

## **Development of Personal Wireless Devices in Teaching and Learning**

**Gary Marrer**

Glendale Community College

Business and Information Technology Department

### **Sabbatical Abstract**

Given the explosion in the use of personal wireless devices, research is needed to investigate and develop software technologies that utilize cell phones, MP3 players and PDA's (personal digital assistants) for student learning.

There is a need to develop techniques and software tools that will facilitate the design of web page content (i.e. syllabi, documents, audio and video content) that can be displayed on small screen mobile devices as easily as personal computer screens. The challenge is to develop small screen design processes that will be as easy as authoring web page content for a personal computer display.

This project will continue previous research I had performed on small screen devices by providing a blog that will follow my sabbatical progress and a web site that will summarize this research and provide a platform to share techniques using this technology in the classroom.

### **Purpose of Project**

#### **Goal**

To facilitate the use of personal wireless technologies in student learning by providing resources and software tools that will promote its efficient and effective use by faculty and students.

#### **Objectives**

The purpose of this project is to (1) survey and collect existing technology processes and products that will enable learning to take place on small mobile wireless devices, (2) look into the future of small wireless devices and determine impacts on faculty and students (3) document existing tools and techniques (via the blog and web site) and (4) provide a forum (via a sabbatical web site) for educators to share experiences using this technology for learning.

### **Personal Qualifications**

I have been an active participant in technology and learning in my classes, on my campus and in district forums. I have taught on-line for more than 10 years; I have developed three hybrid classes and one on line class. I have been the CTC Chair on my campus and I am currently a faculty representative on the GCC Presidents Technology Assessment Team (PTAT). I have been a member of the MCLI Ocotillo Committee for several years. I have created technology presentations for faculty on my campus and for

District staff via my role in Ocotillo. I am a CIS faculty member with over 20 years of experience in software development. I maintain several web sites and am currently using both BlackBoard and WebCT for CIS classes. I maintain blogs on programming and a variety of other topics. I have been awarded a variety of Carl Perkins grants on implementing technology in occupational learning and a Learning Grant on problem based learning.

### **Execution of Sabbatical**

#### ***Pre-Planning:***

I have traditionally played the role of pioneer in implementing technology in the classroom. I have been an early adopter evaluating new learning technologies and sharing that knowledge via GCC campus technology groups and across the District via Ocotillo. This sabbatical is a continuation of a discussion I started last year at GCC and at Ocotillo to take advantage of an underutilized resource. The resource being the cell phone which almost all of our students possess and which is fundamentally is a wireless computer in their backpack. Last year, I created a presentation to assist GCC faculty in creating a single set of web pages that could be rendered on a large or small screen with the same readability. The project created some interest but more research is needed to cultivate the technology so that faculty with average web authoring skills can create above average opportunities for students to view course resources.

#### ***Sabbatical Deliverables:***

##### ***Primary:***

1. Sabbatical Blog
2. Sabbatical Web Site

##### ***Secondary:***

1. Small Screen Content Designer Application

#### ***Sabbatical Activities:***

##### ***Phase One: Survey Existing Technology***

- Explore improvements with Cascading Style Sheets that promote the display of media on mobile devices (and small screens).
- Investigate the technology incorporated in the Opera Browser for small screen web page display.
- Create and document on the sabbatical web site five examples of how personal wireless devices can be used for learning with existing technology. These examples will be available on my sabbatical web site and include web pages, video, audio, wiki's, podcasting and blogging.

- Document experience via sabbatical blog and document relevant web links in a web site created for the sabbatical.

### ***Phase Two: Futures of Personal Wireless Technology***

- Meet with local network providers to document the trends in mobile and personal wireless technology and how those trends will support new learning technologies like YouTube, Second Life and social networking products.
- Survey hardware and software trends with Internet research, interviews and attendance at relevant conferences.
- Identify and document five scenarios of what may be possible with personal wireless devices within a five year time frame. These examples will be available on my sabbatical web site.
- Document experience via sabbatical blog and document relevant web links in a web site created for the sabbatical.

### ***Phase Three: Wrap-up - Creating a Dialog***

- Enable sabbatical web site to include a discussion and collaboration component that will encourage MCCCCD Staff and other educators to share successes and failures of this technology.

### ***On-Going***

- Develop a tool which builds on research I started last year that will act as a tool to aid faculty in the creation of web pages that will automatically scale the web page to the display.

### ***Sabbatical Timeline***

- **Sabbatical Setup (August 2008)**
  - Select blog site with RSS support
  - Enable web site location
  - Plan web site design
- **Documentation and Findings (August – December 2008)**
  - Weekly Blog updates
  - Weekly Web site updates from Blog and Development
- **Phase One (August –October 2008)**
  - Research and Planning
    - Survey electronic resources (small screen technology)
    - Survey print resources (small screen technology)
    - Search for conference workshop opportunities (small screen technology)
    - Research mobile style topics with Cascading Style Sheets
    - Research Opera small screen rendering support
  - Design
    - Select best of breed technologies for 5 case studies

- Determine if additional tools need to be developed
  - Development
    - Create five working examples of small screen technology
    - Development of software tools (if necessary)
    - Enable examples on Sabbatical Web Site
- **Phase Two (October – December 2008)**
  - Research and Planning
    - Survey small screen technology futures
    - Meet with personal wireless device vendors in Phoenix area
    - Search for conference workshop opportunities (small screen technology)
  - Design
    - Design five future feasible small screen technologies research with vendors
    - Describe the design development for web content five years out
  - Development
    - Create five working examples of future small screen technology
    - Document five futures examples on Sabbatical Web Site
- **Wrap up (December 2008)**
  - Finalize documentation on Web site
  - Setup of web site discussion forum
  - Prepare PowerPoint presentation for web site and interested parties
  - Sabbatical final report

### **Expected Outcomes**

My hope is that the culmination of this sabbatical will create a dialog across the district on how to effectively use personal wireless device technology for teaching and learning. The benefit will be to both students and faculty. Any software tools I can develop will only help adoption and use of personal wireless devices.

### ***Expected Professional Growth***

Professionally, this will allow me to gain experience in an area of new technology and the software development work I will need to perform, will be used in my classes where I teach web development. It will also allow me to take my skills in technology and provide them to others who may not have the same expertise but have students, who would benefit by this research,

### ***Significant professional impact to students, department, college, district and community***

The impact is on the students first and faculty second. Access to class resources is an important benefit to learning. More access is better than less access even if the access is on a small screen versus a PC display. The technology needed (mobile devices) is commonly available and very much underutilized in learning.

As is the case for many faculty members, new technology is understood better by the students than by the faculty. This sabbatical will make an attempt to help faculty “catch up” and develop this technology

for use in their courses. In most cases, faculty will not have to have a deep understanding of the technology but instead understand how to use easy to use software tools to enable it.

***Why Fund?***

At Maricopa, we have a tradition of promoting the effective use of technology in student learning. Whether it is hybrid and on-line courses or pod casts and wiki's, this is just another case of a technology that needs cultivation for student learning.