Visioneering – Designing the Future

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Abstract

Science Fair meets rock concert meets a day at the mall meets sporting event….welcome to *Visioneering*. *Visioneering* is an annual engineering outreach event and TV show produced in conjunction with National Engineers Week. The goal of *Visioneering* is to excite K-12 students about science, math, engineering and technology in a high-energy, high-impact atmosphere. *Visioneering* brings together students, educators, higher education, and industry. Now in its 5th year, *Visioneering* has grown from a live event for 250 middle school students to a by-invitation-only for 500 middle school students and a TV show that reaches upwards of 8 million students across the U.S. Each year, *Visioneering* has a unique theme that relates engineering to an exciting, often unlikely industry. The live event includes an Opening Rally, during which participants hear from high-energy, inspirational speakers; a Design Project, in which student teams led by an engineer create a conceptual design; a Tech Expo that showcases the latest technology; and an Awards Ceremony that recognizes the top student designs. The Telly Award winning TV show, aired on Cable Channel One, is a compilation of footage from the live event as well as pre-shot footage. Each year, over half of the students attending are female and over half are blacks and Hispanics. *Visioneering* receives rave reviews from students, educators, and industry – 92-100% of participants would tell a friend about it.

Introduction

Visioneering: Designing the Future is a signature National Engineers Week event which promotes math, science, engineering, and technology in a high-energy atmosphere. *Visioneering* is listed among the official activities on the E-Week website, and the live event is north Texas' largest National Engineers Week event.

> ***Goal of Visioneering:***
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> ***To excite students about science, math, engineering and technology in a high-energy, high-impact atmosphere.***

Visioneering is unique from other engineering programs targeting middle school students in that (1) the event takes place in a high energy atmosphere; (2) no advanced preparation is required; and (3) it is comprised of a live event and a TV show. *Visioneering* brings together students, educators, the engineering industry, and higher education to celebrate the ways engineers make a difference. Students have the opportunity to 'play engineer for the day.'

Each year, *Visioneering* has a unique theme that shapes the content including speakers, interactive booths, the design project, special exhibits, and TV show. Themes are selected to be of contemporary interest and in a wide variety of fields and industries. Table 1 lists the themes of *Visioneering* and components included in each year.

Table 1: Themes and Components of *Visioneering* by Year

Year	Theme	Components
2001	Computer of the Future	Live Event
2002	Transportation of the Future	Live Event
2003	Emergency Room of the Future	Live Event plus TV show
2004	Security of the Future	Live Event plus TV show
2005	Entertainment of Tomorrow	Live Event, TV show, Live Webcast

Visioneering now includes a live event, TV show, and live webcast. The live event is held on Saturday of National Engineers Week, and the TV show is broadcast within a month of the live event. The live event has been the mainstay of *Visioneering* since its inception. The live event has grown from 250 Dallas ISD middle school students and their educators to a by-invitation only event for 500 Dallas-Fort Worth area middle school students and their educators. The TV show was added in 2003 in an effort to reach more students. It is broadcast nationwide on Cable Channel One into classrooms two times a year reaching over 8 million students. The live webcast was added in 2005 and includes the speakers and closing ceremony of the live event. The webcast was intended to serve as the opener and closer for National E-Week events occurring across North America.

The Live Event

The live event consists of the Opening Rally, Design Project, Tech Expo, and Awards Ceremony. All of these elements are tied to the theme.

The live event kicks off with the Opening Rally which includes high-energy, inspirational speakers, many of whom are engineers. They bring engineering to life as they discuss topics such as attributes of engineering, unique engineering projects, the importance of engineering in our everyday lives, and the educational background necessary to become an engineer. A keynote speaker directly related to the theme follows the opening speakers. The keynote shares with students his/her firsthand knowledge of the theme as related to engineering.

For the Design Project, teams comprised of ten students and one educator are led by a working engineer, the team leader. Teams are challenged to design the future as related to the theme. For example, in 2004, teams were presented with a scenario involving a suspicious truck that they

must locate and isolate. They were tasked with conceptualizing current and future technology that could be used to secure the suspicious truck as presented in a scenario. Teams are given 90 minutes to complete their conceptual design which includes brainstorming, selecting one idea, developing that idea, and preparing to present to the judges. Due to the short time allotted, teams do not actually build anything. The team leader provides a point of reference and engineering perspective as the teams move through brainstorming to idea development. At the conclusion of the design time, teams present their ideas to the judges who evaluate all designs and select the top designs.

The Tech Expo provides students and educators with the opportunity to learn about the latest technology through one-on-one interaction with engineers. Each sponsor exhibits technology related to the theme at a booth staffed with their engineers.

The event culminates with an Awards Ceremony to recognize top student team designs. Awards are designed and presented by sponsoring companies. Award criteria may include teamwork, creativity, feasibility, economical, originality, sustainability, adaptability, visionary, community awareness, dual purpose, and environmentally friendly.

TV Show

The TV show is composed of footage from the live event as well as pre-shot footage. The TV show is student-focused and highlights students engaged in the *Visioneering* activities. The 30-minute TV show is broadcast on Cable Channel One nationwide two times a year to an audience of over 8 million students.

In 2004, the *Visioneering* TV show was awarded a Telly Award. Telly Awards honor top video productions, film productions, programs and commercials.

Live Webcast

The live webcast reaches 100 sites across North America and broadcasts the Opening Rally and Closing Ceremony of the live event. Sites are selected on a first-come, first-serve basis from those promising to use the webcast as a kickoff and closer to their event. An effort is made in insure that each host site reaches a large, diverse audience.

Participants

The live event draws 500 middle school students, 50 educators, and 200+ volunteers. School-based teams register in teams of 10 students and 1 educator. Teams are selected on a first-come basis as space is limited to the first 50 teams. Student team member selection is entirely up to the educators and selection methods range from student sign-up to hand selecting the students. Diversity of the student population reached is insured by the diversity of participating schools, and occurs naturally due to the universal appeal of the event.

In 2004, over 700 people were reached at the live event and over 8 million through the TV show. The live event drew 470 middle school students (grades 6-8), 50 educators, and over 200

corporate volunteers. Students and educators came from 13 Dallas-Fort Worth area public school districts and five private schools. Over half of the students were women and over half were underrepresented minorities. The diversity was a self-selection process among the teams and schools. Volunteers came from the corporate sponsors and SMU volunteers.

Evaluation

Feedback and evaluation of the event are solicited from students, educators, team leaders, judges, and sponsors. Student evaluations are conducted at the live event just prior to the Awards Ceremony. Educator, team leader, judge, and sponsor evaluation forms are emailed in the week following the live event. Following are the evaluation results from the 2004 live event.

Nearly half of the participating students completed the evaluation form. Students were asked to rate the following statements with "Agree", "Sort of", or "Disagree."

Item	**Positive Response Rate***
1. I learned how math and science are used.	98%
2. I used my creativity in the design project.	100%
3. I like working with engineers.	100%
4. I liked visiting company exhibits.	98%
5. I made new friends.	66%
6. I would like to attend *Visioneering* next year.	98%
7. I will tell friends about *Visioneering*.	98%

* A response of "Agree" or "Sort of" was counted as a positive response.

The educator evaluation response rate was 30%. Educators were asked to rate the following items "Excellent," "Good," "Average," "Fair," or "Poor."

Item	**Above Average Response Rate***
1. The value of *Visioneering* 2004 as a learning experience for my students.	100%
2. Pre-event materials.	100%
3. Value of *Visioneering* in linking math, science, engineering, and technology.	100%
4. Logistics – space.	100%
Logistics – Travel around campus.	94%
6. Adult to student ratio.	100%

*A response of Excellent, Good, or Average was counted as an above average response.

100% would like to be invited next year, and of schools subscribing to Channel One, 100% planned to watch the TV show on Cable Channel One on Friday, February 27, 2004.

Team leaders, sponsors, and judges were provided with an evaluation form after the event. Response rates for all groups were greater than 50%. The majority of the evaluation questions

were related to logistical details. However, the greatest indicators of the success of *Visioneering* was their willingness to participate in future events and willingness to recommend *Visioneering* to a friend. Of the team leaders, 96% would like to be a team leader next year, and 100% would recommend *Visioneering* to a colleague. 100% of sponsors would like to be contacted about being a sponsor next year; and 100% would recommend *Visioneering* to a colleague. Of the judges, 94% would like to be a judge next year, and 100% would recommend *Visioneering* to a colleague.

Educators, team leaders, judges, and sponsors provided comments and suggestions on the evaluation forms. Following are some of their comments:

Thank you for a great event. The students had a wonderful time! Educator comment

Engineer mentors were great and fun to work with. Educator comment

I can't begin to describe the energy and joy our students still had upon coming to school Monday. Educator comment

The sponsors, educators, and directors did an outstanding job in making this a child-centered event in which they felt like true engineers. Your enthusiasm to offer the best and give the best to open the doors not only to engineering, but the motivation to attend college. Educator comment

Overall, from the perspective of an industry participant, Visioneering was a great experience. Team Leader comment

I enjoyed participating in Visioneering 2004, it was fun experience. Team Leader comment

Students worked very hard on the project. Judge comment

Thanks for having this event. It is a lot of fun! Judge comment

You did a fabulous job! Sponsor comment

However possible, maintain the media focus that was enjoyed this year. Sponsor comment

Media Coverage

Each year, *Visioneering* draws local and national media coverage. *Visioneering* has been featured on the prime time newscasts of all major television network affiliates in the Dallas-Fort Worth area. In addition, radio spots on local stations have covered the event, and print coverage has included the AP wire, websites (such as PRNewswire, CNN Money, MSN Money, and Lycos Finance), and local newspapers. Each year, *Visioneering* is featured on the National E-Week website.

Expansion

To date, expansion of *Visioneering* has been achieved through the TV show and the webcast, both of which allow students and educators across the U.S. to access the content. Additionally, a teacher's guide that describes classroom activities that complement the TV show and webcast is available at the website. The teacher's guide includes instructions for running a mini-conceptual design contest in individual classrooms and schools. Future plans for expansion include a *Visioneering* television series and live events in multiple cities coordinated by SMU.

Conclusion

Visioneering, a signature National Engineers Week event, has grown from a local live event reaching 250 middle school students to a live local event, national TV show, and live national webcast that reaches over 8 million students across North America. Each year, *Visioneering* is centered around a relevant, interesting topic familiar to people of all ages. The success of *Visioneering* can be attributed to its high-energy atmosphere that presents engineering in a fun atmosphere and allows students to "play engineer for the day." This experience is possible only by bringing together industry, higher education, and K-12 education. Each year, the reach of *Visioneering* is expanded. Current plans call for the incorporation of a television show series that would allow families to explore engineering together.

References

Visioneering Website: www.theinstitute.smu.edu/visioneering.html

Biographical Information

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Dr. Willis is a Director in the School of Engineering at Southern Methodist University where she leads the Gender Parity Initiative and Visioneering. Dr. Willis holds a Ph.D. in food process engineering from Purdue University. Dr. Willis has many television appearances and film performances to her credit, and she is a frequent contributor to books and other publications.