

9

**JUDGES  
MANUAL**





## Section I

### Judging Task/Methodology

#### 9.1 What makes a good ALC project?

A good ALC project involves the student in a discovery journey that is driven by curiosity. It typically starts with an interest in science and innovation, and involves such things as creative or critical thinking. In all, the participants first identify a problem that they want to solve, and then use their thinking ability to produce a solution, in the form of an invention.

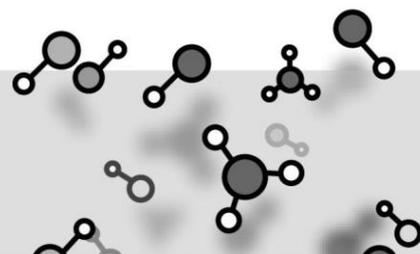
A good invention is based on knowledge, which is, usually gained from reading and observation. A quality project/invention directs the student's efforts towards a particular result or expectation; to find out what happens. This is not only science but is also a form of play, (*Many notable discoveries have been made in this manner, they are notable because they were accidents*).

#### 9.2 Roles of Judging Panel

***(Written principally by Anita Gale with assistance from the California State Science Fair Judging Policy Advisory Committee and was revised and condensed by Robert Allison of the Kern County Science Foundation)***

Innovators do some of the most important and interesting work in our society. They ask questions about nature and try to find answers to those questions by observing and doing inventions. They think about what they observed and the results of their inventions. Sometimes they get a definite answer to their questions; sometimes the results lead to new questions and new inventions. As this process goes on, they understand science and innovation better.

***[Quotation from the introduction to the Kern County Regional Science Fair Official Rules and Entry Forms Booklet]***





The purpose of ALC is to give young people the opportunity to come up with inventions to solve problems that they have identified. Along with our role, as the evaluator of student projects, we have the duty of reinforcing that purpose as well as encouraging, motivating, and even sometimes doing a little teaching. Even a participant whose project is of modest quality should feel a sense of accomplishment and be proud of what he or she did.

Clearly, we have a critical responsibility in the success of ALC in motivating and giving participants the confidence to be great problem solver.

### **9.3 Responsibilities**

The Judging Panel is a group of qualified individuals who are responsible for the evaluation of student inventions and exhibits.

The Judging Panel examines inventions or projects for the following:

- a) Evidence of effective preparation of the invention or project work
- b) Evidence of proper supervision by the teachers and also mentors
- c) Usage of accepted and appropriate research techniques
- d) Completion of ASTI Leap Challenge Competition Judging forms during the school visitation





## 9.4 Relationship with the students/participants

### *What to expect from the students*

As stated above, the students you meet will be proud of their accomplishments. They should be able to explain their projects clearly and concisely. The explanation should include what they did as well as their results and conclusions. Their displays should clearly show the intent and outcome of the inventions, and they should be able to answer questions about their projects at levels appropriate to their ages and grades. They should be able to describe the methodology and equipment employed and the thought processes that were used to develop their inventions, results, and conclusions.

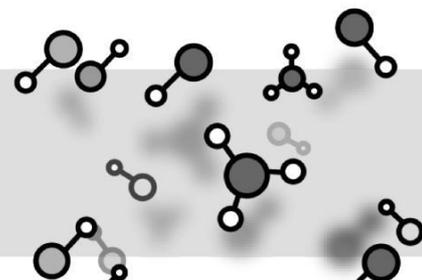
You should not be surprised to find projects vary widely in quality and sophistication. Some projects may be comparable to graduate school work and occasionally beyond. The vast majority, of course, will be more elementary. Some displays will be elaborate while others may be relatively simple. The purpose of the display is to clearly communicate the project's purpose, methodology, results, conclusions, and other information relevant to the investigation. A simple, clear, and well-organized display is to be preferred over one that is ornate but falls short of accomplishing this purpose. Although the fact that a display is attractive should be taken into account, scientific content, creativity and the ability to communicate that content are of primary importance.

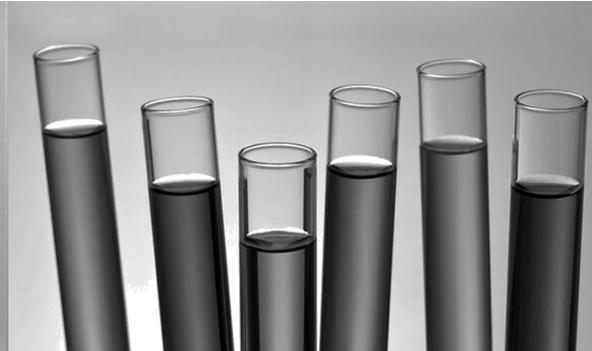
### *Confidentiality*

The judging results must remain confidential. Judges should not disclose any information regarding their findings and conclusions except to those on their judging panel and ALC officials.

### *Conflicts of interest*

If you find that you are acquainted with a student that you have been assigned to judge or you think another kind of conflict of interest (*real or perceived by others*) may be present, inform the organizing committee as soon as possible so that you can be assigned to another judging panel.





### ***Rules and regulations***

It is not your role to enforce ALC rules or other regulations (*local, state, or federal*) regarding the projects you are judging. If you think that a project has violated a rule or regulation, do not bring up the matter with the student(s). Rather, discuss the matter later with ALC Coordinator or Judging Director.

### ***Treating students with respect***

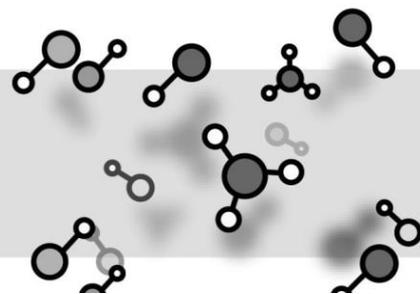
In most cases, ALC projects represent a significant enterprise on the part of the student participants. Although a project may have flaws, you should treat it as a serious project. In doing so, listen carefully to the student's description and explanation, ask questions to reveal his/her understanding of the project and his/her conclusion, while evaluating the project fairly and candidly. Provide praise for the accomplishments demonstrated along with your appraisal.

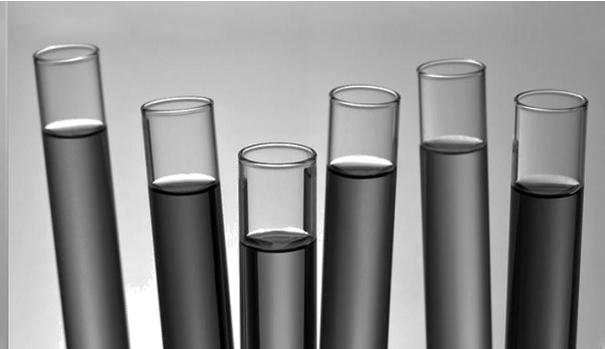
### ***The educational value of interviews***

As stated above, the completion of an ALC project should result in significant learning for the participant. Although the primary purpose of the questions asked during judging is to evaluate the project, the students<sup>3</sup> should emerge from the process with further insights, understanding, and even ideas about additional investigations. In other words, the best questions will cause the student to think more deeply about the project and become aware of issues not previously considered. Questions, which may cause the student to further pursue the subject, are encouraged.

Judges often want to help the student with information about the subject of the project, particularly if the judge finds that certain points require clarification or correction. This is commendable, but if one judge provides information, the student may use that information in his/her interview with the following judges. This could result in a distortion of subsequent ratings.

If you wish to correct misconceptions or errors, it is best to do this by asking questions (*e.g., Have you considered the effect of air pressure on the speed of a baseball?*) and/or suggesting to the student that he/she reexamine the areas in question.





## 9.5 The Judge-Student Relationship

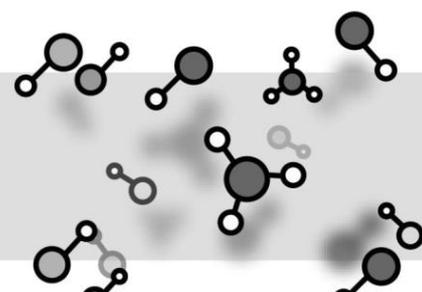
*(The following was taken from the Judging Handbook, California State Science Fair, 2002 and adapted by Robert Allison of the Kern County Science Foundation)*

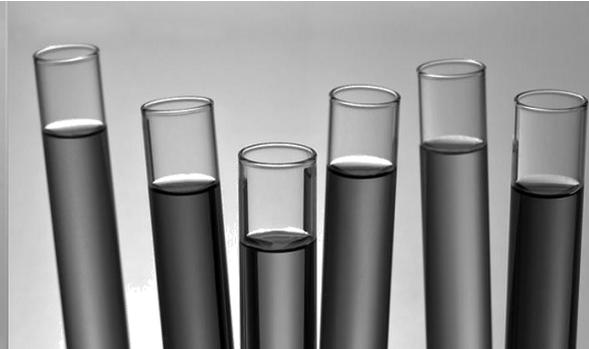
When judges are from outside the school, any direct contact between a student and judge, after all, would result in further benefit to the student. Such contact can be facilitated by the school but only with the approval of parents or guardians. Judges may not ask students for their phone numbers, initiate or propose any future contact.



Inappropriate comments by a judge to any participant are unacceptable. Such behavior is sufficient for barring that judge from future ALC. Judges must adhere to the highest standards of professionalism in all cases.

It is the responsibility of all judges to ensure that all interaction between themselves and the students are in the best interests of the students.





## 9.6 About Judging Criteria

It is critically important that judging is based primarily on the scientific merit of the projects. This includes the project itself, the student's knowledge of the scientific and/or engineering principles underlying it, and his/her comprehension of the project's basis, experimental design, outcome, and implication. A good project must consist of an investigation and not be merely a collection or demonstration of technology or scientific principles, however impressive it may be. Sometimes displays will be elaborate and polished. This should be given credit only to the extent that its elaborative nature results in more effective communication of the purpose, methods, results, and conclusions reached in the investigation.

## 9.7 The Judging Process

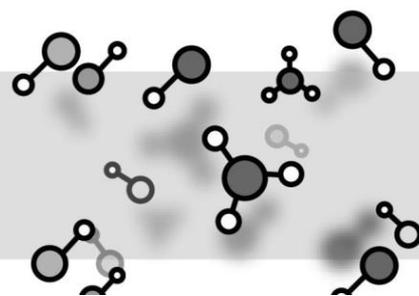
### *Preparing for Judging*

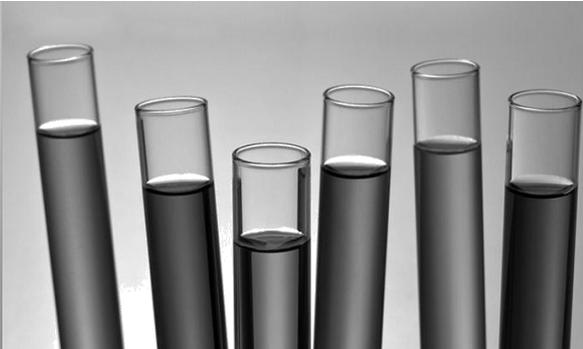
During the event, things will go pretty fast. It is, therefore, important that you are prepared when you arrive. It is suggested that you do the following in the days before the fair.

- Read this manual and become familiar with the judging guidelines and worksheet.
- Read the abstracts of the projects you will be judging.
- Prepare preliminary interview questions.

### *Pre-Judging Activities*

- Orientation Meeting upon your arrival (and you had time to partake coffee or other refreshments) has been a meeting to review procedures and provide the latest information.
- The judging panel meeting should be held immediately after the orientation meeting. The chair will go over any special issues and procedures involved in the categories you will judge and will assign the project interview rotation for each member of the panel. The most important purpose of this meeting is to formulate questions to be asked to all students. Although some variation in questioning is fine, the judges must agree on a primary set of questions in order to establish a common basis for ranking the projects. Finally, the average length of time for each interview will be established. It is important to adhere to this as closely as you can.



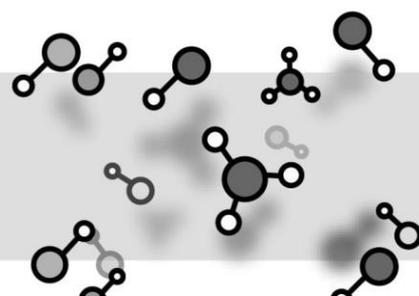


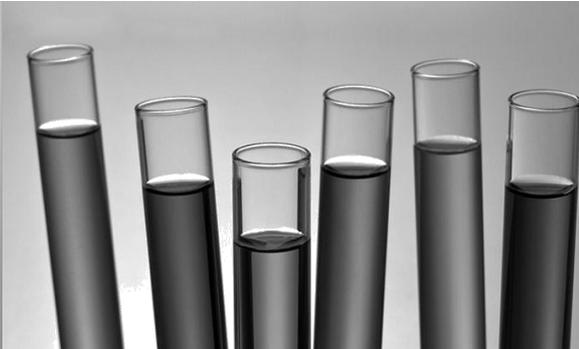
- Following the meeting, and before the students come to the floor, you will have time to begin to familiarize yourself with the projects that you will judge. You should read the abstracts and review procedures, results, and conclusions. The purpose of this time is to preview the projects so that your judging is more effective and efficient. This is not the time for judging, however.

You might want to take some notes to help guide you when questioning, but you should draw no conclusions about project quality, nor should you rank or judge the projects in any way.

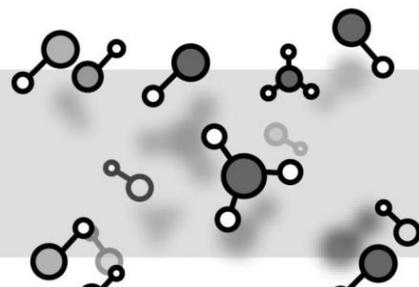
### *Judging Procedures*

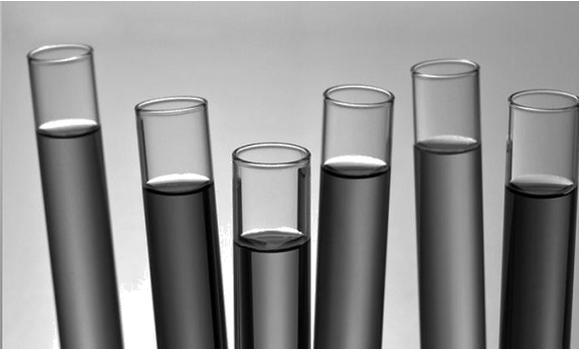
- Begin by introducing yourself and putting the student at ease.
- Ask the student to explain the project. He/she likely will have prepared a brief (*not more than a minute or so*) presentation.
- Following the initial presentation, ask questions designed to clarify aspects of the project and to determine how the student got the idea for the invention and his/her level of understanding of both the project itself and its underlying science.
- As indicated above, you should ask questions to determine the student's understanding of the scientific principles that form the basis for the project. These questions should be appropriate to the student's age and grade level, but do not hesitate to probe the student's depth of knowledge.
- Sometimes students will have received help with their projects. This is acceptable as long as the help is limited and that project really was conceived, developed, and carried out by the student. If the student demonstrates a good understanding of the project as well as its scientific basis and conclusions, it is likely that he/she did not receive unwarranted assistance. If the project required equipment, understanding of scientific concepts, or knowledge of procedures, which are unlikely to be available to someone at that grade or age, it is appropriate to ask how he/she acquired the equipment or came to understand those concepts or procedures.





- A judging panel visiting the booth may be made up of 2 or 3 judges. Judging should be done by one member of the panel at a time rather than by the whole group. This is more likely to put the student at ease during the interview and affords a greater level of individual interaction with panel members.
- To the extent possible, each judge should interview every student in the assigned category. If this cannot be done, at least three interviews should be conducted with all students, and each potential winner must be interviewed by all the judges.
- The time taken for each interview should be reasonably uniform.
- Proceed from invention to invention in the sequence determined by the panel chair. If the next student is still being interviewed by another judge or is occupied with the media, skip that invention and come back to it as soon as possible.
- After the first round of judging is completed, or at a time designated by the panel chair, the panel will meet to determine potential winners and to ascertain that each student has had a sufficient number of interviews. Panel members will then complete the interview process, making certain, as mentioned above, that all assigned judges interview all potential winners.
- Following the completion of interviews, the judges will give the scores based on the marking sheet. The panel will meet again to discuss the results and ranked the winners as well as any honorable mention winners the panel wishes to designate. This process must be completed and results turned in to organizing officials no later than the designated time. This is essential in order to prepare for the awards ceremony.
- It is up to the judging panel to determine the method by which it reaches its decisions about project rankings and awards. It is important, however, that this process is collegial in nature, involving the entire panel members. No one member, not even the panel leader, should be seen as the final authority in making these decisions. Sometimes ranking decisions will be determined quickly and unanimously. In other instances, considerable discussions may be required. After discussions are completed and a decision reached, all panel members should feel that their opinions were heard and seriously considered even if those opinions did not always prevail. Needless to say, all panel members should treat each other with courtesy and respect.





## 9.8 Other judging issues

### *Comparing projects with widely different levels of sophistication*

Sometimes students have access to sophisticated materials, have much resource, and/or carry out their projects under the guidance of a professional. Comparing such projects with those done in a home environment can be difficult. As a judge, you should not be in a position to assume that a project would have been better or worse with or without the advantages of better equipment or instructions.

The critical issue here is not the level of the tools used. Rather, it is what the student has done with the resources at his/her disposal. If advanced instrumentation is used to further a strong innovation, and that is clearly communicated in the interview, such a project should do well. However, a student who does better innovation and has a superior understanding but used only items found in an ordinary kitchen deserves a better rating. The mere use of sophisticated equipment in a weak project and/or by a student who does not understand the scientific principle involved should receive little or no credit.

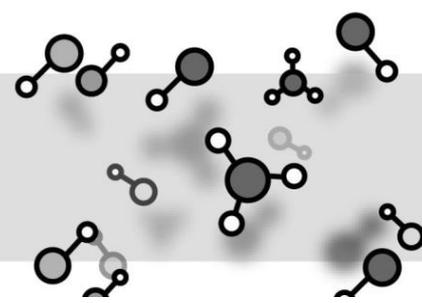
Finally, it is important that the student's knowledge should be appropriate to the project and its goals. If advanced instrumentation is used, for example, the student should be conversant with the principles underlying that use, and how results obtained from the equipment are related to conclusions reached.

### *Team vs Individual projects*

The criteria for judging team projects are the same as for those done by individuals. It is important, however, that each member of the team demonstrates her/his significant contributions to the project and comprehensive understanding of it. This can be accomplished through statements made in the interview by each team member and/or by questions asked by the judge. In conducting the interview, the judge should direct questions to individual team members to make sure that each one has an opportunity to speak. This is especially important if the team has chosen to have one member make the formal presentation about the project or, to direct certain questions to the team member with expertise in that area.

Since a team will have more physical and possibly brainpower resources than an individual, it is appropriate that teams be expected to produce higher quality projects than those working alone. Further, team projects should show evidence that team interactions had positive results and a synergistic effect. You should expect team projects to exceed individual efforts in at least the following:

- **Background research**
- **Data collection in quantity and quality**
- **Number of inventions repetitions**





## Section II

# Judging Criteria Evaluation

### *Detail Criteria Evaluation*

Judges are able to use the following detail criteria evaluation procedures to analyze and implement these criterions during their judging task on the day of ALC Event.

### **Judging Criteria**

- 1) Invention – 40%
- 2) Presentation & Communication – 30%
- 3) Quality & Appeal – 15%
- 4) Safety – 5%
- 5) Report – 10%

#### 1) Invention/Process – 40%

##### **a) Relevance to the Theme**

- The theme for ALC “**Invention/Process To help your School be more Efficient**”
- Does your invention/process have the potential to **make a difference** or does it have a **positive impact** on people, teaching, environment, etc... in your school?

##### **b) Innovative solution**

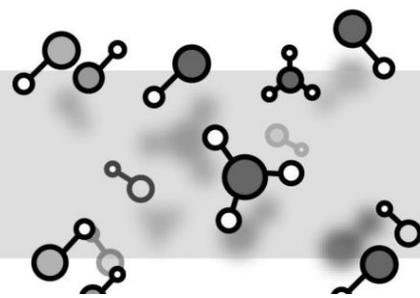
- Will the proposed solution **solve the stated problem**?
- Is it a temporary or a long-term solution?
- Is it a **practical and feasible** solution?
- How inventive is the solution?

##### **c) The process of invention**

- Focused on the **process of the invention**, e.g. what steps did you take to produce your solution?
- What are the **learnings** from the process?
- Did you face any **problems**? How did you solve them?

##### **d) Principles behind the invention/process**

- Discuss the accuracy and suitability of the scientific theory and/principles behind the Invention
- Is it a feasible invention or process?





## 2) Presentation & Communication – 30%

### a) Report – to be submitted before the event

- The **problem statement, methodology, diagram** of the model
- Compare between existing and proposed methods, (**justify** the invention)
- Deadline is **2 weeks** prior to the competition finals

### b) Presentation in the Finals

- Able to **demonstrate the prototype** or walk through the proof-of-concept, **verbally** and/or using posters, video, etc...
- Articulation of the **scientific/design principles** underpinning the invention and **depth of knowledge** of their field
- Explain and critique the **process of invention** process undertaken
- **Q&A** (confidence, depth of knowledge, satisfactory answers)

### a) Clarity and Dramatic Value

## 3) Quality & Appeal – 15%

### a) Design and Appearances

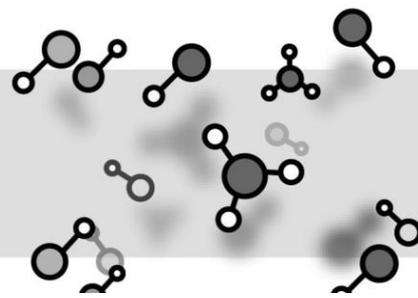
- Will the design of the solution work for its target audience?
- How are the appearance of the invention and the presentation booth? (Visual, poster, sound, test samples, etc.)

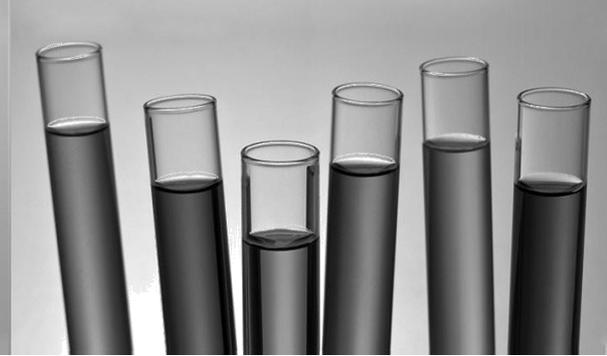
### b) Quality

- Does the prototype work?
- Attention to details?
- 

## 4) Safety – 5%

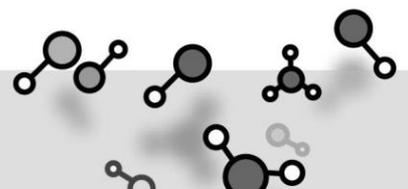
- Is it safe to use?
- Injurious to health?
- Toxic?
- Hazardous?

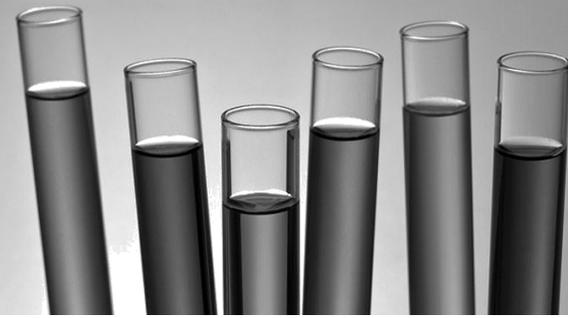




### 5) Final Report Structure

- a) **Page Limit:**  
3 pages maximum, pages must be numbered at the bottom
  - b) **Font:**  
Arial or Times New Roman, 12 points
  - c) **Spacing:**  
1.5
  - d) **Margin:**  
Top: 2.54cm, Left: 2.54cm, Bottom: 2.54cm, Right: 2.54cm
- **Dateline:**  
2 weeks before competition finals
  - **Feedback on Proposal Screening Stage from ALC**
    - ✓ Disqualified
      - Plagiarized
      - Directly from internet
      - Scientifically Untrue
      - Not original
      - Product exists in the market
    - ✓ Poor quality (just one page)
    - ✓ No methodology provided
    - ✓ No detailed description/lack of key information
    - ✓ Not related to this year's theme
    - ✓ Not an invention/Just different application



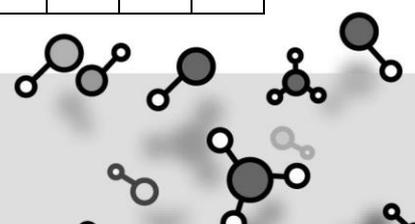


ASTI Leap Challenge 2017



Name of School:	Booth No.:
Project Title:	
Judges Name:	

	Superior	Above Average	Average	Below Average	No Evidence
	5	4	3	2	1
<b>Invention (40%)</b>					
<ul style="list-style-type: none"> <li>• <b>Relevance</b> to the Theme “Invention/Process to help your school be more efficient”</li> </ul>					
<ul style="list-style-type: none"> <li>• Does your invention/process have the potential to <b>make a difference</b> or does it have a <b>positive impact</b> on people, teaching, environment etc.... in your school?</li> </ul>					
Innovative Solution <ul style="list-style-type: none"> <li>• Will the proposed solution <b>solve the stated problem</b>?</li> <li>• Is it a temporary or a long-term solution?</li> <li>• Is it a <b>practical and feasible</b> solution?</li> <li>• How inventive is the solution?</li> </ul>					
Process of invention <ul style="list-style-type: none"> <li>• Focused on the <b>process of the invention</b>, e.g. what steps did you take to produce your solution?</li> <li>• What are the <b>learnings</b> from the process?</li> <li>• Did you face any <b>problems</b>? How did you solve them?</li> </ul>					
<b>Presentation &amp; Communication (30%)</b>					
<ul style="list-style-type: none"> <li>• Able to <b>demonstrate the prototype</b> or walk through the proof-of-concept, <b>verbally</b> and/or using posters, video, etc...</li> </ul>					
<ul style="list-style-type: none"> <li>• Explain and critique the <b>process of invention</b> process undertaken</li> </ul>					
<ul style="list-style-type: none"> <li>• Clear, confidence, concise, thoughtful responses to <b>questions</b></li> </ul>					
<ul style="list-style-type: none"> <li>• Articulation of the <b>scientific/design principles</b> underpinning the invention and <b>depth of knowledge</b> of their field</li> </ul>					
<ul style="list-style-type: none"> <li>• The degree of independence in conducting project &amp; evidence of teamwork</li> </ul>					
<b>Quality &amp; Appeal (15%)</b>					
Appearances <ul style="list-style-type: none"> <li>• Will the design of the solution work for its target audience?</li> </ul>					
<ul style="list-style-type: none"> <li>• How are the appearance of the invention and the presentation booth? (Visually, poster, sound, test samples, etc.)</li> </ul>					
Quality <ul style="list-style-type: none"> <li>• Does the prototype work? Attention to details?</li> </ul>					
<b>Safety (5%)</b>					
<ul style="list-style-type: none"> <li>• Is it safe to use? And would not cause any injurious to health, Non-Toxic or Hazardous?</li> </ul>					





## ASTI Leap Challenge 2017 – Report Evaluation

Name of School:	Booth No.:
Project Title:	
Judges Name:	



No	Fundamental Criteria for Report Evaluation	Marks
1)	<b>Standard requirements have been met</b> (1 mark)	
2)	<b>Problem statement</b> has been clearly given (1 mark)	
3)	<b>Description of the invention</b> has been stated clearly. (1 mark)	
4)	<b>The originality</b> of the invention stated clearly a) Outline existing features versus innovative features of the new model (1 mark)	
5)	Relevant diagrams/photos with specification have been used in the report (1 mark)	
6)	Cost Analysis/benefits included in the report (1 mark)	
7)	The benefit of the invention clearly explained (1 mark)	
8)	The conclusion stated is relevant to the invention a) Conclusion linked to the problem statement (1 mark)	
9)	Steps for future work are clearly explained (1 mark)	
10)	Bibliography / References included in the report (1 mark)	
<b>Total</b> (max 10 marks)		

