | Individualized Instruction
|              | Multimedia Presentation
|              | Hands-On Activities
|              | Cooperative Learning
|              | **Learning Activities – Large Group Instruction**
|              | Students will participate in presentations and discussions introducing measurement, innovations, design, anthropometrics, ergonomics, the engineering design process.
|              | **Drawing Activities – Ongoing**
|              | Students will complete a portfolio of drawings to demonstrate understanding and mastery of basic sketching skills for design a design challenge.
|              | **Design Challenge**
|              | Students will complete a portfolio with daily log, design sketches, self and peer assessments.
|              | **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.
|              | **Summative:**
|              | Students will complete a design portfolio and product presentation for final evaluation.
|              | Students will complete a measurement test to demonstrate the ability to accurately use and apply measurement.

### Teacher Resources –
- Tech Ed Website
- Tech Lab Comp. Network
- Tech Lab Tools and Materials
- Engineering by Design – I3 Curriculum
- Teacher developed Handouts and materials

### Student Resources:
- Instructional Materials
  - Handouts
  - Displays
  - Samples
- Tech Lab Equipment
  - Computer Network
  - Drawing tools
  - Student workstations
  - Design Tools
  - Prototyping/mock-up materials

### Supplemental Resources:
- Alternative Assessment
- ESL staff
- Bilingual dictionaries

### Wida Access Placement Test (W-APT)

### See Addendum for details
- Science and Technology and Engineering
  - 3.4.5.A1.
  - 3.4.5.A3.
  - 3.4.5.C1.
  - 3.4.5.C2.
  - 3.4.5.C3.
  - 3.4.5.D1.
  - 3.4.5.D2.
  - 3.4.5.E4.

### Mathematics
- 2.1.5.D
- 2.3.5.A
- 2.3.5.C
- 2.3.5.E
- 2.5.5.C
- 2.5.5.F
- 2.9.5.A
- 2.9.5.C
- 2.9.5.D
- 2.9.5.E
- 2.9.5.L
- 2.10.5.A

### Reading, Writing, Speaking
- 1.1.5.F
- 1.2.5.A
- 1.6.5.A
<table>
<thead>
<tr>
<th>challenge.</th>
<th>problem solving design challenge utilizing the engineering design process.</th>
<th>2nd edition; Adrienne Herrell, Michael Jordan; (Merrill/Prentice Hall, 2003)</th>
<th>1.6.5.C Career Education and Work 13.2.5.A 13.2.5 E</th>
</tr>
</thead>
<tbody>
<tr>
<td>Students will develop an understanding of and be able to select and use information and communication technologies.</td>
<td>Game Design Challenge</td>
<td>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.</td>
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</tbody>
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