

# Winning Science Fair Backboards

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As [makeitsolar.com](http://makeitsolar.com) points out: **The objective of a display board is to present the main areas and conclusions of your project so that folks can easily understand what you accomplish.**

For the participant looking to win awards, ‘folks’ includes laymen, specialist and non-specialist special awards judges, and expert category judges. This list comprises a wide range of skills and interests!

While there is no specific way that you are required to arrange your backboard, it needs to be easy to follow from project inception to conclusion. A flow from top to bottom, left to right often works quite well.

## Physical Construction

Ever more widely available color printers have enabled some contestants to spend \$30 (or much more) to create seamless tall and wide single-sheet backboards.

The popular, economical alternative is to create nice, variously-sized sheets (think of them as little sub-backboards or backboard-components) that are then affixed to a trifold ‘carrier’, usually with a color ‘matte’ behind them (like the matte in a picture frame). Each sheet is big enough to hold its section’s information; sizes might vary from a few inches high to perhaps a foot or more.

Generally, the sub-backboard method is the winner because, otherwise, every little change to the backboard requires an unsightly patch or a complete reprinting (at \$30 or much more).

The sorts of folks who lavish meticulous care on their backboard *will* want to tweak it frequently (and, of course, as the projects moves to bigger fairs like the Colorado State Fair and the International Science and Engineering Fair). Thus, despite the absolute unparalleled quality of the seamless, one-sheet color-printed backboards, generally one is better off with the set-of-matted sheets that can be easily edited.

## General Comments

These general comments are just that: general. Specific exceptions will occur for every rule, but if you start with these, your results are liable to be quite nice.

- Make the backboard easy to read with an easy to follow flow (like a newspaper article)
- Items attached to backboard should (generally) be matted (backed by a piece of construction paper). Matted with an attractive border is nice.
- Graphs and tables should be computer generated and attractive.
- Do not put text on top of pictures; makes it hard to read. Put it below the pictures. Use  $\geq 12$  point font.
- Minimum font size: 14 points; 16 is much preferred. Titles should be much larger. Note that judges often require reading glasses owing to presbyopia; their eyes are not as good as a typical exhibitors.

- Choose traditional fonts. Avoid comic sans; it engenders an irrational prejudice. Avoid artistic fonts (e.g., cursive font).
- Avoid reverse type (white on black) unless you really know what you're doing.
- Avoid using more than 2-3 typefaces on your backboard.
- Consider headlines & subheadlines to catch attention. Bullet lists for bodies of text. Exception: The question and/or hypothesis.
- Exploit photographs! "A picture is worth a thousand words"
- Use good color with balance.
- If you must use text, ensure paragraphs are no longer than four not-too-long sentences.
- Use whitespace to your displays' advantage.
- Shun prose and sentences using instead bullet lists and prose fragments.
- Strive to balance your display with photos and color throughout instead of stacking photos and color in small segments.

Remember: It's the project that needs to stand out. The backboard facilitates that, but it's about the science. Enable the science to shine!

Your backboard layout should include:

- **Project Title:** generally at top of project, centered on middle section. Puns are not required. More than 100 characters requires a very special project. Project title needs to grab attention of judges (be "catchy"). This title is not for a publication for research; it is a poster for a science fair. Some folks recommend type as big as two inches: It needs to be readable from at least halfway across the room!
- **Research Question/Problem:** What problem are you going to solve? This is a short description that, with any luck, a layman can follow. This is really the 'Big Question' your project pursues. A short set of text or set of bulleted questions.
- **Hypothesis:** A clear, measurable/verifiable single-sentence statement. Since the experiment is finished, it's OK to make a hypothesis that you KNOW is going to be 'true' when everything is analyzed. You do not need to show your original hypothesis if it turned out to be wrong, although negative hypotheses do have less of an impact.
- **Background Research** (if appropriate): What results feed in to this project? Does this project extend one or more other projects? Bullet list.
- **Materials:** A bulleted or numbered list of major items/equipment that your project used. If this list is quite long, show the highlights in large type and make a "lift up" sheet with details in appropriate type (never smaller than 12 point).
- **Procedure:** A blow-by-blow numbered list of the high points of the operations performed to execute the project. If the steps number quite high, show only the highlights and use a lift-up to provide details.
- **Data & Graphs/Graphics** (graphs better than numerical tables): No one reads extended tables of data due to time constraints and general focus. Show data as graphs and graphics can cut through this issue and enable your project's gathered results to shine. Be sure the graphs are created properly (axes labelled, units, titles/legends, explained).

- **Photos** (learn your fair's rules about showing people/faces): Showing an intriguing part of your project (the rocket launch, e.g.) can draw interest and attention to your project. Generally, be sure that captions explain the photos.
- **Variables Identified and Examined:** Show the variables your project used and measured (more than 5-10 is probably too many here). Label them as independent, dependent, and control as appropriate. Explain them briefly in a bullet list. Show relationships among variables.
- **Data & Results:** Explain the data; analyze it. What was learned? Bullet list.
- **Conclusion:** show how results confirm or deny the hypothesis. Bullet list of brief statements. Support the statements with data and statistics. Be specific; do not generalize. Do not introduce new information in the conclusion. Mention practical applications.
- **Recommendations & Future Research:** What's next if you or someone else were to perform a follow-on project? As many as three different directions to take is appropriate. Bullet list if more than one.
- **Important References and Acknowledgments** (if appropriate): bullet list. This includes books, websites, teachers, other researchers: everything and everyone with whom you consulted.

## References

Science Buddies <http://www.sciencebuddies.org>

Solar Science Fair Projects <http://www.makeitsolar.com/science-fair-information/02-science-fair-board-layout-1.htm>

Parental help for science fair projects <http://science-fair-coach.com/wp-content/uploads/2012/03/BACKBOARD-guidelines.jpg>

Teaching teachers to be amazing <https://www.stevespanglerscience.com/blog/2012/01/30/science-fair-911-display-boards/>

Salt Lake City School District <http://www.slcschools.org/departments/curriculum/science/Science-Fair/documents/Display-board.pdf>

Norwalk Public Schools [http://norwalkps.org/UserFiles/Servers/Server\\_71596/File/curric/k12/science/15-16/how\\_to\\_set\\_up\\_display\\_board.pdf](http://norwalkps.org/UserFiles/Servers/Server_71596/File/curric/k12/science/15-16/how_to_set_up_display_board.pdf)

Discover Education Services <http://school.discoveryeducation.com/sciencefaircentral/Science-Fair-Presentations/How-to-Create-a-Winning-Science-Fair-Display-Board.html>

Illinois Institute of Technology's Perfect Backboard Example <http://sciencefair.math.iit.edu/display/halloffame/>

# Backboard Checklist

This checklist enables exhibitors and their mentors to examine a backboard for areas of improvement. It might be easiest to mark those areas that are **incorrect** instead of those that are OK.

## Project Title

- Visible from 25 feet away
- Clear and concise
- Reasonable contrast/color
- Catchy – grabs attention

## Research Question/Problem

*Somewhat optional*

- Brief
- Easy to read
- Bulleted if appropriate

## Hypothesis

- Single clear statement
- Provides measurable yes/no answer
- None too long
- Easy to understand by everyone

## Background Research

*Optional*

- Bulleted list of items

## Materials

- Bullet list of materials used
- Hits high points if list is long

## Procedure

- Bullet list of steps followed
- Hits high points if list is long

## Data/Graphs/Graphics

- Avoid large tabular data presentation
- Graph properly named
- Graph axes descriptions w/units
- Graph axes labeled appropriately
- Any other legends that are necessary
- Helpful use/description of color

## Photos

*Optional but helpful*

- Description below photo,  $\geq 12$  pt
- Attribution somewhere on backboard
- Attractive, helpful content
- Appropriate size

## Variables

*Optional*

- Bullet list
- No more than 5-10 variables
- Explain what variable represents
- Label as {in}dependent & control

## Data & Results

- No blobs-of-text
- Easy to understand
- Graphs as appropriate
- Interesting observations called out
- Avoid too many liftups/overlays

## Conclusion(s)

- Easy to understand bullet list
- Supported by data/results
- Specific
- (*Optional*) Real-world applications

## Future Research/Recommendations

- 1-3 future ideas
- Bullet list

## General/Overall Impression

- No handwritten text
- Easy-to-follow flow
- Good matting/item separation
- Balanced display
- Generally attractive
- Good color balance
- Good use of bullet lists
- Viewer can read question (hypothesis) and answer (conclusion) with 30 seconds of viewing.
- No type smaller than 14 point
- No “blobs” of text – bullet lists as much as possible
- Typesetting large enough to read
- $\leq 3$  classic fonts; no fancy faces
- White space used well