Project descriptions

Teens and Distracted Driving

Sponsored by TADD, Hindsight Group, and Boys & Girls Club of Calgary and Canada

Background: According to the government website for Distracted Driving, the definition of distracted driving is any activity that could divert a person's attention away from the primary task of driving. All distractions endanger driver, passenger, and bystander safety. With more than 300 million wireless subscriptions in America today, and a growing number of devices and services designed to keep people connected constantly, technology is playing an increasing role in enhancing our quality of life. Yet using these technologies while you're behind the wheel can have harmful outcomes.

The U.S. Department of Transportation's National Highway Traffic Safety Administration (NHTSA) estimates that there are at least 3,000 deaths annually from distraction-affected crashes— crashes in which drivers lost focus on the safe control of their vehicles due to manual, visual, or cognitive distraction.1

Studies show that texting simultaneously involves manual, visual, and mental distraction and is among the worst of all driver dis- tractions. Observational surveys show that more than 100,000 drivers are texting at any given daylight moment, and more than 600,000 drivers are holding phones to their ears while driving. Since text messaging requires visual, manual and cognitive attention from the driver, it is by far the most alarming distraction. According to UMTRI, a quarter of teens respond to a text message once or more every time they drive. Twenty percent of teens and 10 percent of parents admit that they have extended, multi-message text conversations while driving. 49 percent of drivers with cell phones under the age of 35 admit to sending and reading text while driving. In addition, 77 percent of young adult drivers are very/somewhat confident that they can safely text while driving. Distracted driving is the number one killer of North American teens. Alcohol-related accidents among teens have dropped, but teenage traffic facilities have remained unchanged because of distracted driving.

The role of the Internet in texting while driving: Technology is the leading cause of teenagers being distracted while driving. Social networking has become such a big part of our lives that it's hard to stay away from it for even seconds. As told by CEO of AAA President, "The new technologies that help us multitask in our everyday lives and increasingly popular social media sites present a hard-to-resist challenge to the typically safe driver." First, there was only one way of texting, which was through your cell phone carrier, but since the smart phones have taken over, we have lot more ways to connect with apps such as Facebook or text free applications and therefore socializing becomes an unintentional priority over our own lives and lives of others.

Technology as a tool to prevent and educate: Since technology both positively and negatively affects texting while driving, it is also being used to address the problem. Solutions mentioned below are used to decrease the accidents caused by texting while driving.

In 2013, one example of location-based technology to detect potential texting while driving situations was announced. This approach utilizes the GPS and Network Location services of Android mobile phones to estimate the speed that the cell phone is travelling at the time text messages are sent. The recommended approach in this case was for parents

install an app on their children's mobile phones to silently monitor texting, send alerts when potential texting while driving situations occur, and counsel phone holders (in this case, teenage drivers) after the fact.

Technology can also help inform drivers and teenagers around the nation about the dangers and outcomes of texting while driving. It can leave the everlasting effect by sharing stories of the survivors and the families of the lost ones. It can have both emotional and mental effect that can decrease the temptation of distraction. Consider these two pages for additional research and awareness campaigns to stop teens from distracted driving to help you in this challenge:

Additional research reports on distracted driving can be found here: http://www.distraction.gov/content/get-the-facts/research.html

There have been public awareness campaigns to try to stop distracted driving: http://www.distraction.gov/content/dot-action/awareness.html

We would like to call on hackers to help us create a mobile application or serious game or social media campaign to increase awareness and stop teens from distracted driving. The key features of the website/application/game can include but not limited to the following:

- Capacity for web-based live chat and reporting
- List of organizations in area that victims and drivers can go for safety, services and protection
- Stories from victim's families and others
- Live facts and resources about distraction while driving
- Innovative features that detour teens from texting while driving

Requirements

- Open to female students worldwide ages 16 and older
- Make an application or mobile application
- Valid platforms include open source, proprietary platforms or Microsoft platforms, examples: iOs, Android, TouchDevelop, or Windows Phone
- All team members (four to five) must be women. The mentor can be any gender.
- Please ensure you meet all the requirements of the official rules and regulations.

Encouraging More Women in STEM

Background: How do women fare in science, technology, engineering and math (STEM) and innovation?

Great gender imbalance exists in science, technology and innovation worldwide, with women's representation low, and sometimes in decline, in both the developed and developing world. The number of women in STEM falls continuously from secondary school to university, laboratories, teaching, policymaking, and decision-making. Available figures show the scope of the challenge:

- Globally, girls start to *self-select out of STEM courses in early secondary school.* (Secretary General Report (SGR), Commission on the Status of Women (CSW), 2011)
- Societal *attitudes and bias hinder girls' participation*. 153 science teachers in a country who were given the same description of a student associated in one case with a boy's name and in the other with a girl's name, 71 percent considered the "boy" a good student but only 20 percent perceived the "girl" to be so. (SGR CSW, 2011) Similar studies have found the same results in a number of countries across the world.

- In *tertiary education* in global averages women dominate in some sub-fields of science—particularly life sciences—but are *underrepresented in computing, engineering and physics at less than 30 percent in most countries*. (Women in Global Science and Technology - WISAT)
- *In R&D, women account for only 29 percent of researchers in public and private sector.* However, this figure includes social sciences and humanities, which skews the figure higher than in non-traditional S&T disciplines. (UNESCO) *Female membership of national academies in science and technology* disciplines is estimated at about *5 percent globally.* (SGR CSW, 2011)
- There are consistently low levels of women in the skilled technology workforce in the private sector, with even fewer females in senior management and as leaders of large companies. *Women represent only 10 to15 percent of high-level managers and decision makers in the ICT sector.* (ITU Bright Future Report)
- The lack of trained female professionals means that *in OECD countries, women now account for less than 20 per cent of ICT specialists.* It also means that most developed countries are forecasting an alarming shortfall in the number of skilled staff to fill upcoming ICT jobs, with up to two million projected globally. (ITU Bright Future Report)
- There still remains *a pronounced wage gap between men and women globally.* The wage gap varies between countries and disciplines but exists nonetheless. *In the United States, at least*, women in technology-related fields, however, fared the best. *Women computer programmers make 93 percent of what men make in the same position* make and on average earn US$1,182 per week. This is very encouraging but there is still much improvement to be made in the technology industry to help women thrive. (The Best Paying Jobs for Women in 2013)
- *Women have on average a 16 percent gap in access to ICTs such as Internet and smartphones* in the majority of *countries* in the world. In some regions this reaches 40 percent. (Broadband Commission Gender Working Group Report, Intel Women and the Web and mWomen Reports)
- *In non-formal STEM*, in their day-to-day lives women innovate, employ local scientific knowledge and technical solutions, yet *women's work is largely invisible and under-valued.*

Why does this matter? There are a multitude of reasons why women's access to and participation in science and technology matters. The following are merely illustrative of what an education, skills development, or career in science and technology provides:

Tools with which to *make sense of the world and make informed decisions* related to critical aspects of their lives, including their health and in an age where many societal debates are linked to the risks and benefits of technological developments, women must be scientifically and technologically literate if they are to participate fully as citizens. (SGR CSW, 2011) Moreover, as more and more interactions go online, women and girls' ability to engage with ICTs can create mechanisms to mobilize, build community, and *advocate for their interests, rights and social transformation*.

Avenues for personal, and national, economic development and as the world economy is increasingly driven by knowledge, countries need a large base of workers and entrepreneurs who can apply technology, as well as scientists and engineers who can carry out further research and development. (SGR CSW, 2011) It is predicted that some 90 percent of formal sector jobs of the future will require ICT skills and as green jobs grow, so too will demand for a solid educational background in science or technology. Developing women's competencies will widen the pool of human resources available to perform these tasks and open opportunities for women to pursue their own productive interests and talents.

Improvements in development outcomes and capacities to improve work in which women are engaged, ranging from productive work and enterprise, to household responsibilities (e.g. education, healthcare, nutrition) to

community management activities. Building their scientific and technical skills can help them to better access, develop and apply relevant knowledge and tools.

However, the science, technology and innovation (STI) needed to support these activities is not readily available, their benefits not equally distributed, nor are women adequately influencing STI/STEM direction and development. It is generally perceived that more women in STI/STEM would help expose a broader range of needs, would shift priorities, and result in greater responsiveness to women's and girls' realities. Given the realities below, this is needed:

- In 25 combined countries, it is estimated that women spend at least 16 million hours fetching water each day per round trip. Women and girls are also the most exposed to water born disease. Yet, they have little say in policymaking and private sectors over how those resources are managed, improved, and investments made in scientific and technological infrastructure and solutions. (MDG Report, 2012, WISAT) Moreover, it is estimated that 2.5 million engineers and technicians will be needed in sub-Saharan Africa alone to achieve improved access to clean water and sanitation. (UNESCO)
- Cooking from indoor pollution from biomass kills more people annually than malaria and tuberculosis combined. It is women and girls that are primarily responsible for these activities. Yet, the share of female employees in the energy industry is estimated at only 20 percent, with most working in nontechnical areas. (WISAT)
- Cars are designed in ways that harm pregnant women and medicines prescribed for men's body types. Would this be different if women were not under-represented in biomedical research, design and engineering? (Reports of UN Expert Group Meeting on Women, Science and Technology)
- In addition, FAO has estimated that equalizing access to productive resources for female farmers—fertilizers, extension, technology and credit—could increase agricultural output in developing countries by 2.5 to 4 percent and result in 100 to 150 million fewer hungry people globally. (WISAT)

What are the causes of inequalities and entry points for making a change?

When looking at improving girls and women's engagement in STEM, holistic approaches are required (including around broader issues related to gender norms and access to education and income) but there are points of intervention where a difference can be made by addressing barriers and taking advantage of opportunities, including the following:

Education: availability of safe, affordable and high quality and hands-on STEM education for girls and young women; hiring women STEM teachers and teacher gender-sensitization training; development of gender-responsive curricula which address learning styles for girls; preparation for STEM tertiary education.

Stereotypes and perceptions: challenging preconceptions that STEM is a male domain and changing self-perceptions, and those of families, teachers and institutions; presenting widespread positive images of girls and women in STEM. Recognizing and valuing of women's contributions, including traditional knowledge, highlighting and telling stories about their work and interests and how they are already interacting with science and technology.

Vocational and informal opportunities: availability of STEM internships, after school activities, clubs and camps; technical training and skill development for re-entry and lifelong learning.

Role models, mentoring, and networking: exposure to girls and women in STEM studies and careers and

relationships with mentors; presenting science and technology as viable and interesting careers, and tied to real life, including real world problems; connecting with like-minded girls and women.

Outreach, recruitment programs and investments: Targeting and incentivizing girls and women to enter STEM studies and careers; Scholarships, R&D grants for women; government and private sector investments in education and training for girls and women.

Career tracks: addressing home life balance, supporting different working styles, workplace recognition campaigns.

Access: access to scientific and technological resources, including ICTs, in day-to-day life and for business.

Strategies and implementation: participatory processes for identifying women's needs and interests in STEM strategies and plans; process for prioritizing application of STEM to women's and societal needs; monitoring of investments and impact.

Data: collection and analysis of gender-disaggregated data on women in STEM access, usage, and participation in these fields.

All of the above must be supported by many partners from government, to academic and research institutions, to the private sector, to civil society. **Deliberate action must be taken to improve girls and women in STEM and innovation.**

Role of technology: There are a number of ways to employ apps and digital platforms to meet these goals. What are the advantages of these tools? They connect, track and monitor, engage and teach, allow for creation of content, are creative, use rich media, can scale, allow for sharing of good practices, and so many other benefits. ICTs are not just enablers, but also fundamental to the issue at hand. There are many sites that encourage more women in STEM if you search the Internet, but they lack "stickiness" to keep young women engaged. Each has its own success, whether in identifying role models, mentoring, STEM learning, but none are connected and few cover women globally.

So we challenge the hacker community to address any or a combination of the many dimensions of getting girls and women in STEM in a way that responds to different types of access to ICTS (mobile, broadband, use of intermediaries) and enables scale and adaptability. (A few example ideas to get you brainstorming: serious game that teaches a young girl all the steps she needs to take, courses to learn so she can go into a STEM field, mobile app that teaches scientific concepts, or mobile app that connects a community of STEM girls to share stories, learning tools, peer mentorship, etc.)

Requirements

- Open to female students, worldwide, ages 16 and older
- Make a website, game, cloud based service, application, or mobile app
- Valid platforms include open source, proprietary platforms or Microsoft platforms, examples: IOs, Android, TouchDevelop, or Windows Phone
- All team members (four-six) must be women. The mentor can be any gender.
- Please review and meet all requirements of the official rules and regulations.