2006-1077: IMAGINING FUTURE TECHNOLOGY THROUGH SEAMLESS MOBILITY

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Imagining Future Technology through Seamless Mobility

Abstract

This article discusses the development, implementation, and evaluation of a company sponsored competition, MOTOFWRD by Motorola, into a course project for engineering graphics technology students that encourages creativity, critical thinking, and imagining future technology. The project involves completing a myriad of activities to engage the students in the process of finding solutions for seamless mobility, where the most innovative technologies can deliver uninterrupted, seamless communications, connectivity and entertainment, as described by Motorola. One of the ten finalists and People's Choice winners of the competition describes his personal involvement with the competition, why he became involved and the experiences he has drawn from the overall project.

Introduction

The field of engineering technology is constantly evolving and ever-changing. As technology advances, so do our curriculums, teaching methods, and typical students. Often our engineering and technology curricula attempts to cover so much material in such a short time that we can overwhelm the student with a myriad of information and tend to lose the creative process and critical thinking development. Our challenge as educators in the graphics field is to keep up with constantly advancing technology and new platforms (PDAs, cell phones, HDTV, etc), yet still inspire our students to combine creative aesthetics with competent technology.

As Richard Felder states in his paper "On Creating Creative Engineers",

> …Our job as engineering educators…should not be merely to impart facts but to prepare students to solve problems. If we are doing our job well, our graduates should be equipped to define problems and devise strategies for attacking them, determine the information they need to implement these strategies, figure out where or how to get the information, and evaluate the implications of their solutions beyond their immediate technical context.
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> If we are to develop and nurture critical and creative problem-solving skills in our students, we must provide periodic opportunities to exercise these skills, a classroom atmosphere that lends itself to such exercises, and recognition and encouragement of those who display talent along these lines.

In an effort to enhance creative thinking, the author discovered a new scholarship competition by Motorola, called MOTOFWRD. The goal of the competition was for students to "imagine the future – a time when the world will leverage the most innovative technologies to deliver uninterrupted, seamless communications, connectivity and entertainment"[1]. The key to the project was seamless mobility, which is "…about creating a new world of uninterrupted access to information, entertainment, communication, and more…The challenge with seamless mobility is getting different technologies to work together. It's not about one operating system or one device. It's about crossing the boundaries of multiple networks, services and products"[1]. As engineering graphics technology students are primarily concerned with how to effectively communicate all types of information visually and graphically, this competition was an ideal way to inspire technology students.

The competition was implemented into a foundations course for computer graphics technology students, CGT 101 Introduction to Computer Graphics Technology, at one of Purdue's Statewide Technology campuses in Kokomo, Indiana. Eighteen students were registered for the course, with the majority being first-year college students. The competition allowed entries into one of six possibly categories: essay or white paper (non-fiction); short story (fiction); short film; animation; comic strip; digital art (graphics, photos, and schematics). Students were allowed to choose their own category for submission, based on their current expertise and where they felt they could best disseminate their concept/idea.

Additionally, Andrew Davidson, a first year graduate student in the College of Technology at Purdue University, submitted a winning entry to the competition on his own accord. With an undergraduate degree in psychology, Davidson felt he could bring something unique to the competition by combining his technical, cognitive psychology, and social experiences into an idea that could ease people's fears about new technologies by demonstrating the seamless integration and control they will have over it.

Research and Methodology

Prior to the final submission, the students in the CGT 101 Introduction to Computer Graphics Technology class were guided through a multitude of assignments to examine the history and future of computer graphics, their own personal forms of communication today, and the future as envisioned by filmmakers, both past and present.

The first step was to examine the history of computer graphics, which was done through a video produced for ACM-SIGGRAPH titled "The Story of Computer Graphics"[2]. The video covers the development of computer graphics from an obscure topic of research to its widely accepted role as an important communication tool [2]. Students were then asked to write a four page argumentative paper on the future of visual communication. The paper was to detail where they personally think the future of computer graphics lies. Concepts to consider included: will the field of computer graphics grow or become further specialized; who or what will decide the direction of the future – companies, individuals, products, countries, people; how far away is your definition of future – five, ten, twenty years; what trends will help direct / sway the future of visual communication.

A "Personal Timeline Analysis" was then assigned to the students where they detailed a twenty four hour period in their weekly schedule. Students were required to make note of times, locations, tasks/activities, parties involved, and forms of communication used for the twenty-four hour period. By assessing their own needs, they were able to start figuring out ways to make their day to-day tasks more seamless. Students were to complete questions at the end of the exercise to analyze their personal timeline. Questions included:

- Does the twenty-four hour period adequately reflect your daily schedule on a normal day? Does your schedule vary significantly from day-to-day?
- Which tasks did you complete that you find most tedious/monotonous/boring?
- What part of your day do you enjoy the most?
- Do you multitask? If yes, is it difficult? Why? If not, why not? (lack of concentration, lack of resources, etc.)

- How do you think you could make your daily tasks easier/more efficient/more enjoyable?

The next step in the process was to spark the students' imaginations by examining how Hollywood has envisioned our future, both in the past and present. In the "Back to the Future" exercise, students were asked to find a feature film that depicted the "future" between 1985 and 2005. They then analyzed what kind of innovations and technologies were shown in our current time and whether or not such inventions were feasible.

Following the "Back to the Future" assignment, students did a design analysis on feature films depicting the "future" beyond 2005. The objective was to evaluate the design of three different futuristic communication systems/tools as portrayed in a film taking place in the future. Students were to analyze a computer system, a telephone system, a vehicle system based on visual aesthetics and functionality. Written analyses were to consider the film and the time period depicted in the film; the intended users of the systems; if the system is functional and feasible in today's world.

After completing the above assignments, the students created their final submission for the Seamless Mobility competition based on their personal research. Projects had a range of subjects, from ideas of cell phones that contained your temperature preference in a given room, to smart vehicles that navigated travel routes based upon traffic patterns. One student imagined a cell phone that you could speak your grocery list into and the phone would search a database with current price comparisons of area stores. Many students imagined a phone that could carry all their personal information on, including email, music preferences, movie times, video games, and even homework.

Results and Findings

The project was introduced to the CGT 101 students in September 2005, and final entries were due in November. This gave the students a time span of only about three months to complete all above mentioned exercises and develop their final solution. Majority of the students in the course submitted an entry to the short story category, where their solution was described through a fictional account of the products they envisioned. Because this course was a freshman-level foundation course, most students did not feel comfortable entering a more graphically-based division, as their computer graphics knowledge was minimal at this point in their college career. Future implementation of this project would most likely dictate that students submit a graphically-driven submission to utilize their engineering graphic design skills.

Andrew Davidson, the graduate student who entered the competition on his own, was inspired by the concept that a person's interaction with technology ultimately leads to its success or failure. He took everyday moments where he asked "Wouldn't it be nice if my (insert device) could do this?" He then took those ideas a step further by integrating everything into one unified system. Davidson created a textual-video demonstrating this system in order to guide viewers with sounds and words while leaving imagery to the individual. This provided an opening into which a person's imagination could continue to explore the area and ultimately lead them to open their minds to the possibilities that seamless mobility has to offer.

Conclusions and Further Implications

The goal of the entire project was not to focus on the competition aspect and winning, but to encourage the students to think about how technology will change our lives. As the field of engineering graphics is based on the practice of visual communication, the purpose of the project was to push students, as future leaders of tomorrow, to imagine and design a world where technology knows no boundaries. As Gary Bertoline and Eric Wiebe state in their book The Fundamentals of Graphics Communication, "Those who will succeed in the future will be those who successfully integrate outstanding technologies with a usable human interface and compelling design. These factors combine to create the intangible positive emotion which transcends mere form, material, or features and makes a visceral connection with the user."[3]

Bibliography

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