

## STEP 5: PRESENTATION OF PROJECT

Now that you are almost completed with your project, you need to think about how you will communicate your project to the judges. You will need to finish the last parts of the written paper, complete your journal, place all materials on a display board, prepare a 12 minute oral presentation, and prepare to speak with judges about your project. The key to these final aspects of your project will be practice, practice, and MORE PRACTICE!!! If you are the expert on your topic, which you should be by now, it should be relatively easy to talk about what you did, why you did it, how you designed it, and what you plan to do in the future. Good luck, all of the hours of work are going to shine through at this time. A colleague once told me, the top ten percent will rise to the top while the bottom ten percent sink to the bottom. The middle eighty percent is a roll of the dice; hopefully the judges will like what you have to say. So where are you with your project? Are you the cream, the middle, or the rocks? There is no substitute for hard work.

### Assignment 16: ABSTRACT

It is now time to begin the final piece of the puzzle, the abstract. This is a one-page summary of the entire project. An abstract gives the reader a quick overview of the entire project. The abstract should include parts of the introduction, purpose, hypothesis, procedure, results and conclusions. It should be single-spaced and no more than 200 words. You should use a readable font of 12 so the reader can see the words. Do not try to squeeze extra words by using a small font.

There is no standard way of writing an abstract. The arrangement is up to you. You will probably find that many drafts are required to get it just right. There is no harm asking other students, parents, scientists, or teachers to review your abstract. Some judges will only see this printed form, so make it memorable. For most judges this is the only written paper that they will read. Many will make comments about your project on the abstract sheet as they judge you. They will then refer to this as they assign judge points and ribbon placements.

According to Martin and Brenstein (1998) the abstract should be the summary of principal findings of the paper. It should be a stand-alone document that gives all essential information about your project. They suggest that the abstract should not include headings or include information that is not in the paper. You should not use first person style or include references, figures or tables. Avoid abbreviations and do not emphasize minor details. “While it is difficult to be both concise and descriptive at the same time, that is exactly what you should strive for when writing an abstract. Say only what is essential, using no more words than necessary to convey the meaning. Examine every word carefully.” (Martin and Brenstein, 1998, pg. 4)

The abstract needs to have key information at the top. The title is always typed in all capital letters. The next line includes the student’s last name then first. The third line is the address line. The author recommends that you use the school address here. This is given so readers may contact the author if necessary. The fourth line should have the school, city and state. Look at examples for spacing specifics. All type should be in font size 12 with a standard font style. The heading information does not usually count in the 200 word count. (ISEF allows 250 words, JSHS allows 200 words.)

Ask your teacher to show you examples from previous ISEF and state fairs to see samples relating to your topic.

## ASSIGNMENT 16

1. To prepare an abstract for your project.

## Assignment 17: FINAL PAPER

Things will wrap up very quickly in the next few days. The final paper is a compilation of all the steps that you have completed so far in your project. Your science project must be presented in written form so that it can be reviewed and studied by others. Scientists need to share their knowledge so others can learn as well.

As you arrange your paper you need to update any changes that have been made since that step was last evaluated. You want to be sure to write in a past tense mode. Most scientific papers will include the following parts: abstract, title page, table of contents, introduction (includes purpose and hypothesis), procedure, results, conclusions, acknowledgements, sources cited, and appendixes.

Remember that the symposium rules limit the paper to a total of 20 pages. The computer content should not exceed 1.6mB of space as these will be emailed to judges. Work to say the most that you can in a manageable space.

Three small parts of the paper that still need to be completed are the title page, the acknowledgement section, and the table of contents.

The title page is obviously the cover to your paper. The title page states the title of the research, the category of the research, the student's name and grade in school. The first thing that a judge observes on your project is the title. The title should be well thought out and carefully constructed. The title should catch the eye of the observer without being excessively detailed or over the head of the observer. The title should define your project, giving as much detail as possible. The title should be clear and concise. Don't use a lot of connecting words. The best titles are usually ten words or less. Keep it simple, yet intriguing.

The Junior Science and Humanities Symposium suggest that the following rules be followed:

1. do not write the title as a question
2. do not use abbreviations
3. avoid excess words such as a, an, or the
4. avoid phrases such as a study of or investigations of
5. length of title should be more than 2-3 words but less than 14-15 words  
(Martin and Brenstein, 1998)

Sample titles are included below. You can also find sample titles in the media center or any science fair project book. (Carnahan and Hartmann, 1988; Hulse and Mc Mullin, 1991; Press, 1998) Abstract books from previous ISEF are located in the classroom.

Title Examples:

Comparing Buffalo Fish Mucus and Synthetic Slime on Racing Swimwear

Concrete Reinforcement Phase III: Strengthening Concrete Beams Using Fiberglass Reinforced Plastic Rods and Carbon Laminates

The Impact of Electronic Tapes on Lesser Snow Goose Harvest Rates

Phase 3: The Effect of Radiation (X-Rays) on Sweet Corn Seeds

The Effects of Metal Hydroxide Sludge on Plant Growth

Automatic Packet Reporting System: Building a Large Scale Geospatial Database

The acknowledgement section allows you to thank and recognize those individuals or groups that significantly helped you with your research. You may want to check with organizations or individuals to be sure that they will allow you to put their name in your paper. Some companies and individuals are not allowed to put their name on your work. This is a nice thank you section for individuals that guided you through the process.

**Acknowledgements may be included in the paper but are not allowed to be displayed on the display board.**

The table of contents will help to organize your paper. It will direct the reader to all of the major sections in your paper. Although this may seem like a trivial thing to do, it may mean the difference to advancing to the next level or staying at home. A well-organized paper will be easier to follow for the judges who are reading them.

The research paper that is submitted for competition must be stapled with one staple. No other binding is allowed for competition. NO PLASTIC COVERS, FOLDER, OR THREE-RING BINDER IS ALLOWED FOR JUDGING. You may bind your final paper for display purposes at your project display. No binding is allowed for the paper competition. (TCRSF accepts only a PDF of the paper uploaded per directions in registration.)

The paper is key to advancing to symposium. A strong effort here will be rewarded later in the science fair. You have put so much effort into your project that you don't want this part to be sloppy. An excellent paper should be able to be submitted for publication if everything works out.

## ASSIGNMENT 17

1. Compile the entire project into a final paper presentation.
2. To prepare a title page for your paper.
3. To prepare the acknowledgement section for your paper.

4. To prepare the table of contents for the paper.

## Assignment 18: BOARD DISPLAY

It is now time to begin the visual display for others to admire your work. Each display must be arranged so that it clearly identifies all aspects of the project. It should tell a story about how you solved your original problem. It should be neat, attractive, and be the focal point for the judges' attention. Your display needs to show the title, purpose or problem, hypothesis, procedure, results, conclusions and abstract. If room permits you may include pictures, display materials, video, etc. Most judges will read from left to right, so it is wise to begin the story on the top left side and end with the conclusion on the bottom right side.

The display size is limited to 76cm (30 inches) deep from front to back, 122cm (48 inches) wide from side to side, and 274cm (108 inches) tall from floor to top. Most tables are 76cm high (30 inches). You will want to refer to the latest copy of the ISEF display rules for the latest rules on what can be displayed.

Normally, power of 110 volt AC, single-phase service with 500 watts per exhibit will be available. Requests for other power needs must be made prior to the fair. Additional power costs will be the responsibility of the participant. The student should provide an adequate extension cord for the project. Power should be used only if necessary to power equipment that is absolutely essential to show the judges. Special effects, such as lights or a laptop, are not recommended unless critical for the judges to see. Remember that judges will cut through the fluff of the display to focus on the project content. If the power is not essential to the project content, avoid using it.

Each student is expected to assemble his or her own exhibit. Help will be limited to packing and unpacking or to situations where the physical size or weight is such that assistance is required. Be sure that you understand how everything fits together. You will need to bring the tools necessary to assemble your project. Check with your school or fair director to see if they provide basic tools. ISEF has a hub set up for tools and supplies that can be checked out by the presenter.

Perhaps the most important part of the display is lettering, so it should be done with great care. Stencils, pre-made letters, or computer signs may all be used. Focus on color combinations which will enhance your project. Be sure they are easy to read and bring focus to the key parts of your project. Size of the lettering is important. Titles should be at least 2 inches tall, while subtitles should be at least 1 inch letters. Paragraph writing should not be smaller than font size 20. Judges should be able to read the display from a distance of four to five feet away. The display should be a summary of key ideas. It does not have to be in paragraph form. Bullets and short phrases are acceptable, and some judges prefer to not have to read lengthy paragraphs on the display. At ISEF, the judges read through the displays without the presenter present, prior to judging. Be sure the display is easy to follow without the presenter explaining everything. The author has found that most judges do not like the display if it is a copy of the written paper put on display. The paper should be available at the display for the judges to read if they want. Most display judging will only be 10 – 15 minutes in length. Be sure the judge is able to see all of the key ideas of your display and also have adequate questions answered.

Several types of arrangements can be used for your display. Avoid copy cat displays. Make your display unique to your project. It should be neat and well organized. AVOID CLUTTER! You will find that good pictures of your equipment may be more effective than a clutter of equipment. You will find several examples of display arrangements and pictures of displays in the Science room. The author has several pictures on a CD from previous ISEF fairs. Ask your teacher or parents if you need supplies to put your display together. Be creative and put together a fun display. Judges will remember unique displays; however the key always comes back to your knowledge and project content.

Please make sure your project display meets all ISEF rules. Here are some pointers. The following is taken directly from the ISEF web site display and safety page. The bolded underlined items are the most common violations we have at the state science fair. Please do everything you can to abide by these rules. Remember pictures say a thousand words! Instead of bringing in items, **TAKE PICTURES!**

#### **Not Allowed at Project or in Booth**

- 1) Living organisms, **including plants and fruit flies!**
- 2) **Taxidermy** specimens or parts
- 3) **Preserved** vertebrate or **invertebrate animals**
- 4) Human or animal food **including popcorn**
- 5) Human/animal parts or body fluids (for example, blood, urine) (**Exceptions:** teeth, hair, nails, dried animal bones, histological dry mount sections, and completely sealed wet mount tissue slides)
- 6) Plant materials (living, dead or preserved) usually which were part of the scientific experimentation and which are in their raw, unprocessed, or non-manufactured state (Exception: manufactured construction materials used in building the project or display)
- 7) **Laboratory/household chemicals including water** (Exceptions: water integral to an enclosed apparatus or water supplied by the Display and Safety Committee).  
**Please note this includes bottles with residue and toothpaste!**
- 8) Poisons, drugs, controlled substances, hazardous substances or devices (for example, firearms, weapons, **ammunition**, reloading devices)
- 9) Dry ice or other sublimating solids
- 10) Sharp items (for example, **syringes, needles, pipettes**, knives)
- 11) Flames or highly flammable materials
- 12) Batteries with open-top cells
- 13) Awards, medals, business cards, flags, **acknowledgements (this means you can not say “Thank you to Dr. Jones on your display”; an acknowledgement can be made in the paper)** etc. (Exception: The current year Intel ISEF medal may be worn at all times.)

- 14) Photographs or other visual presentations depicting vertebrate animals in surgical techniques, dissections, necropsies, or other lab procedures
- 15) Active Internet or e-mail connections as part of displaying or operating the project at the Intel ISEF

**Allowed** at Project or in Booth, BUT **with the Restrictions** Indicated (To be sure, check the current year's rules!)

- 1) Soil or waste samples **if permanently sealed in a slab of acrylic**
- 2) Postal, Web and e-mail addresses, telephone and fax numbers **of finalist only**
- 3) Only photographs (that is, visual depictions) of the Finalist, the Finalist's family, photographs taken by the Finalist, and/or photographs for which **credit** is displayed (such as from magazines, newspapers, journals, etc.) **if not deemed offensive** by the Scientific Review Committee, The Display and Safety Committee or Science Service
- 4) Any apparatus with unshielded belts, pulleys, chains, or moving parts with tension or pinch points **if for display only and not operated**
- 5) Class II lasers if:
  - a) Operated only by the Finalist.
  - b) Operated only during Display and Safety inspection and during judging
  - c) Labeled with a sign reading "Laser Radiation: Do Not Stare into Beam."
  - d) Enclosed in protective housing that prevents physical and visual access to beam.
  - e) Disconnected when not operating.

- 7) Class III and IV lasers **if for display and not operated**
- 8) Large vacuum tubes or dangerous ray-generating devices **if properly shielded**.
- 9) Pressurized tanks that contained non-combustibles **if properly secured**.
- 10) Any apparatus producing temperatures that will cause physical burns **if adequately insulated**

#### Electrical Regulations at the Intel ISEF

- 1) Finalists requiring 120 or 220 Volt A.C. electrical circuits must provide a UL-listed 3-wire extension cord which is appropriate for the load and equipment.
- 2) Electrical power supplied to projects and, therefore, the maximums allowed for projects is 120 or 220 Volt, A.C., single phase, 60 cycle. Maximum circuit amperage/wattage available is determined by the electrical circuit capacities of the exhibit hall and may be adjusted on-site by the Display and Safety Committee. For all electrical regulations, "120 Volt A.C." or "220 Volt A.C." is intended to encompass the corresponding range of voltage as supplied by the facility in which the Intel ISEF is being held.

- 3) All electrical work must conform to the National Electrical Code or exhibit hall regulations. The guidelines presented here are general ones, and other rules may apply to specific configurations. The on-site electrician may be requested to review electrical work on any project.
- 4) All electrical connectors, wiring, switches, extension cords, fuses, etc. must be UL-listed and must be appropriate for the load and equipment. Connections must be soldered or made with UL-listed connectors. Wiring, switches, and metal parts must have adequate insulation and over current safety devices (such as fuses) and must be inaccessible to anyone but the Finalist. Exposed electrical equipment or metal that is liable to be energized must be grounded or shielded with a non-conducting material or with a grounded metal box or cage to prevent accidental contact.
- 5) Wiring which is not part of a commercially available UL-listed appliance or piece of equipment must have a fuse or circuit breaker on the supply side of the power source and prior to any project equipment.
- 6) There must be an accessible, clearly visible on/off switch or other means of disconnect from the 120 or 220 volt power source.

**Maximum Size of Project at the Intel ISEF - no demonstration may be outside of this space:**

**30 inches (76 centimeters) deep**

**48 inches (122 centimeters) wide**

**108 inches (274 centimeters) high including table (72 inches max on table)**

#### ASSIGNMENT 18

1. To prepare a display board which meet the needs of your project.

#### Assignment 19: ORAL PRESENTATION (PAPER COMPETITION)

The regional science fair has two types of competitions. The project competition is similar to the local science fair. Your display board is judged and you talk with 3-4 judges about your project. Each project judge will spend 10-15 minutes talking with you and asking questions. Don't spend a lot of time talking. Know your key points and allow the judge to ask you a lot of questions. The second competition is paper judging.

The paper is sent to the regional committee to be read by three different judges on the written aspects of your project. At the regional fair you are then judged by 3-6 judges in an oral presentation. The oral presentation is limited to 12 minutes for you followed by 6 minutes for judges to ask you questions.

The oral presentation should involve some visual items, however the project board display is not allowed. You may use posters, slides, video, computer slide presentation, or overhead slides. You want to pick the media that you feel comfortable working with. Work with your teacher to pick the appropriate style that fits you. If using PowerPoint

presentations there are a few precautions. Be sure to create your slide show on the same computer that you plan to present it on. There is very little set up time for your presentation, so you cannot afford computer problems. Be very careful that your disk or storage device is compatible with the presentation computer. From past experience this can be a big problem. Be sure to practice on the computer to be used at presentation to avoid any problems.

Avoid mixing too many media types within your presentation. It is difficult for a judge to shift from overheads to video to posters. Practice with your materials so you are very comfortable with your presentation. The paper presentation should be prepared to use all of the time available, while the project presentation is less prepared as each judge will ask different questions. Both require hard work in preparing for responses to questions that the judges may ask.

When presenting, begin by introducing yourself to the judges. Talk directly to your judges while maintaining good eye contact. Stand to the side of your visual so that you don't block the judges' view. Use a pointer to point out details that you are discussing. Avoid opening your presentation with, "My project is about...". When answering questions, be specific and honest. Don't try to make up an answer; the judge probably knows the correct answer. They are testing you to see how much you know about your topic. Be honest and say you don't know an answer: the judges will appreciate your honesty. Avoid using note cards for your presentation. Practice many times to have your responses to questions well prepared. Avoid a memorized approach, as this can be very robotic. Be flexible. If you have spent 100-200 hours on this project, you will have no problem talking for 12 minutes. Remember that you will be stopped at 12 minutes. PRACTICE, PRACTICE, PRACTICE. Do you get the feeling that there is a key theme to presenting?

Be enthusiastic, friendly, calm and in control. Always thank the audience for their attention and ask if they have any more questions. Remember that practice will be extremely important in how well you do on your oral presentation.

## ASSIGNMENT 19

1. Complete an in class mini symposium and practice judging.

## ASSIGNMENT 20: SCIENCE FAIR COMPETITIONS

You are now ready for competition. The science fair begins with the local science fair (usually held at the end of January or early in February). This is optional although it is good practice working with judges, especially if this is your first science fair. All projects are able to advance to the regional fair. The placing at local fair is simply a preliminary look at your project.

The second level of competition is the regional science fair. This fair is usually held at the end of February. The regional fair you compete at is determined by the location of your school (including public, private, charter, home school & on-line schools). The Twin Cities includes schools in Ramsey, Hennepin, Washington, & Dakota counties.

This fair is the springboard for all future competitions. You must be selected to advance to a higher-level competition. Winners can advance to the State Science and Engineering Fair or the International Science and Engineering Fair. The Minnesota State Fair is a three-day event, typically at the end of March or first days of April, often in the Twin Cities. The International Science Fair is held in various cities, usually the second week in May. There are many special awards at all levels of competition.

The paper competition begins at the regional science fair. Top papers advance to the North Central Regional Science and Humanities Symposium. This involves top papers from Minnesota, North Dakota, and South Dakota. This competition is usually the day before the MN State Science and Engineering Fair. The top 5 papers from this competition advance to the National Symposium. This is usually at the end of April and is located in different cities around the US. The top papers from National advance to the European Symposium in London. This is usually held the end of July.

Although winning awards should not be your only motivation, it is a great reward for the hours of hard work that you have put into your project. Most of the travel awards are paid by the regional or state competition. Awards vary at each science fair, but can be a financially fun experience. Scientists enjoy talking to young scientists. Have fun and share what you have discovered.

## STEP 5 GRADE CRITERIA

E=Excellent

S=Satisfactory

N=Needs Work

The following grade rubric will be used to assign points for this task:

- Abstract clearly displays key aspects of the project.
- Key background information is well-documented throughout paper.
- Data collection methods precisely summarized.
- Results of statistical analysis are clearly presented.
- Graphs and tables clearly presented.
- Interpretations and conclusions addressed including problems, related scientific work, and implications for further study.
- Board display
- Oral Presentation

**Format** (Grammar, Spelling, Typed, Style) \_\_\_\_\_

**Content** (Information, Documented, Reliable, Journal) \_\_\_\_\_

**Creativity/Originality** (Ownership of Project, Ingenuity) \_\_\_\_\_

**EXCELLENT WORK:**      **28 - 30**

**SATISFACTORY WORK:**    **24 - 27**

**NEEDS IMPROVEMENT:**   **21 - 23**

**Total Points**      \_\_\_\_\_/30 points

Suggestions for Improvement: