



Why Encourage Children to be Engineers – Because We Need Them

September 2007, Volume 2, No. 9

This newsletter, we hope, gives you some useful information to help you understand franchising and, in particular, opportunities in the educational services franchise business space. The after-school educational market exceeded \$60 billion in the U.S. in 2005 and continues to grow at a near double digit pace. So please enjoy and let us know what other topics you would like us to discuss.

About Us

At CTWorkshop creative thinking is a child's greatest asset. Since 1997 we've delivered hi-tech programs enabling children to enhance their innate creativity. We facilitate and extend a child's awesome natural ability to learn.

For more information contact:

Len Rosen

Business Development Manager

Bus: 416.425.2289 x 24

Mob: 647.225.2784

Fax: 647.439.0890

E-mail: len@ctworkshop.com

109 Vanderhoof Avenue, Suite 101A

Toronto, ON M4G 2H7, Canada
www.ctworkshop.com

A tragedy, the collapse of the I-35 bridge across the Mississippi River in Minneapolis, in which 13 lives were lost, brings forward the importance of proper engineering design and the maintenance of highway infrastructure. Was this tragedy foreseeable? The August 9, 2007 issue of the *The New York Times* bore the following headline, *Potential Flaw Seen in Design of Fallen Bridge*. The article went on to state, "Investigators have found what may be a design flaw in the bridge that collapsed...in the steel parts that connect girders, raising safety concerns for other bridges around the country." Although the investigation is far from over, it was reported that a consultant hired in the days after the collapse looked at the weight of construction equipment and materials on the bridge at the time of its collapse and suggested that this may have put undue stress on the gusset plates that joined supporting girders together. It was suggested that those who designed the bridge in 1964 may have miscalculated the loads "and used metal parts too weak for the job." So whether design imperfections or pigeon droppings (the latest proposed theory) prove to be the cause of the bridges demise, the importance of proper design and use of materials is critical.

Last month in this newsletter we talked about the importance of constructionism as a learning method for children because it gets them to build things and then explain why and what they have built. One of the programs that Children's Technology Workshop introduces to kids is **West Point Bridge Designer** (WPBD). WPBD is a bridge building simulator, providing realistic, hands-on experience to children about how civil engineers design real structures. WPBD reflects many aspects of real-world civil engineering. The user selects a site, decides on the truss configuration, joints and members and then load tests the design. The test shows which members are potentially unsafe and what material choices are available to optimize strength. The user can optimize the shape and configuration of the trusses. At the same time the cost of the bridge construction, material and modifications is accounted for. Just like a civil engineer the user must trade-off design for safety. WPBD provides a real-world experience. Make the wrong decision and your bridge fails the load test.



Load testing a potential bridge design. Notice that trusses under stress change color going from white to pink to red. This design combines steel alloy and carbon steel trusses to keep the cost under \$500,000.