



New Project Display System for Canada-Wide Science Fair

1. *Rationale and Background*

The objective of this paper was to examine the current disadvantages of the present system of project display at the CWSF and to propose an alternate method to alleviate these concerns.

The backboard that is traditionally used today at the CWSF has not really evolved since 1962. It typically consists of 3 panels and it is often constructed with wood. There are several variations on the material such as the use of Sintra or Plexiglas. Many materials are prohibited, as they do not meet with UL-94 regulations. Attachment of presentation materials to the backboard must be secure with all edges completely fastened.

The present method of display does pose some challenges. Transportation to and from the CWSF can be difficult. Backboards are often heavy and awkward for transportation by the finalist. Airlines will request payment for a second item of luggage. Backboards often end up considered as oversized luggage. Finalists also make use of courier services such as FedEx, which requires advance planning of creating and shipping the backboard to and from the CWSF, as well as the cost. Situations do arise in which the backboard is lost or misplaced by the courier service.

There are a great number of options for display materials suggested by YSC, which can be difficult for finalists and delegates to navigate when looking for a material other than a heavy wood product. Ensuring that variation from the traditional wood product meets acceptable standards can be tricky. Any unusual display material is questioned by the safety check process at the CWSF as not all individuals trained as safety checkers are familiar with the range of materials available and whether or not they meet the UL-94 standard. Similar issues exist when adhering presentation materials to backboards. Sometimes the choice of adhesive does not adhere well, or sometimes, too well. Often there are inconsistencies in the safety check process in which some finalists are asked to better attach presentation materials while others with similar backboards pass the safety check.

The typical 3-panel backboard requires either hinges or “zip tie” fasteners. Both may compromise the presentation design by requiring the project to be split 3 ways to fit the 3 sections of the board or some form of adjustment to avoid contact with the hinges or fasteners.

The use of rental backboards has increased over the past several years. This trend suggests that regions prefer not to ship their own. In 2008, about 100 backboards were rented. In 2012, about 200 were rented which is over half the fair. This means 4 pallets must be used for shipping, each with a mass of over 1 tonne (2,500 lbs). YSC must store, maintain, and ship the backboards. If the trend continues to the point where all projects use the current YSC backboards, YSC would be maintaining and shipping 8 tonnes of backboards each year, which is not practical, reasonable, or sustainable. (It should be noted that YSC is not averse to continuing to provide this service.)

The CWSF currently specifies a table with a 30-inch width. However, the standard rental table size is 24". This means that about 200 custom tables have to be built or purchased every year by the conference supply company. This is an additional cost for YSC that could be reduced.

The present rental backboards do not look great, but they could look better if painted. However, these backboards hardly convey an image of science and technological innovation. This will become a larger issue as we gain larger and more engaged sponsors, as well as increased media exposure.

2. Data Collection

Information regarding backboards was gathered through survey results, as well as a forum of the delegates during the CWSF in PEI, 2012. The National Science Fair Committee (NSFC) appointed a task group comprised of delegates present at the backboard forum and members of the NSFC and YSC staff to review these data and identify options for a new CWSF project display format.

a. Survey Results on Backboards

Survey results show that regions would prefer YSC provide a standard display over transporting their own and over half would consider a replacement for the 3-sided backboards.

Surveys showed that 70% of delegates and 62% of finalists either agreed or strongly agreed that YSC should provide a standard display for every CWSF project to which a variety of display materials can be affixed rather than finalists transporting backboards.

Similarly, 59% percent of delegates and 51% of finalists agreed or strongly agreed that a flat poster board to which a large poster or a variety of smaller items could be attached using Velcro, double-sided tape, or pins would be a good replacement for 3-sided backboards at the CWSF.

b. Delegate Forum on Backboards at CWSF 2012, PEI

This forum provided an opportunity for delegates to express their opinions and concerns regarding all issues associated with backboards. During the meeting, a great number of concerns were expressed about shipping backboards. Some of these concerns referred to the cost to ship backboards and the loss of backboards when shipped. Some delegates stated that some airlines may not allow tubes that carry posters because they can be too large for the overhead bins.

Delegates also had issues with the YSC rental backboards. They find that the zip ties can be in the way if a poster is to be affixed. They considered whether or not to mandate the use of the rental backboards, but thought that over 400 may be difficult for YSC to manufacture and transport. The boards also get dusty and you need to wipe them off with a damp cloth.

There were a number of suggestions for adhesives such as binder clips instead of tape, carpet tape, double-sided tape, and rolled packing tape. Concerns were expressed about how well certain adhesives would stick or if they were too sticky. They felt it would be helpful to have an agreed upon type of hardware or tape. Double-sided tape was recommended.

Delegates stated that there was confusion about lamination. It is encouraged on one hand but discouraged on the other. Delegates also expressed a general concern about the consistency of safety checks. For example, there could be one curl on a backboard but another project could pass safety check with loose sheets lying around. Lamination was considered okay in the safety check but there was inconsistency on whether or not photo paper would pass safety check.

There were a number of suggested strategies for backboards. PVC piping can fit in a suitcase for travel. One could make a "Plexi board sandwich" by sealing the project in between two pieces of Plexiglas. Paper could be laminated and attached with Velcro.

Posters or fabric posters were discussed as a possibility. It was stated that the rules do not exclude a single board display. Sample templates or "how to guides" could be created for posters. One would have to be certain posters would meet the criteria for the CWSF.

It was discussed that it may not be possible to mandate that all finalists use posters. This is an additional expense for finalists. Some communities may not have the resources to produce posters. It was suggested that most municipalities have a plotter that could provide a solution. It was questioned if it would be possible that the posters could be printed for some regions on site at the CWSF for regions that lack the resources to do so. It was thought that if some students have expensive posters printed and others not, how will the students without the posters feel? It was suggested that a laminating machine could be used instead of posters but then it was suggested that not all schools have laminators.

The use of fabric board was also suggested. The region could buy the fabric board and the project could be changed every year. It was questioned whether or not display materials could hang off curtains? The use of corkboards instead of backboards was suggested, as well.

3. The Next Step

The task group researched other options through conference supply companies. One possibility was the use of corkboards. Although the use of corkboards would eliminate the problems with the traditional backboard, it was considered to be less attractive than the current display standard. In addition, finalists would have less space to display their materials on the board.

Another option that was researched was the use of a standard display that can be rented from conference supply companies, which came to be referred to as the “zig-zag” option. This type of booth is used at science fairs in other countries (particularly in Europe) and at scientific conferences. The display consists of a modular aluminum frame and two Coroplast panels set at a 90-degree angle, which creates a zig-zag arrangement when the display units are connected together in a row.

The exhibit hall cost using the traditional pipe and drape with tables (based on CWSF 2011 and 2012) is approximately \$78,000. The cost with the new display system will be approximately \$130,000 – an increase of approximately \$52,000. Although this option significantly increases the cost of outfitting the exhibit hall, it eliminates virtually all the problems associated with traditional backboards as previously described. It is also considerably more attractive and consistent than the current mix of backboards – and the corkboard alternative.

4. The Decision

At its annual face-to-face meeting on September 15 in the YSC office, the NSFC reviewed the task group’s report and then passed a motion recommending that YSC adopt the new CWSF project display, starting at CWSF 2013 in Lethbridge, to be supported by a \$50.00 increase in the CWSF registration fee. A \$50 increase in the CWSF registration fee would contribute approximately \$30,000 toward the increased exhibit hall cost; Youth Science Canada would cover the balance of approximately \$22,000 through increased CWSF sponsorship.

Regarding the cost, the task group and the NSFC noted that most regions already pay additional fees for backboards if they rent, ship, or transport them. Regions pay \$30.00 for YSC rental backboards or \$25.00 each way for a backboard as a second piece of luggage. Shipping by courier costs even more; many regions that ship projects pay \$100.00 or more per project each way. By adopting a standard CWSF display, costs incurred by regions to ship or rent backboards will be eliminated and incorporated into the CWSF registration fee at a flat rate of \$50 per participant. In addition to the cost savings and reduced workload for regions, it was also noted that the CWSF registration fee has not increased from \$650 for the past 8 years (since 2005).

New CWSF Project Display



Display Area

The height of the display is 2.5 m from the floor. The triangular shelf is at the standard table height of 0.8 m (30"). The header panel, including its frame, is 48 cm (19") tall, and its top sits at 2.5 m – the same height as the display panels. A header sign, similar to the one in the photo, will be pre-printed for every project. For reference, the large Smarter Science poster in the photo is 69 x 89 cm (27 x 35 inches) and the 7 other posters are 28 x 43 cm (11 x 17 inches).

The header does obscure the top part of the rear display panels when viewed from 1.5 m away (the middle of a 3 m aisle); however, the full height of the panels is visible when standing right in front of the display, except for the area in the 45° corners close to the header. To be as fair as possible in our comparison with the current display options, we used the "clear display area" in our calculations - the height of the panel from the shelf to the bottom of the header - even though most of the area on the two display panels is usable. The clear display area is as follows:

2 panels (height calculated to bottom of header)
 0.96 m x 1.26 m x 2
Total = 2.4 m²

For reference, here are the display area dimensions for two current options: the YSC rental backboard, used by over half the projects at CWSF 2012, and a tabletop backboard with the maximum permitted height of 2.5m:

YSC Rental Backboard:

Centre Board: 0.813 m x 1.016 m = 0.83 m²
 2 x Side Boards: 0.533 m x 1.016 m x 2 = 0.54 m² x 2 = 1.1 m²
Total = 1.9 m²

CWSF Maximum Backboard (height of 2.5 m from floor, assuming a 0.8 m (30") high table):

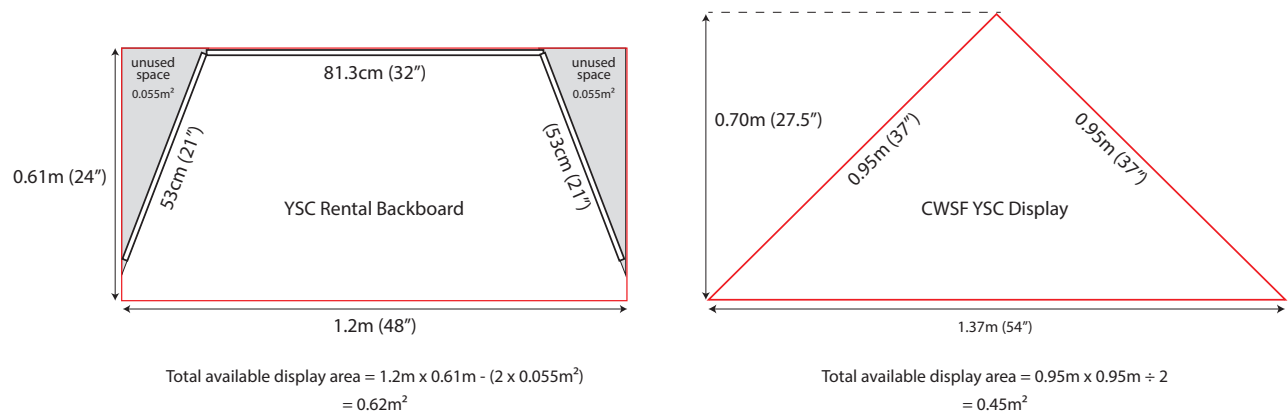
Centre Board: 1.2 m x 1.7 m = 2.0 m²
 2 x Side Boards: 0.61 m x 1.7 m x 2 = 1.0 m² x 2 = 2.0 m²
Total = 4.0 m²

The new display will provide 26% more display space than the YSC Rental Backboard (equivalent to adding a **third side board**).

Although the clear display area of the new project display is 40% less than the current maximum permitted by a 2.5 m tall backboard on a table, it is a lot of display space, and based on the fact that over half of CWSF 2012 projects used a rental board, it's more than what has been used by most CWSF projects in the past few years.

Table Area

The table area of the new CWSF Project Display is compared with the rental backboard in the scale drawing below:



Although the new display provides 27% less table space than the rental backboard, it provides greater width, greater depth, and wastes no space, with room for a laptop, binder(s), and textbook(s).

As shown above, the triangular shelf provides 0.45 m² of space – approximately 27% less than the space available with a rental backboard; however, as seen in the photo on the next page (with black display panels installed, though we will be using white) it easily accommodates a 13" laptop, a couple of university textbooks and a binder, which is shown standing, but it fits laying down as well:



Adhesives

A variety of adhesives will be acceptable. The display supplier recommends Velcro dots, which can be removed fairly easily, and would be supplied by YSC. Removable double-sided tape will also work very well, and will be supplied by YSC.

Display Materials

CWSF Finalists will continue to have a choice of presentation display formats and materials, including:

- Printed posters no larger than the dimensions of the display panels; or
- Printed sheets of paper (e.g., letter, legal, tabloid) that can be arranged to fit within the dimensions of the display panels, including decorative elements currently permitted under the CWSF Display policy.

In other words, finalists may continue to use what they have normally affixed to their own or a rental backboard.

Nearly all CWSF finalists redo their regional fair project displays after being selected to attend CWSF. They would be redone to fit the new CWSF project display.

Note 1: Regions are not expected to change the requirements for displays at their regional science fair.

Note 2: Use of the new CWSF project display will be required; there will not be an option to substitute a different backboard or display.

5. Benefits of the new CWSF Project Display

- Finalists will be using one of the current displays of choice at scientific conferences;
- Finalists can use a variety of presentation displays ranging from a single poster to multiple sheets of paper and other decorative items, carried in a poster tube or other compact container;
- Suitable adhesives will be provided during CWSF project setup;
- There will be consistency between projects – a “level playing field”;
- Safety checks will be greatly simplified;
- Use of a commercial display conforms to fire safety regulations;
- Finalists will not bring backboards as luggage. They will only have to bring their display materials. This is easier, more cost effective for regions and finalists, and more environmentally friendly;
- There will be no need for regions to ship projects to and from the CWSF.
- There will be no cost for regions to transport backboards.
- The issue with the 30-inch table requirement versus the typical rental table size of 24" will be resolved, as the new display has an attached table.
- The header/title board for each project will be pre-printed to include the student name(s), project title, project number, and provincial flag. This will standardize the displays and make them more professional in appearance.
- The white panels can be used as screens for pico and micro digital projectors that connect to cell phones, tablets, and laptops.
- There is increased vertical space for posters and other presentation materials.

6. Potential Issues

- While large format posters are not required, some finalists who might want to create one may not be aware of how to produce a large poster using available computer software.
- Some regions may not have easy access to large format printing services. There is also a cost associated with printing large posters. However, regular paper (letter, legal, tabloid, etc.) printed on an inkjet or laser printer will continue to be used by many finalists.
- On smaller aircraft, longer poster tubes will be accommodated at the front or rear if they don't fit in the overhead bins.
- The new table display provides 27% less table space than the rental board on a 24" table (but greater width and depth). Finalists will need to be more selective in their tabletop display materials.

7. Implementation

- Software templates, suitable for the new CWSF project display will be provided on the CWSF web site in a variety of formats to help finalists prepare a poster for printing. Templates for large posters, as well as standard paper sizes, will be provided.
- Information will be provided on how to access large format printing services. This may include businesses such as Staples or printing services in universities and municipalities.

NSFC Backboard Task Group

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