Competitive Events Handbook

2007 TECA Regional Conferences and 2008 ITEA Conference at Salt Lake City
Important Notes For 2007 / 2008

The events and guidelines outlined in the 2007 / 2008 TECA Competitive Events Handbook are very similar to previous years. Please note these changes . . . .

COMMUNICATION CONTEST

We embrace the use of digital technologies at all TECA events. Media turned in during regional or ITEA conferences must be on a CD. Any video must be in a Quicktime or DVD format. Please be sure that all media are saved in one of those formats!

TEACHING LESSON CONTEST

The challenges for the TECA regional conferences and 2008 ITEA Conference in Salt Lake City are included in this handbook.

ALL CONTESTS

Most judging forms have been revised so check them carefully! Also, please be sure that TECA students are registered participants at each regional conference site and / or at the annual ITEA conference.

TECA EVENTS / ITEA CONFERENCE (FEBRUARY ‘08 @ SALT LAKE CITY)

ITEA will again feature a competitive event in “prime time” at the Utah conference. This year the finals of the SME / TECA Live Manufacturing Contest event will be held right after the Second General Session. Team materials will be forwarded to all participating schools in late-December 2007 for this event.

Note: Please check out all conference information, including a special rate for student housing, at the ITEA web site: www.iteaconnect.org

NOTE OF APPRECIATION

We extend a huge THANK YOU to all our sponsors! The companies and organizations below have been supporting TECA activities for many years, including the two decades of assistance by Goodheart-Willcox Publishers, PITSCO, and the Society of Manufacturing Engineers. Special thanks to these supporters: DEPCO, LLC Mr. Dave Holloman
Goodheart-Willcox Publishing Co. Mr. John Flanagan
Kelvin Technologies Mr. Avi Hadar
McGraw-Hill Higher Education Ms. Lindsay Roth
PITSCO Dr. Harvey Dean
Society of Manufacturing Engineers Mr. Stephen Quinlan

Finally, thanks to the Dept. of Technology at Ball State (Ray Shackleford, interim chair), the Ball State Office of Contracts and Grants (Mrs. Jeanette Hathaway), and ITEA officials (Dr. Kendall Starkweather, Ms. Susan Perry, the ITEA Board of Directors, and all HQ staff) for their continued support.
McGraw-Hill Higher Education “Live” Communication Contest

2007 & 2008 TECA Competitive Events
“LIVE” COMMUNICATION CONTEST

DESCRIPTION:

The “live” communication contest is designed for teams of college students from TECA affiliated chapters. The competing teams will receive a description of a product, service, or organization plus essential marketing or demographic information . . . . then produce a video commercial or feature. The teams must develop a storyboard and produce the required feature within the time constraints of the contest.

TEAM:

Each team will consist of three to six students who are members in good standing of a TECA affiliated chapter and is a registered participant at the conference / regional. The members may be either full-time undergraduate or graduate students but no more than two graduate students can serve on a team.

PROCEDURES:

1. The team must check in at a designated time and place to receive the “challenge” and contest forms for the competition. These materials will include blank Storyboard forms and related materials. Typically each team will deliver their completed tape 12–24 hours later, as determined by the conference schedule and judges.

2. Each team shall produce and deliver a:
   a. Preliminary and final Storyboard forms for a video feature or commercial
   b. Digital production of the commercial or feature
   SPECIAL NOTE: During all TECA events this year, a CD should be turned in with either of these file formats: Quicktime or DVD!

3. Each team must work with equipment they have transported to the competition. No “permanent” video production facilities will be provided at the site, nor may any local (off–site) facilities be used.

4. A preliminary set of Storyboard forms must be submitted at a time and place specified by the judges (approximately 3-12 hours into the competition). Since these forms are important planning tools, the completed videotape should not differ significantly from the plan laid out in the preliminary Storyboard. Slightly revised (or “polished”) final Storyboard forms may be submitted along with the completed video.

5. Storyboard forms may be developed using the form provided, or a similar form may be produced using computers. If the form is reproduced digitally, the format should be identical to the forms provided. Graphics may be hand-drawn or created digitally. Since the emphasis is on communication, teams should use whatever techniques allow them to communicate most effectively.
6. Pre-recorded audio (music, SFX, etc.) may be used, but no pre-recorded video may be incorporated into the solution. Note: If pre-recorded audio is used, teams are encouraged to use copyright-free audio. Any audio may be generated with computers, midi devices, etc.

7. The final video (commercial or feature) must be clearly labeled on the CD handed in to the judges.

8. Solutions turned in late will be penalized up to 5 points for anything over 30 minutes of elapsed time beyond the deadline.

9. Programs may run 2 seconds over or under the designated time allotment. Programs that are too long or too short will be penalized up to 5 points for time that they run over or under (versus the allotted time).

   NOTE: Credits (e.g. contestant's names, date, notes of appreciation, etc.) are not necessary. If they are added after the end of the production, please leave an adequate separation between the main program and any credits to avoid confusion with listed time constraints.

MATERIALS:

   The following must be provided by the individual teams:
   
   - Props, costumes, backdrops, etc.
   - Camera
   - Sketching / illustration tools (pencils, etc.)
   - Produced video on a CD     ( Please use standard CDs and record your media in Quicktime or DVD format! )
   - Video recorder, monitor, & editing equipment (optional)

   The following is to be provided by the contest organizers:
   
   - The "challenge"
   - Storyboard forms
   - On-site player and large screen-monitor or projector

[ CONTINUED ]
**JUDGING CRITERIA:**

Each team’s commercial will be judged on the following criteria:

1. Planning the message **45 points**
   a. Concept outlined is appropriate (5 points)
      Premise related to the challenge
   b. Technical aspects of the storyboard forms (15 points)
      Technical quality of illustrations
      Details, notes, etc. complete
      Neatness
   c. Design of the audio component (10 points)
      Appropriately specified all narration, music, voice-over’s, etc.
      Plans helpful in capturing the desired media
   d. Design of the visual component (10 points)
      Appropriately specified all images
      Plans helpful in capturing the desired media
   e. Relationship of plans to final media (5 points)
      Match between preliminary planning and the final product

2. Communicating the message (i.e., completed media) **30 points**
   a. Efforts of on-screen and / or behind-the-scenes talent (10 points)
      Voice quality
      Facial expression
      On-screen presence
   b. Technical aspects of the final production (20 points)
      Quality of recorded video
      Quality of audio elements
      Too long or too short (i.e., allotted time for the video)
      Nature of editing, sequencing, etc.
      Technical sophistication

3. Overall message impact **20 points**
   a. Overall message impact (20 points)
      Persuasiveness
      General impression

4. Violations of contest rules **5 points**
   a. Team guidelines, formatting issues, deadlines, etc. (5 points)

**TOTAL POINTS** **100 points**
**“Live” Communication Contest**

**JUDGING FORM**

<table>
<thead>
<tr>
<th>Category</th>
<th>Possible Score</th>
<th>Actual Score</th>
<th>Comments</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>PLANNING THE MESSAGE (STORYBOARD FORMS / PAPERWORK)</strong></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Concept Outlined Is Appropriate</td>
<td>Good 5 - 4 - 3 - 2 - 1 - 0 Poor</td>
<td>_____</td>
<td></td>
</tr>
<tr>
<td>(Premise related to theme, topic, or storyline)</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Technical Aspects Of Paperwork</td>
<td>Good 15 - 12 - 9 - 6 - 3 - 0 Poor</td>
<td>_____</td>
<td></td>
</tr>
<tr>
<td>(Technical quality of sketches, thoroughness, complete information / detail)</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Audio Elements Of Storyboard</td>
<td>Good 10 - 8 - 6 - 4 - 2 - 0 Poor</td>
<td>_____</td>
<td></td>
</tr>
<tr>
<td>(Specified music, narration, etc. / audio plans are appropriate for developing the final media)</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Visual Elements Of Storyboard</td>
<td>Good 10 - 8 - 6 - 4 - 2 - 0 Poor</td>
<td>_____</td>
<td></td>
</tr>
<tr>
<td>(Clearly specified visual elements of the media / video recording images and plans complete)</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Alignment–Storyboard w/ Product</td>
<td>Good 5 - 4 - 3 - 2 - 1 - 0 Poor</td>
<td>_____</td>
<td></td>
</tr>
<tr>
<td>(Match exists between initial plan and final product)</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td><strong>COMMUNICATING THE MESSAGE (I.E., THE COMPLETE MEDIA)</strong></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>On-Screen / Off-Camera Talent</td>
<td>Good 10 - 8 - 6 - 4 - 2 - 0 Poor</td>
<td>_____</td>
<td></td>
</tr>
<tr>
<td>(Voice quality of narrators, on-screen presence, appearance, nature of voice-over work, etc.)</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Technical Aspects Of The Media</td>
<td>Good 20 - 17 -14 - 10 - 7 - 4 - 0 Poor</td>
<td>_____</td>
<td></td>
</tr>
<tr>
<td>(Clear images and audio, effective use of wipes or special efforts, sophistication, timing issues, etc.)</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td><strong>IMPACT OF THE MESSAGE</strong></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Over-all Message Impact</td>
<td>Good 20 - 17 -14 - 10 - 7 - 4 - 0 Poor</td>
<td>_____</td>
<td></td>
</tr>
<tr>
<td>(Persuasive, creates the desired impact, related to the topic / theme)</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td><strong>RULE VIOLATIONS</strong></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Time / Procedures / Other</td>
<td>None 5 - 4 - 3 - 2 - 1 - 0 Many</td>
<td>_____</td>
<td></td>
</tr>
<tr>
<td>(Returned on time, on- or off-format, participation, etc.)</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td><strong>COMMENTS</strong></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Total (of 100 points):</td>
<td></td>
<td></td>
<td>________</td>
</tr>
</tbody>
</table>
SME / TECA “Live” Manufacturing Contest

2007 & 2008 TECA Competitive Events
LIVE MANUFACTURING CONTEST

DESCRIPTION:
The SME / TECA live manufacturing contest is sponsored by the Society of Manufacturing Engineers to both encourage and reward the study of production technology. Each participating team must include college students from TECA affiliated chapters. The teams must design, document, fabricate, and implement a continuous manufacturing system to produce an assigned product using only the tools on the official list plus the materials provided.

TEAM:
Each team will include four to six students who are members in good standing of a TECA affiliated chapter and registered participants at the conference / regional. The team members may be either full-time undergraduate or graduate students but no more than two graduate students may serve on the team.

PROCEDURES:
1. Members of each team must be present at the designated location at the announced time for the start of the contest.
2. Teams will receive a set of drawings for a product. The product must be manufactured using only the listed materials and tools.
3. Each team will develop and document a complete continuous manufacturing (line production) system including:
   a. Flow process chart for each part
   b. Operation process chart for the product
   c. Dimensioned tooling plans (sketches and / or CADD drawings)
   d. Tooling
   e. Dimensioned inspection gage plans (sketches and / or CADD drawings)
   f. Inspection gages
   g. Plant layout drawing
   h. A safety system (safety glasses, signs, barriers, etc.)
4. Each team will work in a designated area within the conference center. No laboratory facilities will be provided. The work must be done in assigned area with tools on the tool list. All teams at regional contests must provide their own tools and are limited to the tools on the official tool list. Tools will be provided at the annual ITEA conference.
5. Forms for operation process and flow process charts, tooling and inspection gage drawings and plant layouts will be provided.
6. The complete manufacturing system must be developed during the specified time—usually between 3 to 6 hours—after receiving the plans and bill of materials for the approved product.

7. Each manufacturing system will be tested during a scheduled production run at which time a set number of products will be produced.

8. Judges will evaluate the quality and the efficiency of the manufacturing line and products produced from it.

9. The system must run with only the tools listed on the official tool list.

10. Teams may use microcomputers / printers, portable drafting equipment, or sketching procedures in completing the design of their manufacturing system. Note: The teams must provide the equipment and / or microcomputer hardware and software.

MATERIALS:

1. Materials for tooling, inspection gages, and related production aids will be provided by the contest organizers.

2. Production materials for the pilot and final production run will be provided by the contest organizers.

3. Tooling and inspection gages must be built from the materials furnished. No other materials may be used!

4. Any computers / printers, portable drafting equipment, or sketching materials used during the competition must be provided by the team.
SME / TECA MANUFACTURING CONTEST TOOL LIST

Each team is limited to using the following tools for (1) building tooling, (2) building inspection gages, and (3) operating the manufacturing line.

<table>
<thead>
<tr>
<th>QUANTITY</th>
<th>ITEM</th>
</tr>
</thead>
<tbody>
<tr>
<td>3</td>
<td>3/8&quot; portable electric drill (with driver bits)</td>
</tr>
<tr>
<td>1</td>
<td>Portable electric bayonet saw</td>
</tr>
<tr>
<td>2</td>
<td>Oscillating finish sander</td>
</tr>
<tr>
<td>2</td>
<td>A full set (packet) of 1/16&quot; - 1/4&quot; drills</td>
</tr>
<tr>
<td>2</td>
<td>3/8&quot; drill (in addition to the set of drills above)</td>
</tr>
<tr>
<td>1</td>
<td>Set of spade (butterfly) bits</td>
</tr>
<tr>
<td>1</td>
<td>1/2&quot; countersink</td>
</tr>
<tr>
<td>2</td>
<td>Combination squares</td>
</tr>
<tr>
<td>4</td>
<td>Tape rules</td>
</tr>
<tr>
<td>4</td>
<td>12&quot; rulers</td>
</tr>
<tr>
<td>1</td>
<td>Pencil compass</td>
</tr>
<tr>
<td>1</td>
<td>Set of wood chisels</td>
</tr>
<tr>
<td>2</td>
<td>Scratch awls</td>
</tr>
<tr>
<td>4</td>
<td>13 or 16 oz. claw hammers</td>
</tr>
<tr>
<td>1</td>
<td>Wood or rubber mallet</td>
</tr>
<tr>
<td>3</td>
<td>4&quot; slotted tip and Phillips screwdrivers</td>
</tr>
<tr>
<td>3</td>
<td>6&quot; slotted tip and Phillips screwdrivers</td>
</tr>
<tr>
<td>1</td>
<td>6&quot; or 8&quot; slip joint pliers</td>
</tr>
<tr>
<td>1</td>
<td>6&quot; or 8&quot; long nose pliers</td>
</tr>
<tr>
<td>1</td>
<td>6&quot; adjustable wrench</td>
</tr>
<tr>
<td>1</td>
<td>10&quot; adjustable wrench</td>
</tr>
<tr>
<td>2</td>
<td>Plane–type surform</td>
</tr>
<tr>
<td>2</td>
<td>Half-round wood and / or mill files</td>
</tr>
<tr>
<td>2</td>
<td>Backsaws</td>
</tr>
<tr>
<td>1</td>
<td>Miter box with saw</td>
</tr>
<tr>
<td>1</td>
<td>Hacksaw</td>
</tr>
<tr>
<td>2</td>
<td>8&quot; (jaw length) hand screw clamps</td>
</tr>
<tr>
<td>4</td>
<td>Deep throat light weight bar clamps</td>
</tr>
<tr>
<td>8</td>
<td>C-clamps / various sizes</td>
</tr>
<tr>
<td>8</td>
<td>Toggle (De-Sta-Co type) clamps / various sizes</td>
</tr>
<tr>
<td>1</td>
<td>Center punch</td>
</tr>
<tr>
<td>1</td>
<td>Scissors</td>
</tr>
<tr>
<td>2</td>
<td>Nail sets</td>
</tr>
<tr>
<td>1</td>
<td>Dowel center set</td>
</tr>
<tr>
<td>1</td>
<td>Electric glue gun (with glue sticks)</td>
</tr>
<tr>
<td>1</td>
<td>Tin snips</td>
</tr>
<tr>
<td>1</td>
<td>Shop vac for clean-up (optional)</td>
</tr>
</tbody>
</table>

NOTE: Teams participating in the regional contests must provide their own set of tools. Tools will be supplied at the annual ITEA conference.
JUDGING CRITERIA:

Each team’s manufacturing system will be judged on the following criteria:

1. Manufacturing system design 25 points
   a. Thoroughness of the planning (paperwork)
   b. Plant layout established
   c. Tooling designs
   d. Inspection gage design

2. System component fabrication 25 points
   a. Quality of the tooling
   b. Quality of the inspection gages
   c. Safety materials

3. System output 25 points
   a. Appropriate number of functional products produced
   b. Quality of the product

4. Productivity 25 points
   a. Measures the efficiency displayed during the system design and component fabrication phase. Note: The productivity index will be determined by dividing the measure of the quality of the team’s efforts (production plans, tooling designs and fabrication, inspection gages, etc.) by the number of students on each manufacturing team.
   b. The system productivity rating will be measured by the number of quality products produced per unit of labor worked (i.e., time). The "labor" component is determined by the original team size.

TOTAL POINTS: 100 points

Note: Judges will penalize or disqualify teams who disregard the rules!
**Society of Manufacturing Engineers / Technology Education Collegiate Association**

**“Live” Manufacturing Contest**

**JUDGING FORM**

| School : ___________________________ | Team Captain(s): ___________________________ |

<table>
<thead>
<tr>
<th><strong>MANUFACTURING SYSTEM DESIGN (PAPERWORK)</strong></th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>Flow Process Charts</td>
<td>Good 5 - 4 - 3 - 2 - 1 - 0 Poor</td>
</tr>
<tr>
<td>(Logical sequence of production tasks, developed accurately, complete)</td>
<td></td>
</tr>
<tr>
<td>Operation Process Chart</td>
<td>Good 4 - 3 - 2 - 1 - 0 Poor</td>
</tr>
<tr>
<td>(Accurate format, complete / logical sequence of processes for the entire product)</td>
<td></td>
</tr>
<tr>
<td>Plant Layout Diagram</td>
<td>Good 3 - 2 - 1 - 0 Poor</td>
</tr>
<tr>
<td>(Specifies the optimal arrangement of stations and equipment for the production operation)</td>
<td></td>
</tr>
<tr>
<td>Tooling Drawings</td>
<td>Good 8 - 6 - 4 - 2 - 0 Poor</td>
</tr>
<tr>
<td>(Quality of documentation for jigs and fixtures, acceptable format, etc.)</td>
<td></td>
</tr>
<tr>
<td>Q.C. (Inspection Gage) Drawings</td>
<td>Good 5 - 4 - 3 - 2 - 1 - 0 Poor</td>
</tr>
<tr>
<td>(Nature of documentation for all inspection materials, accurate, appropriate format, etc.)</td>
<td></td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th><strong>COMPONENT &amp; SYSTEM FABRICATION</strong></th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>Quality / Function of Tooling</td>
<td>Good 10 - 8 - 6 - 4 - 2 - 0 Poor</td>
</tr>
<tr>
<td>(Construction of jigs and fixtures, function properly, etc.)</td>
<td></td>
</tr>
<tr>
<td>Nature / Function of Q.C. System</td>
<td>Good 10 - 8 - 6 - 4 - 2 - 0 Poor</td>
</tr>
<tr>
<td>(Construction of inspection gages, gages check desired details accurately, etc.)</td>
<td></td>
</tr>
<tr>
<td>Safety Program</td>
<td>Good 5 - 4 - 3 - 2 - 1 - 0 Poor</td>
</tr>
<tr>
<td>(Nature of safety program materials, use safety glasses throughout the contest, etc.)</td>
<td></td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th><strong>SYSTEMS OUTPUT</strong></th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>Required Quantity of Products</td>
<td>Good 5 - 4 - 3 - 2 - 1 - 0 Poor</td>
</tr>
<tr>
<td>(Accurate number of products completed)</td>
<td></td>
</tr>
<tr>
<td>Quality Of Final Output</td>
<td>Good 20 - 16 - 12 - 8 - 4 - 0 Poor</td>
</tr>
<tr>
<td>(Completed products match specifications / tolerances, attractive fit and / or finish, etc.)</td>
<td></td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th><strong>PRODUCTIVITY</strong></th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>Planning Productivity</td>
<td>Good 10 - 8 - 6 - 4 - 2 - 0 Poor</td>
</tr>
<tr>
<td>(Size of the team considered for planning and development activities)</td>
<td></td>
</tr>
<tr>
<td>Manufacturing Productivity</td>
<td>Good 15 - 12 - 8 - 4 - 0 Poor</td>
</tr>
<tr>
<td>(Efficiency of the team in terms of output per worker)</td>
<td></td>
</tr>
</tbody>
</table>

**COMMENTS**

Total (of 100 points): __________
DESCRIPTION:

The problem solving competition is designed for teams of college students from TECA affiliated chapters. The competing teams will receive contest details, tools, and materials necessary to develop a solution to a specific problem. Each team is responsible for bringing along the tools and materials noted on the enclosed list.

TEAM:

Each team will be composed of three to five students who are members in good standing of a TECA affiliated chapter and registered participants at the conference / regional. The team may not be composed of over 40% graduate students. One team member should be designated as the team leader.

PROCEDURES:

1. All members of a team must be present at the announced location and time for the start of the competition.

2. Each team will receive contest details, tools, supplies, and related materials necessary for a problem to be solved specifically for the competition. The solution to the problem must be created using the materials provided.

3. Each team will develop a solution to the problem by:
   a. Brainstorming the problem and developing a list of possible solutions.
   b. Identifying the solution that has the best potential for solving the problem.
   c. Preparing a sketch of the device that is part of the selected solution.
   d. Constructing the device / mechanism that is part of the selected solution.
   e. Testing and evaluating the device that is part of the selected solution.
   f. Describing how the device solved the problem.

4. Each team will work in a designated area. All construction work must be done in the assigned area with the materials provided. Also, appropriate safety procedures must be followed during the construction and testing phases.

5. Forms for sketches and procedures will be provided and are to be turned-in for evaluation at the end of the contest (yet prior to the demonstration of the device for the judging team).

6. The solution to the problem, as completed and tested within the time announced for the activity, will be demonstrated for the judging team.

7. Judges will evaluate the completed device / mechanism, sketches and forms, and will witness a demonstration of the device solving the problem.
TOOL / MATERIAL LIST:

Basic Kit

A basic materials kit will be provided to each team by the national TECA contest officials. The contents of the kit may vary by competition or site, usually depending upon the design challenge. The "typical" kit will include items such as:

- Ping-pong ball
- Golf ball
- Popsicle stick
- Mouse trap
- Steel washers
- Paper clips
- Straight pins
- Nails
- Thumb tacks
- Index cards
- Skewers
- Contact paper
- Balloons
- Velcro
- String
- Soda straws
- Pipe cleaners

On-Site Supplies

On-site items will be provided to each team by the local TECA Contest Coordinator, depending on the specific challenge. Examples of these materials are listed below:

- ¾" or 1" 12" x 24" foam insulation board
- ¼" and 3/8" dowel rods (2 each)
- Pieces of corrugated board (3-5 each)
- bond paper or cardstock (8-10 sheets)
- 8, 10, or 16 oz cups (5-8 each)
- Additional components as appropriate

Team Tools & Supplies

The following items must be provided by each team and includes the only tools that may be used during the event. Note: This is the same list as used for the TECA transportation contest, so schools should only need one set of materials at each event.

- Utility knife
- Coping saw
- Needle nose pliers
- Rulers
- Triangles (30° / 60° & 45°)
- Sander (with abrasives)
- Scissors
- Pencils
- White glue
- Calculator
- Hot glue gun & glue sticks
- Portable drill & drill bits
- Masking tape (3/4" or 1" wide roll)
- Clear Tape (1/2" or ¾" wide roll)
- Tape rule
- Stapler
- Hot wire (Styrofoam) cutter
- Optional: Computer w/ printer
Technology Education Collegiate Association — PITSCO
PROBLEM SOLVING CONTEST

Brainstorming Sheet

School: ________________________________________________

Problem: ____________________________________________________________

List a number of possible solutions to the problem below:

a. ____________________________________________________________

b. ____________________________________________________________

c. ____________________________________________________________

d. ____________________________________________________________

e. ____________________________________________________________

(Additional ideas may be listed on the back of this sheet.)

NOTE: Circle the letter of the solution you believe will best solve the problem!
School: ________________________________

In the space below, sketch the technological device that was identified during the brainstorming session as the "best solution" to the problem.
School: ________________________________

**TESTING THE DEVICE**

Describe the criteria the device must meet as listed in the “problem” statement:

Next, test your developed solution using the appropriate technique. Summarize the results of the test:

**EVALUATING THE DEVELOPED SOLUTION**

Describe how the device solved the problem in 35 words or less:

When asked, present the solution and all paperwork to the judges for their review!
Technology Education Collegiate Association — PITSCO

PROBLEM SOLVING CONTEST

Judging Form

| School: ___________________________ | Team Captain: ___________________________
|-------------------------------------|------------------------------------------|

**SOLUTION DESIGN**

- **Brainstorming**: Good 10 - 9 - 8 - 7 - 6 - 5 - 4 - 3 - 2 - 1 - 0 Poor _____
  
  (Multiple ideas, diverse ideation)

- **Sketches**: Good 10 - 9 - 8 - 7 - 6 - 5 - 4 - 3 - 2 - 1 - 0 Poor _____
  
  (Level of detail, technical factors, quality of illustrations on the Solution Design forms)

- **Creativity**: Good 10 - 9 - 8 - 7 - 6 - 5 - 4 - 3 - 2 - 1 - 0 Poor _____
  
  (Again as outlined on the Solution Design worksheets)

**SOLUTION FABRICATION**

- **Construction**: Good 10 - 9 - 8 - 7 - 6 - 5 - 4 - 3 - 2 - 1 - 0 Poor _____
  
  (Nature of fabrication, effective use of materials, finish, etc.)

- **Matches Plan**: Good 10 - 9 - 8 - 7 - 6 - 5 - 4 - 3 - 2 - 1 - 0 Poor _____
  
  (Constructed device matches developed / approved design)

**SOLUTION TESTING AND EVALUATION**

- **Testing Procedures**: Good 10 - 9 - 8 - 7 - 6 - 5 - 4 - 3 - 2 - 1 - 0 Poor _____
  
  (Strategies outlined are complete and appropriate, plans "work", etc.)

- **Evaluation & Summary**: Good 10 - 9 - 8 - 7 - 6 - 5 - 4 - 3 - 2 - 1 - 0 Poor _____
  
  (Narrative and summary provides an accurate assessment)

**SOLUTION OUTPUT**

- **Results**: Good 20 - 18 - 16 - 14 - 12 - 8 - 6 - 4 - 2 - 0 Poor _____
  
  (Solution works based on the maximum 2 trials displayed for the judges)

**RULE VIOLATIONS**

- None 10 - 9 - 8 - 7 - 6 - 5 - 4 - 3 - 2 - 1 - 0 Many _____

**COMMENTS**

Total (of 100 points): __________
DEPCO / Technology Education Collegiate Association

TEACHING LESSON CONTEST

DESCRIPTION:

The DEPCO Teaching Lesson Contest allows an individual or pair of students to teach others about a technological topic. The topic is provided well in advance of the TECA competition. All preparation for the actual lesson must be done by the student and / or team. During the actual competition, the lesson is timed and instructional media is reviewed. The scoring is based on teaching / learning effectiveness, organization, information presented, use of media, and handouts. The handout(s) could be in the format of a Design Brief, in–class worksheet, and / or similar items.

TEAM:

A team of up to three students may be involved in planning and developing the formal lesson. However, only one or two students may be designated as the primary teacher(s). Each school may enter one DEPCO Lesson Planning team entry, and the entrants must be registered conference / regional participants.

PROCEDURES:

1. All students must “check in” at a designated time and place to be scheduled for their teaching performance.

2. The lesson should be a “live”, interactive teaching unit. It should not be videotaped (other than brief segments of commercial or personal videotapes shown for instructional purposes).

3. The student or duo will be teaching to the team of judges who will "play" the role of the members of the class (therefore, plan on a maximum of three judges at any contest site).

4. All planning is to be completed prior to the conference.

5. Each formal teaching segment should be designed for a maximum delivery period of 10 minutes. Lessons extending over 10 minutes will incur penalty points. Note: Lessons that continue beyond 12 minutes will be stopped.

6. The total cost for developing the unit of instruction should not be excessive.

7. Students and teams are responsible for their own media requirements for the contest. Note: You may plan on a large, white screen being available at each competition site, but other items are the team's responsibility!

8. A set–up time of 5 minutes is provided prior to starting the scheduled technical presentation. Note: Exceeding the set–up time will also incur penalty points.
9. Videotaped segments or portions of commercial tapes may be used but should not exceed three minutes in length.

10. Each individual or team should prepare four copies of a typed or word processed instructional handout. Student handouts should not exceed six pages!

Suggested items that will be evaluated include:
   (a) A Design Brief that introduces a lesson
   (b) Worksheet with special graphics related to the main topic
   (c) A formal lesson plan (in a format of your own design)
   (d) Other

Note: If teaching aids are to be used plan on at least three students (i.e., judges) in the “class”.

11. The lesson must not create a hazardous situation.

12. Both the (a) DEPCO / TECA teaching presentation and (b) all developed instructional materials will be reviewed by the judges.

JUDGING CRITERIA:

The DEPCO Teaching Lesson Contest is based on students effectively teaching a topic to a live, interactive group of students. To maintain consistency, the “class” will be the team of judges. This means the judges (a maximum of 3 individuals) may be engaged as normal students, responding to questions and completing tasks during the teaching unit.

The specific values are outlined on the Judge's Scoring Sheet (included in this document). The percentages are included below.

1. Paperwork & Teaching Aids — 30% of over-all score
   Format, content, appropriateness to the theme, instructional value, and completeness of all documentation.

2. Teaching presentation — 60% of over-all score
   On-site performance including the introduction, the nature of the delivery of the content, organization of the lesson, personal appearance, and the educational value of the lesson.

3. Rule / guidelines violations—10% of over-all score
   Points may be deducted due to violation of any guidelines or rules!
GENERAL INFORMATION:

1. For the benefit of the judging team, the formal teaching segments (i.e., student performances) may be videoed for timing purposes.

2. Conference participants are encouraged to observe the lessons, as are other contestants . . . but other contestants will not be permitted to view performances prior to their scheduled time to compete.

3. Video’s already queued to the proper place of the tape, PPT programs installed on shared equipment, and other media arrangements are the responsibility of the contestant(s).

ROOM ARRANGEMENT:

1. It is recommended the room be arranged as illustrated below. Note: Please remember the judges are also the students, so they should be (a) able to see everything and (b) in a position to participate fully as requested by the teacher(s).

2. For the benefit of contestant(s), this arrangement can be modified slightly.

* Placement of a display unit or overhead projector.
### DEPCO / Technology Education Collegiate Association

#### TEACHING LESSON CONTEST

**Judging Form**

| School: ____________________ | Name(s): ________________________________ |

### HANDOUTS / TEACHING AIDS

<table>
<thead>
<tr>
<th>Item</th>
<th>Rating (10 - 0)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Lesson plan</td>
<td>10 - 0</td>
</tr>
<tr>
<td>(Instructional nature of the lesson, inclusion of learning objectives, connection to standards, etc.)</td>
<td></td>
</tr>
<tr>
<td>Projected media</td>
<td>10 - 0</td>
</tr>
<tr>
<td>(Quality of display graphics, appropriateness of materials, information contained in the media)</td>
<td></td>
</tr>
<tr>
<td>Student handouts</td>
<td>10 - 0</td>
</tr>
<tr>
<td>(Format, spelling, grammar, information related to the lesson topic, etc.)</td>
<td></td>
</tr>
</tbody>
</table>

### TEACHING OF THE ACTUAL LESSON

<table>
<thead>
<tr>
<th>Item</th>
<th>Rating (10 - 0)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Introduction</td>
<td>10 - 0</td>
</tr>
<tr>
<td>(Gains immediate attention of the students, introduces topic well, addresses learning objectives)</td>
<td></td>
</tr>
<tr>
<td>Nature of lesson</td>
<td>10 - 0</td>
</tr>
<tr>
<td>(Logical sequence, stays &quot;on topic&quot; throughout the lesson, etc.)</td>
<td></td>
</tr>
<tr>
<td>Use of media during the presentation</td>
<td>10 - 0</td>
</tr>
<tr>
<td>(Uses media effectively by referring to content of graphics or explaining points on handouts)</td>
<td></td>
</tr>
<tr>
<td>Instructional value of the lesson</td>
<td>20 - 0</td>
</tr>
<tr>
<td>(Followed content, the students were actively engaged in the lesson, learning was achieved)</td>
<td></td>
</tr>
<tr>
<td>Personal factors</td>
<td>10 - 0</td>
</tr>
<tr>
<td>(Appearance, eye contact, command of attention, etc.)</td>
<td></td>
</tr>
</tbody>
</table>

### RULE VIOLATIONS

<table>
<thead>
<tr>
<th>Event violations</th>
<th>Rating (10 - 0)</th>
</tr>
</thead>
<tbody>
<tr>
<td>None</td>
<td>10 - 0</td>
</tr>
<tr>
<td>(Set-up or presentation time, illegal participation, etc.)</td>
<td></td>
</tr>
</tbody>
</table>

### COMMENTS

Total (of 100 points): __________
Technology Education Collegiate Association  
DEPCO TEACHING LESSON CONTEST CHALLENGES

Topic For The Fall 2007 TECA Regional Conferences

STEM (Science / Technology / Engineering / Math) Education

The third Standard for Technological Literacy (STL) outlines the unique relationship of technology with various fields of study, including math and science. Basically, Standard #3 refers to the importance of many disciplines in functioning in a technological world. Innovation truly requires an understanding of many principles.

At the same time, acronyms like TIDE and STEM have gained traction in public schools. Course content and school-wide activities are often integrated around themes such as "space exploration" or "environmental issues". Basically, Standard #3 cites the connections, and many schools have responded with activities and assignments that integrate knowledge and actions.

For the DEPCO Teaching Lesson event at the TECA regional conference for Fall 2007, the challenge relates to STL #3, as you are to develop and teach a lesson that integrates concepts from science, technology, engineering, and math (STEM). The topic / theme is up to you (such as transportation, bio-technology, impacts, etc.).

During the regional conference please plan to teach an integrated lesson about a technological topic of your selection. The judges in the audience will be your class (students), so develop your lesson plan in such a way that the "class" will be involved in learning some key idea / concept / process / system. Note: The students must be able to clearly recognize the math, science, engineering, and technology components of your lesson!

Prepare your lesson and media following the contest guidelines outlined in the DEPCO Teaching Lesson packet. Finally, your lesson should be developed assuming the learners at the secondary level.

Topic For The 2008 ITEA Conference in Salt Lake City

"WORLD CLASS QUALITY"

Numerous Standard for Technological Literacy (STL) benchmarks relate to the engineered world and modern productive sector. One of the major factors is how efficiency, reliability, value, and most importantly "quality" are built into our products and systems. Few modern programs reflect that goal more then the Six Sigma Quality efforts found in today's manufacturing sector.

The challenge for the 2008 ITEA Conference is to present a lesson about the idea of "World Class Quality". This challenge focuses on the innovative programs, procedures, statistical techniques, etc. that allow firms to produce virtually "zero defects". The students (i.e., judges who will serve as the class) should leave the lesson understanding how quality is assured versus merely controlled. Teaching a lesson about of key quality concepts, examples of establishing and analyzing quality standards, and various reporting techniques are all options for this challenge.

Prepare your lesson and media following the contest guidelines outlined in the DEPCO Teaching Lesson packet. Note: Your lesson should be developed for learners at the secondary level.
TECA Technology Challenge
Sponsored by Goodheart-Willcox Publishing

2007 & 2008 TECA Competitive Events
TECA TECHNOLOGY CHALLENGE CONTEST

DESCRIPTION:
The purpose of the TECA Technology Challenge Contest is to provide a means for TECA members to demonstrate their knowledge about the core concepts of (a) technology and the (b) profession of technology education.

TEAM:
1. A maximum of one team per school may enter the contest.
2. Each team may have one to four members, each a registered participant at the conference / regional.
3. A team may have one graduate student member.
4. All TECA Technology Challenge team members must be currently enrolled in the university they are representing, and be registered participants of the conference / regional.
5. A team may not change membership at any time during the competition.

PROCEDURES:
1. Teams must register to compete in the contest prior to the event.
2. Teams will be paired by lottery for the first (initial) round.
3. When instructed, two teams will enter the contest area and be seated.
4. Prompting of contestants by members of the audience will not be permitted.
5. Preliminary rounds will consist of 5–8 questions and final rounds will have 6–12 questions drawn from the TECA Technology Challenge card file.
   a. Questions will be drawn from the seven categories found in the Technology for All Americans© national standards documentation:
      (1) Agricultural and Bio-related Technologies
      (2) Construction Technology
      (3) Energy and Power Technologies
      (4) Information and Communication Technologies
      (5) Manufacturing Technology
      (6) Medical Technology
      (7) Transportation Technology
      (8) In addition, an 8th category used during this event will include questions related to “Technology Education / Professional” concepts
   b. In case of a tie score at the end of a round, there will be one tie-breaking question in the category of the Master of Ceremony's (MC) choice.
6. The MC will read each question. As soon as a contestant signals that they are able to answer, the MC will stop reading the question. The team has ten (10) seconds to begin answering . . .
   a. For each correct answer the team will receive ten points.
   b. If a question is answered incorrectly, or if a member of a team signals and cannot answer the question, five points are subtracted from the team's total points.
      (1) If the question has a yes-no answer or true-false answer and is missed, the next question will be asked.
      (2) If any other type question was asked and the team member pressed the button before the question was finished, the member must give the same answer that is on the answer card; but if the answer is incorrect, the entire question will be read for the other team. Within 10 seconds, one person on the opposing team may answer after giving the signal. The team may not discuss the question.

7. Transmitting or recording devices will not be permitted in the contest area.

8. Failure to show up for your scheduled contest will result in disqualification of your team.
   If part of a team shows up, they may compete, but the other member(s) of the team cannot join the team after the first question is read. They may rejoin for the next round.

9. Elimination continues until a 1st, 2nd and 3rd place team is determined.

RULES OF CONDUCT:
Any poor conduct, cheating, foul language, abuse of equipment will result in team disqualification. Any discrepancy with a question will be taken up in an orderly and proper manner with the judges. The decision of the judges is final.

SPECIAL NOTE:
The TECA Technology Challenge event is sponsored by the Goodheart–Willcox Publishing Company of Tinley Park, Illinois.
Technology Education Collegiate Association
TECA TECHNOLOGY CHALLENGE

ROOM ARRANGEMENT

TEAM #1
TEAM #2
MC
SCORE
KEEPER
AUDIENCE
Kelvin Technologies / TECA Transportation Contest

2007 & 2008 TECA Competitive Events
TECA TRANSPORTATION CONTEST

DESCRIPTION:
The Kelvin Technologies / TECA Transportation Contest is about conceptualizing, designing, and constructing a transportation device or craft for optimal efficiency. The contest has several variations and involves concepts associated with air, land, sea, space and/or intermodal transportation. Scoring factors involve craft performance (i.e., efficiency) in addition to the design documentation and construction.

TEAM:
Each transportation team will consist of 2-5 students who are members in good standing of a TECA-affiliated chapter, and are registered participants of the conference/region. The team may be composed of no more than 40% graduate students. A maximum of one transportation team may enter from each institution at each TECA Regional Conference and the annual ITEA Conference.

PROCEDURES:
1. All teams must “check in” at a designated time and place to receive the contest specifications.
2. A set of specific contest rules will be included in the contest packet. The contest rules will identify basic criteria and related details for the competition. All contest rules must be adhered to.
3. Aspects of the specific transportation device or system to be developed will occur at each contest site. Note: The physical work on the solution is often completed off-site.
4. Each team will have the opportunity to test and modify their craft using any unique guideway or path.
5. All entries must be completed in total prior to the specified deadline in order to be eligible.
6. Teams are responsible for cleaning-up their area at the conclusion of the contest.

Violation of any of the rules stated above may constitute immediate disqualification. All teams should display a fair and honest effort throughout the event.

[ CONTINUED ]
MATERIALS:

All materials necessary for the physical construction of the transportation device or system will be supplied at the time of registration for the event. Usually, adhesives, abrasives, paint, special decals, etc. will not be provided by the contest coordinator. These materials are the responsibility of competing teams. The use of any hand tools or portable power tools is permitted but the use of stationary power tools is not permitted. Tools and supplies that would be most useful include the following:

- Utility saw
- Coping saw
- Needle nose pliers
- Ruler
- Triangles (30° / 60° & 45°)
- Sander
- Hot wire cutter
- Stapler
- Calculator

- Scissors
- Pencils
- Tape rule
- White glue
- Hot glue gun with glue sticks
- Portable drill and drill bits
- Masking tape
- Clear tape
- Optional: computer / printer

Note: This is the same list of resources as are used for the Problem Solving contest, so each school would only need one set of materials for both events.

JUDGING CRITERIA:

TECA event organizers will appoint several judges to evaluate the contest entries. On scoring items where qualitative decisions or subjectivity is required, the judges' scores will be averaged. The judges’ decisions are final.

All transportation devices will be scored on the basis of the rationale, design, construction, and efficiency.

I. **Ideation:** Written and illustrated documentation that reflects the concept behind the final design. This preliminary plan of your transportation device should be submitted to the contest judges at the appropriate time. The ideation phase could include a discussion of technical factors, notes, and an evaluation of ideas that might play an important role in the design of the craft. Any calculations performed may also be included.

This portion of the contest focuses on the ingenuity of the contestants. Original and creative designs will be issued higher scores.

**Points Earned for the Ideation Phase**

<table>
<thead>
<tr>
<th>Category</th>
<th>Points</th>
</tr>
</thead>
<tbody>
<tr>
<td>Excellent / Outstanding</td>
<td>24-30 points</td>
</tr>
<tr>
<td>Good Effort</td>
<td>16-23 points</td>
</tr>
<tr>
<td>Fair / Average</td>
<td>11-15 points</td>
</tr>
<tr>
<td>Poor Effort</td>
<td>0-10 points</td>
</tr>
</tbody>
</table>
II. **Design Documentation / Illustrations**: This portion of the contest focuses on sketches, technical drawings, etc. that communicate the final plans of the team

**Points Earned for Written & Graphic Documentation**

- Well Developed, Complete, Etc. = 17-20 points
- Good Quality of Forms / Drawings = 12-16 points
- Somewhat Complete & Accurate = 8-11 points
- Quality & Detail Missing = 0-7 points

III. **Construction**: This portion of the contest assesses the quality of construction and overall appearance of the transportation device / system. Well-constructed designs will be issued higher scores. Also, the final item(s) must match the approved drawings.

**Points Earned for Construction**

- Excellent Construction = 21-25 points
- Good Construction = 16-20 points
- Average Construction = 11-15 points
- Poor Construction = 6-10 points
- None = 0 points

IV. **Efficiency**: This portion of the contest is concerned with the efficiency of transporting humans or freight from one point to another. Efficiency usually takes into account the amount of cargo hauled in relationship to the fuel consumed and / or the speed of transport.

Note: A set of specific efficiency contest criteria for each individual competition will be provided in the contest packet to be received at the time of registration for this event. The “efficiency” score may be based on distance, time, or some related criteria.

**Points Earned for Efficiency**

- Greatest Efficiency = 25 points
- Next Best Level Of Efficiency = 18-22 points
- "Good" Level Of Efficiency = 10-17 points
- Poor Efficiency = 0-9 points
Kelvin Technologies / Technology Education Collegiate Association

TRANSPORTATION CONTEST

Judging Form

| School : ____________________________ | Team Captain : ____________________________ |

**IDEATION PHASE / CONCEPTUALIZATION**

<table>
<thead>
<tr>
<th>Brainstorming / Development</th>
<th>Good</th>
<th>10 - 8 - 6 - 4 - 2 - 0 Poor</th>
</tr>
</thead>
<tbody>
<tr>
<td>(Key ideas covered in written and graphic form, detailed, appropriate)</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Technical Factors</th>
<th>Good</th>
<th>15 - 12 - 9 - 6 - 3 - 0 Poor</th>
</tr>
</thead>
<tbody>
<tr>
<td>(Consideration of scientific and technological principles, calculations, terms, etc.)</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Creativity</th>
<th>Good</th>
<th>5 - 4 - 3 - 2 - 1 - 0 Poor</th>
</tr>
</thead>
<tbody>
<tr>
<td>(Innovative, resourceful, etc.)</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

**DESIGN DOCUMENTATION**

<table>
<thead>
<tr>
<th>Design Paperwork</th>
<th>Good</th>
<th>5 - 4 - 3 - 2 - 1 - 0 Poor</th>
</tr>
</thead>
<tbody>
<tr>
<td>(Forms completed accurately / neatly, etc.)</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Sketches / Final Drawings</th>
<th>Good</th>
<th>15 - 12 - 9 - 6 - 3 - 0 Poor</th>
</tr>
</thead>
<tbody>
<tr>
<td>(Quality of preliminary sketches through final illustrations)</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

**CONSTRUCTION**

<table>
<thead>
<tr>
<th>Vehicle / System</th>
<th>Good</th>
<th>25 - 20 - 15 - 10 - 5 - 0 Poor</th>
</tr>
</thead>
<tbody>
<tr>
<td>(Craftsmanship, appropriate use of approved materials, matches the final drawings / plans)</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

Comments:

**EFFFICIENCY**

<table>
<thead>
<tr>
<th>Best Time / Distance / Etc.</th>
<th>Good</th>
<th>25 22-18 17-10 9-0 Poor</th>
</tr>
</thead>
<tbody>
<tr>
<td>(Score from the competition trials / finals, with only the best mark getting the full 25 points)</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

Value: ____________________________ Units: ____________________________

**COMMENTS**

Total (of 100 points): __________
Ideation Worksheet

University / School: _____________________________  Page _____ of _____

Design Notes (Operational requirements, dimensions, environment, etc):
Kelvin Technologies / Technology Education Collegiate Association

TRANSPORTATION CONTEST

Planning Worksheet

<table>
<thead>
<tr>
<th>Potential Solutions</th>
<th>Advantages</th>
<th>Disadvantages</th>
</tr>
</thead>
</table>

University / School: ___________________________  Page _____ of _____
Design Sketches

University / School: _______________________________ Page _____ of _____
TECA CONTEST INFORMATION

Dr. Richard D. Seymour
TECA National Contest Coordinator
Ball State University
Muncie, IN 47306-0255
rseymour@bsu.edu