# CLASSROOM 2.0: TEACHING INNOVATION OR GIMMICK

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## INTRODUCTION

Those of us who have been teaching for many years are at a threshold of new era in higher education. The infusion of technology in every aspect of our students' young lives has produced new challenges for many faculty members. The fact that information can be instantly acquired from a multitude of sources, and with relative ease, has made it even more difficult to continue with traditional methods of teaching. One of the main challenges is to what extent should we incorporate the internet tools and applications into our courses. What is meant here is not simply using the internet as a research tool and/or creating web-based course material, rather using the internet's Web 2.0 features such as RSS, Wiki, Podcast, Twitter, Blogs, You Tube and alike as a means to deliver course material and to get students actively engaged. Obviously, how such tools are utilized would depend not only on the particular discipline but the level of instructors' understanding of such tools. I have selected my Information Systems course in which to implement these tools primarily because it is naturally more conducive to using innovative technologies, and also because students' can readily access computers in lab and school's network.

The question is therefore twofold; first to what extent should these new tools become a part of delivery of material; and more importantly how effective would these methods be as compared to traditional methods of instruction delivery. In other words, would using such techniques be a true innovation in the classroom or is it simply another gimmick. In addition, it would be interesting to observe the extent to which students would reject or embrace such methodologies.

### Experiment Design

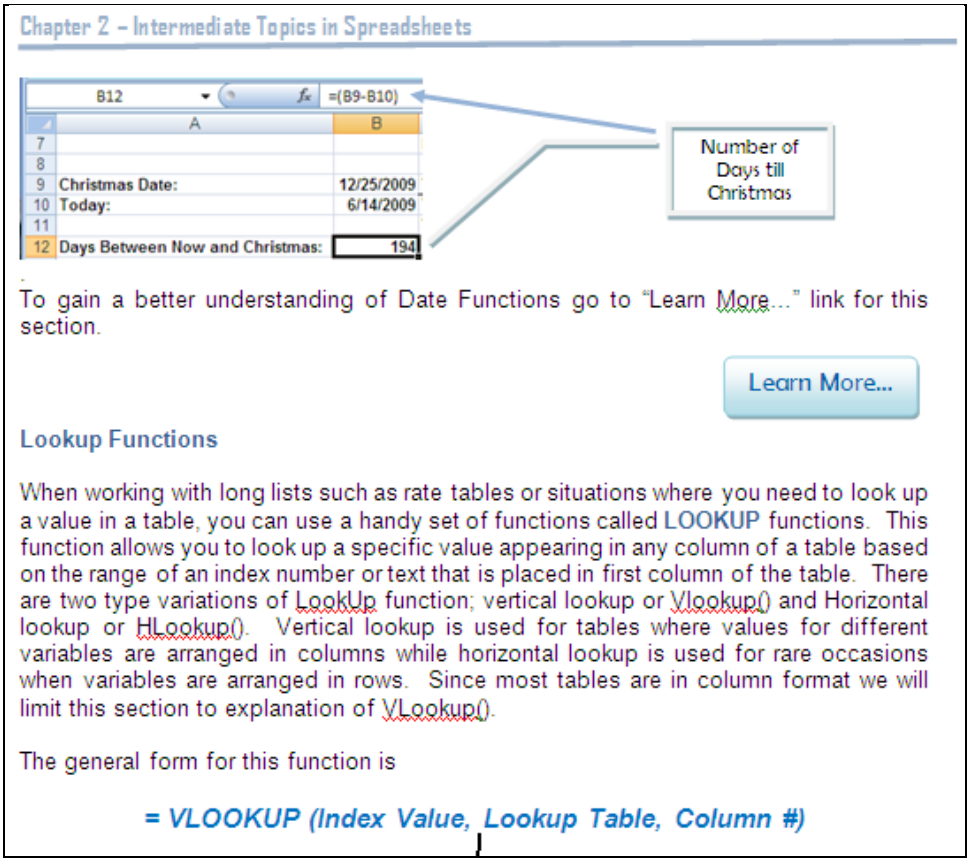
To answer these questions, I have developed an experimental course in which many of the aforementioned tools are utilized. For this, the course material and lesson plans for an existing course has been redesigned to incorporate several internet-based tools. The course will be taught during summer 2009 session and results are reported in this paper in the Observations and Recommendations section. To set up such a course several factors were taken into account. These include:

- Course Content
- Communications Methods
- Collaboration

- Evaluation and Outcomes Assessment
- IT Access and Support

**Course Content**

One of the main reasons for this experiment was to see if we can eliminate the textbook for the entire or at least part of the course. The idea here is to let students develop the course material. This especially important for IS courses were textbook material becomes quickly outdated. The attempt was made to make part of the course material available in digital form and have students collaborate on other material. Therefore reading material came from two sources. Since a portion of the course deals with hands-on microcomputer applications, the original intent was to use my existing set of notes make them available in PDF format. Unfortunately, I could not update and modify them in time for the summer course and had to use the textbooks that I had picked for the course. I intend to make them available for the fall term. In addition to the regular content, the notes contain a series of links that will be interwoven into the document and will point the student to the appropriate websites and/or RSS feeds. The following shows an example for portion one of these documents with embedded link.



These documents would be available on BlackBoard or other internet-based sources such as Google Reader. All students will be required to create an account on Google in order to have access to all Google tools.

The second part of the course material covers the Information Systems Concepts or what I call the nuts and bolts of computing. In past, a textbook was assigned as reading material for this portion but it became progressively more difficult to keep up with the newer technologies as these text where at least one to two years behind the curve. This presented an opportunity to see if the content can be kept fresh and be generated through existing web-based sources. To accomplish this, a series of Wiki topics were started. These would usually contain several images and a brief description of the topic. The following is an example of one of these wikis.


As a part their assignments, students were asked to provide additional information about the topic by adding to the wiki's content through comments. Part of the assignment grade was the extent to which each student contributed to the topic. This was made possible through the use of Wiki Tool available on BlackBoard. This tool allows for version control and can be set up so that students are able to add to the content but not be able to delete the comments. It was set up for a specific timeframe providing a built-in deadline for assignments an each comment was automatically date stamped. To make sure that students did not receive credit after the deadline,

a copy of each wiki was made. This particular wiki received 7 comments that are presented in the Appendix A.

There were 10 wikis for the course and following image shows how they appear on Wiki Tool. Note that the "Processing Hardware" wiki was selected.


At the beginning students were a bit confused about what was actually required but quickly caught on. For example, one criterion for adding comments to wikis was not to repeat what others have already contributed so the earlier a student contributed the easier the assignment would be. Unfortunately, for the first assignment, a student answered all the questions in the wiki and left nothing for other students to contribute. Just to make it more interesting, after all students made comments on the wiki they were quizzed on the content. This created an unintended consequence for both instructor and students. Students soon realized that to get better grade, they needed to make their comment more substantive. This, however, created more material for quizzes as the comments accumulated. Students eventually started tempering their comments and do less copying and pasting. The instructor faced a similar dilemma. On one hand, it was good to get students involved but at the same time, on occasions, the amount of material become unbearable.

Wikis were managed by the instructor throughout the semester and simple stats were available easily. The following show the portion of BlackBoard's Wiki Tool that allows for updating the wiki and keeping track of comments.

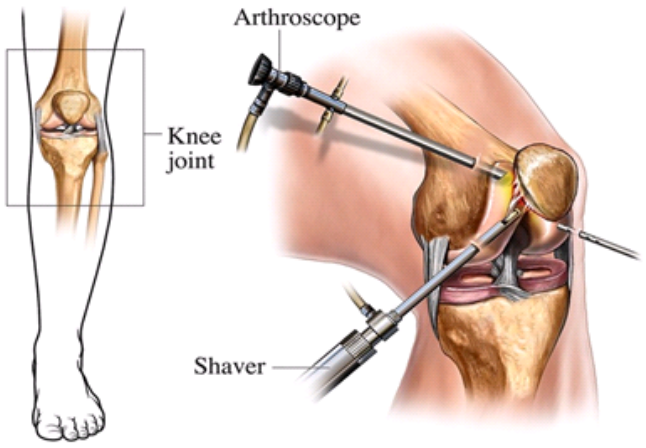

In addition to contributing to wikis, each student had to start and maintain a blog throughout the term. To research topic was left to students but all had to focus on the impact of technology on our lives. Students are asked to provide information including images, video and audio files about the particular topic. The image in the following page shows a portion of one of the student's blog.

At the end of the course, the blog information was consolidated into a research paper and an eight minute presentation. One difference between this method and traditional paper assignments was that other students could comment on the blogs and could help their fellow students with reference sources and relevant information. BlackBoad Blog Tool allows for keeping track of comments was set up to keep comments from being deleted. This only happened in one occasion as the students were pressed for time

**Impact of Technology on Surgery** (permalink) -edithistorydelete
Created on Friday, 07/10/2009 1:45 PM by Gregory Cooper
Updated on Wednesday, 07/15/2009 5:23 PM by Gregory Cooper

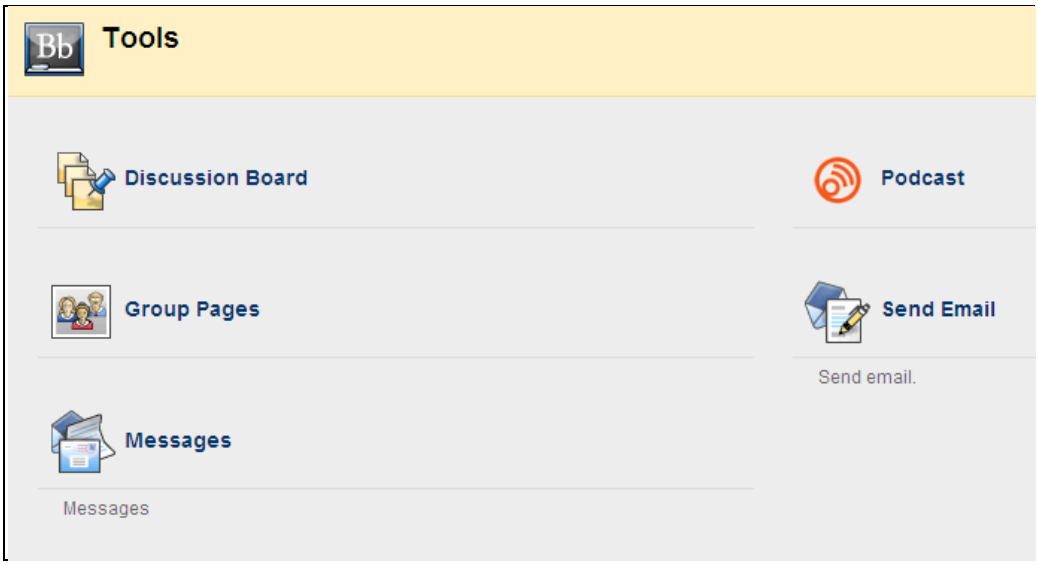
**Arthroscopic Surgery**

During my senior year of high school I tore my anterior cruciate ligament (ACL) in my knee playing basketball. This injury requires a complex surgery in which the ligament is reconstructed. Many years ago, to fix this injury the surgeons had to cut apart the entire knee to be able to see inside the joint. This left massive scars and lead to many possible complications. Today, after having my surgery a few years ago, I only have one small incision scar and two port hole scars to show for it. Due to technological advances, ACL reconstruction can be done through arthroscopic surgery. Arthroscopic surgery is a minimally invasive surgical procedure in which an examination and sometimes treatment of damage of the interior of a joint is performed using an arthroscope, a type of endoscope that is inserted into the joint through a small incision. This allows the surgeons to see inside the joint as displayed on a video monitor, and make the necessary medical procedures to the ligament. This procedure allows for alot quicker recovery time and leaves less room for errors or complications. After my surgery I was off crutches in a matter of a few weeks and no complications arose.



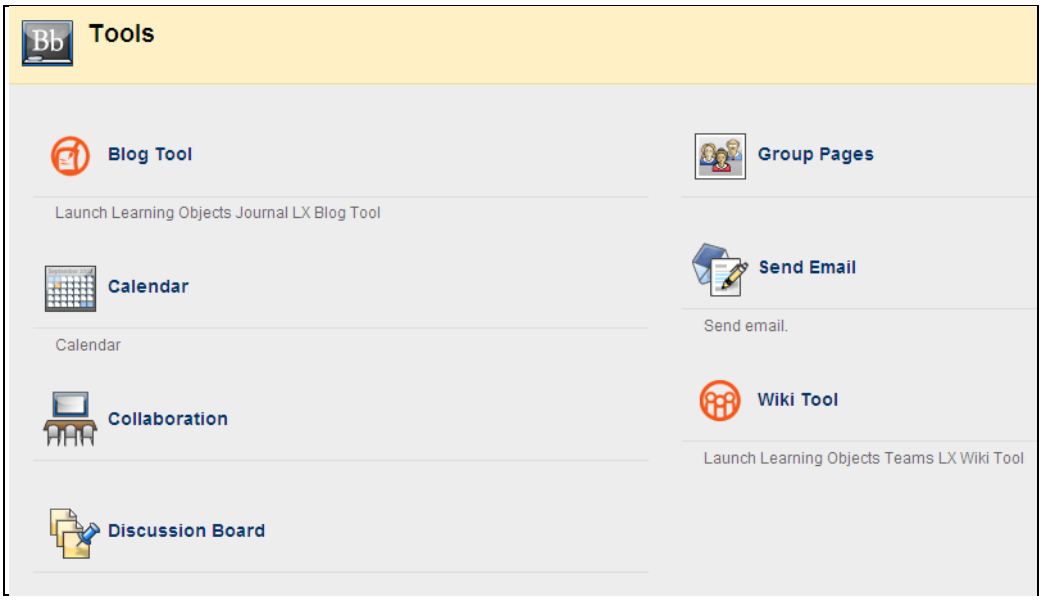

## Communication Methods

Since the course relates to information technology, classes usually met in the PC lab. This allowed students to have an opportunity to work on their assignments under instructor's supervision. In the next iteration of this course, I intend to use several other ways to communicate with the students such as BlackBoard's Collaboration Session and Discussion Board. I am also working on several short lecture audio recordings that can be Podcasted and downloaded to any cell phone or MP3 player. For example, syllabus and course outline information and some of the course requirements will be available as an audio file. I also maintain FaceBook and Twitter accounts but have not decided how to incorporate them in this course. The following image shows BlackBoard's communication tools that were (will be) utilized in the course.




**Collaboration**

The course was designed to make collaborative efforts easier for students. The fact that students could comment on each other's work and contribute to their fellow students' research creates a new paradigm for collaborative learning. Also, there are two group projects in which students were required to work in teams. BlackBoard allows for setting up Group Pages in which students can exchange files and work on the projects. For real-time collaboration students are encouraged to use Collaboration Session on BlackBoard or use free online programs such as Google's Knol and Orkut. Following image shows some of the collaborations tools that are available to students.



**Evaluation and Outcomes Assessment**

It was anticipated that this part of the course to be most challenging. This turned out to be easier than anticipated. One fear was that the collaborative nature of the course and cross-pollination in research efforts and team projects would create communal effect when grading assignments. This did not happen as students were too busy with their own material to help others. Also, there was enough variation in comments that very few if any of them repeated the same material. One difficulty was trying to quantify students' contribution to Wiki pages and Blogs. This was accomplished by comparing comments and assigning points based on amount of contribution, quality of what was added to wiki and how recent was the information provided. Tests and quizzes were used as usual to measure of students' comprehension of material. Quizzes were administered using BlackBoard's Test Manager. One of the objectives of this experiment was to see whether or not these methods are effective as compared to the traditional techniques. This was done by comparing student grades for this course with those of the similar course taught last summer. The average grades for this course was 5% higher than that of a similar course last year. The quiz average that tested students knowledge of wikis was actually 7% lower than last year's. This was probably because they had to read more material. Students, however, did not mind not having a text and most managed to get the information they needed from online sources.

**IT Access and Support**

This course has always been taught in a computer lab so students have always had a hands-on experience. What makes this new approach different is that students are now required to contribute to the course content and aid each other's learning. They can also access course material through multiple media and at any time. The institution has provided a very effective IT infrastructure for doing this and has encouraged faculty to utilize new technologies in the classroom. I am a member of a group of faculty who is selected to investigate the use of touch PDAs for instructional technologies. I intend to use this opportunity to get feedback from other group members on the most effective ways to utilize mobile devices in higher education.

**Expected Outcomes**

The purpose of this experiment was to establish whether or not the new internet-based technologies can enhance or replace the traditional teaching methods. Four basic outcomes were expected:

1. Students will embrace this method and the course will be popular.

This actually happened for two reasons. First it was a very unique way of engaging them in the course and to get them to contribute. The other reason was that students invariably appreciate going on line and searching for relevant information. They also appreciated seeing other students' contributions and comparing them with their own contribution.

2. Students will learn about and will become proficient in utilize new information system technologies.

   This happened to a certain extent. Students did not have any difficulty accessing and adding to the course content but it is not clear whether or not they learned how it works or they will continue utilizing the technologies outside the class.

3. Students will gain a deeper understanding of information systems through collaboration.

   If this happened, it surly was not apparent. The collaboration efforts were kept to a minimum and students did not seem to have time to help each other. This could be a function of teaching the course during summer term. The course was condensed and met every day. One notable item here is the fact that students tended to find highly up-to-date material and in that respect you may claim that they gained a better understanding of information system.

4. These methods would be more effective than traditional instructional methods in students' comprehension of course material.

   I based my comparison on two areas; one was how students performed in quizzes and assignments and the other was on their research project. This is a highly unscientific way of assessing the effectiveness of the new methods since many other factors could have contributed to grade fluctuation. However, it does provide a preliminary indication of the impact of the new methodology on student learning. As was mentioned before, students' grades in quizzes decline by 7% while the grade for the projects increased by 19% compared to similar class last year. The average grade for the course increased by 5% compared to last year's class.

   The better indication was how good the research topics were and the quality of blogs. I noticed that students were a bit more diligent in their research and in writing things up as they go. This was mainly due to the fact that all blogs were public and instructor and other students could see each others' progress.

**Observations and Recommendations**

Even though this experiment was limited in nature, few observations were made. These include the following:

1. The time commitment for setting up the course by far exceeded my expectations.
2. At the beginning of the course, the new approach was a bit confusing for students.
3. Students seemed to enjoy playing with some new tools.
4. Collaborative efforts were non-existent.
5. Students let wiki contribution and blog entries drift and rush to complete them at the last minute.
6. The number of wiki entries grew rapidly even though the class size was small.
7. Quality of research papers and presentation increased dramatically.

Based on these observations, the following recommendations can be made:

1. Allow ample time for course design.
2. Get familiar with all Web 2.0 tools prior to start of the course.
3. The requirements and expectations have to be clarified early in the semester.
4. Tight timelines are required to keep student on task.
5. The amount of material generated has to be managed.
6. Create situations that forces students to collaborate on projects.
7. Must be careful with larger classes since the wiki entries can get out of and quickly.

# Appendix A – Comments on Wiki #5: Processing Hardware

Comments (8)

The mother board is the main circuit board inside your PC. Every components at some point communicates through the motherboard, either by directly plugging into it or by communicating through one of the motherboards ports. The motherboard is one big communication highway. Its purpose inside your PC is to provide a platform for all the other components and peripherals to talk to each other. The motherboard contains many connections for all type of components. Motherboards contain expansion slots such as the ISA, PCI, AGP and DIMM sockets. It also contains external connections for your onboard sound card, USB ports, Serial and Parallel ports, PS/2 ports for your keyboard and mouse as well as network and Firewire connections. So the motherboard has a massive part to play in the workings of your PC. Components that you buy all rely on the motherboard to have the correct connections are available and working. Its best to buy a decent motherboard especially if you plan on buying extra's in the future.
http://www.pantherproducts.co.uk/Articles/What_is/What_is_Motherboard.shtml This website also explains the types of motherboards, what to look for when buying a motherboard, measuring the speed of a motherboard, and the motherboard chipset.

Monday, 07/06/2009 2:22 PM by Jillian Fiumara | Delete

**Random-access memory** (usually known by its acronym, **RAM**) is a form of computer data storage. Today, it takes the form of integrated circuits that allow stored data to be accessed in any order (i.e., at *random*). The word *random* thus refers to the fact that any piece of data can be returned in a constant time, regardless of its physical location and whether or not it is related to the previous piece of data.[1]

http://en.wikipedia.org/wiki/Random-access_memory

Tuesday, 07/07/2009 12:47 PM by Cynthia Garman | Delete

**Power supply**- A power supply is a hardware component that supplies power to an electrical device. It receives power from an electrical outlet and converts the current from AC (alternating current) to DC (direct current), which is what the computer requires. It also regulates the voltage to an adequate amount, which allows the computer to run smoothly without overheating. The power supply an integral part of any computer and must function correctly for the rest of the components to work.

Tuesday, 07/07/2009 3:54 PM by Michael Rouhana | Delete

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Tuesday, 07/07/2009 3:54 PM by Michael Rouhana | Delete

**Complementary metal–oxide–semiconductor** (**CMOS**, is a technology for making integrated circuits. CMOS technology is used in microprocessors, microcontrollers, static RAM, and other digital logic circuits. Two important characteristics of CMOS devices are high noise immunity and low static power consumption. The main function of CMOS is to store BIOS memory and keep the system time.
Wednesday, 07/08/2009 10:21 AM by James Saunders | Delete

Abbreviation for *central processing unit* , and pronounced as separate letters. The CPU is the brains of the computer . Sometimes referred to simply as the *central processor* ,but more commonly called *processor*, the CPU is where most calculations take place. In terms of computing power, the CPU is the most important element of a computer system .

On large machines, CPUs require one or more printed circuit boards. On personal computers and small workstations, the CPU is housed in a single chip called a *microprocessor*. Since the 1970's the microprocessor class of CPUs has almost completely overtaken all other CPU implementations.

The CPU itself is an internal component of the computer. Modern CPUs are small and square and contain multiple metallic connectors or pins on the underside. The CPU is inserted directly into a CPU socket, pin side down, on the motherboard. Each motherboard will support only a specific type or range of CPU so you must check the motherboard manufacturer's specifications before attempting to replace or upgrade a CPU. Modern CPUs also have an attached heat sink and small fan that go directly on top of the CPU to help dissipate heat.

http://isp.webopedia.com/TERM/C/CPU.html

Wednesday, 07/08/2009 10:22 AM by Gregory Cooper | Delete

A chipset or "PCIset" is a group of microcircuits that orchestrate the flow of data to and from key components of a PC. This includes the CPU itself, the main memory, the secondary cache and any devices situated on the ISA and PCI buses. The chipset also controls data flow to and from hard disks, and other devices connected to the IDE channels. While new microprocessor technologies and speed improvements tend to receive all the attention, chipset innovations are, in fact, equally important. The following charts the evolution of the Intel chipsets over the years.

Chipsets Menu

- >> CHIPSETS
- Intel Triton Chipsets
- Intel 440 Chipsets
- 810 AGPset
- Intel 820 Chipset
- 815 chipset
- 850 chipset
- i845 chipset
- Intel E7205 Chipset
- Intel 875P chipset
- Intel 865 chipset
- Intel 925X PCI Express Chipset
- Intel 915 Express chipsets
- Intel 945 Express chipsets
- Intel 955X Express chipset
- Intel 965 Express chipset
- Intel 915P to P965 Chipset Comparison Chart

http://www.pctechguide.com/13Chipsets.htm

Wednesday, 07/08/2009 8:33 PM by Patrick Guzi | Delete

## Super I/O Controller Functions

The Super I/O controller is a single chip that, much like the system chipset, performs many functions that used to take several pieces of hardware in the past. This standardizes and simplifies the design, and thus reduces cost. The Super I/O chip typically is responsible for controlling the slower-speed, mundane peripherals found in every PC. Since these devices have been mostly standardized, they are virtually the same on every PC and it is easier to integrate these into a commodity chip instead of worrying about them for each motherboard design.

The major functions of the Super I/O controller chip are:

- **Serial Port Control:** The Super I/O chip controls the serial ports and includes the UARTs that make the ports function. Almost all modern chips provide the high-performance 16550A UART, which includes a 16-byte FIFO buffer.
- **Parallel Port Control:** The Super I/O chip provides the circuitry to drive the parallel port. This includes support for the newer parallel port types such as EPP and ECP.
- **Floppy Disk Drive Control:** Support for floppy disk drives is provided by the super I/O chip. Newer models support the higher 1.0 MB/sec transfer rate, and provide support for 2.88 MB floppy drives, although these never did catch on. Floppy-based tape drives also use the same interface; see here for more on the floppy controller and floppy interface.

Newer PCs sometimes integrate the functions even more, and include in the Super I/O chip not only the functions above but also the real-time clock, keyboard controller, and in some cases even the IDE hard disk controllers. It is far more common to find IDE controllers implement through the system chipset, however, especially in newer systems.

National Semiconductor makes a large number of these chips, and they can sometimes be identified by looking for their name or logo on the surface of the chip.

**Note:** On older PCs there is no super I/O controller chip; the interfaces to the serial and parallel ports, and the floppy disk drives, are provided by an I/O controller card (which often also controlled the hard disk drives).

http://www.pcguide.com/ref/mbsys/chip/super.htm

Thursday, 07/09/2009 9:21 AM by William Bolling | Delete

**Unicode** is a computing industry standard allowing computers to consistently represent and manipulate text expressed in most of the world's writing systems. Developed in tandem with the Universal Character Set standard and published in book form as *The Unicode Standard*, Unicode consists of a repertoire of more than 100,000 characters, a set of code charts for visual reference, an encoding methodology and set of standard character encodings, an enumeration of character properties such as upper and lower case, a set of reference data computer files, and a number of related items, such as character properties, rules for normalization, decomposition, collation, rendering and bidirectional display order (for the correct display of text containing both right-to-left scripts, such as Arabic or Hebrew, and left-to-right scripts).[1]

The Unicode Consortium, the non-profit organization that coordinates Unicode's development, has the ambitious goal of eventually replacing existing character encoding schemes with Unicode and its standard Unicode Transformation Format (UTF) schemes, as many of the existing schemes are limited in size and scope and are incompatible with multilingual environments.

Thursday, 07/09/2009 10:54 AM by Christopher Kaczmarsky | Delete