

# Using Internet technologies to link students

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## ***Why?***

To begin, we must think in terms of the purposes behind connecting students. Often we fall into a mindset that was handed to us since the time of Newton, and bolstered in the era of industrialization. The prevailing model for education is much like the work of a factory. In other words, to teach science we must lecture science in front of students. To teach history, we must recite history in front of students.

Many of the modern learning theories are based upon the work of Vygotsky. His writings about development through scaffolding appear novel. They in many ways echo parts of Maslow, Dewey, and Piaget. The important issues to remember are that students grow from their current position in intellectual development to higher levels of understanding. This development occurs in different fields and across fields. The typical example being the dependence upon math to understand certain scientific concepts.

Connecting students can help students at one level assist other students to achieve that level. Students even across geographic regions speak to each other in ways that adults must work hard to comprehend. For example, try to understand the singer in most music a teenager listens to... for an adult, it is difficult to understand, but the student gets it. Simply put, linking students can help to communicate ideas to them. At the same time, students can use each other's learning to grow themselves.

Additionally, we know that learning requires a connectedness. Often the issues being presented in a class are so far removed from certain geographic regions that the student does not feel connected to them. By tying together classes from different regions the students can have a vicarious connection to the issue at hand. At the same time, this interaction can help dissolve some of the geographic isolationism imposed by the reality of the distances.

The final advantage (and the one the school board and plant manager can buy) is that certain concepts cannot be demonstrated properly without perspectives from different geographic regions. For example, an agrarian community does not have the innate ability to demonstrate an industrial community to students. But other locations do have this ability. Students in the south can learn from the experiences of the students in a northern city. A student in Arizona could discuss snow with a student in the Northeast.

Altogether, there are many benefits if the educator just steps outside the box that has been built around them since the 1920's. Sometimes the box is the schoolhouse itself. At other times the box is the structure of learning that we often use without questioning.

## ***A few good reasons to share***

Let us begin with a few sample activities that have much more power when performed linked between schools. Each activity will be described as to purpose and what the students need to do.

- 1 Measure the angle of the sun

The purpose is for the students to develop an understanding of the rotation of the earth and the reality of the round shape. Additionally, the concept of time zones will become obvious to them.

Students in different time zones will be asked to measure the angle of the sun to the horizon at two points during the day. First they will be expected to measure (using systems shown in most earth science text books) the angle at non local time. It is best if the students do this on a Monday and review the data collected on Tuesday to do the comparisons. On Wednesday, ask the student to do the same measurement at 1PM Eastern time (noon in the Midwest, 11 in the next bracket and 10 on the coast) On Thursday compare the angles reported.

## 2 Temperature

The purpose is for students to gain an appreciation of the differences in temperature form region to region. This understanding can be fostered by not only shared data but shared conversation about the weather.

Very simply, for a period of time, such as a week, the students will record the temperature before school, at noon and after school. The students will share this data with students in a different region.

## 3 What we do?

Student will better understand the communities in which they live. They will gain an appreciation of how other communities function.

Students will report the jobs being advertised in a local paper. This information will be shared with class from other locations.

## 4 What we write

The student will improve descriptive writing skills and understand the dynamics of writing to a dissimilar audience.

Students will write a descriptive piece on their community. They will share the writing with students in a distant school. Student will critique each other's work by asking questions and trying to clarify the writing. Students will then rewrite the description.

## ***Methods for sharing***

Several tools are available for student interaction. Although this list is not near exhaustive, it is meant to inspire some of the creative uses of these methods. Each of these methods has a description of known pitfalls, and technology needed to support its use.

### 1 NetMeeting

This is free video conferencing software with collaboration capabilities. It is available free for the windows platform only. The bonuses for using NetMeeting are many. Students can collaborate (more than one person edit a the same time in real time) on a single document residing in software on only one computer. In other words, the students can all work on an excel spreadsheet even if only one computer has it installed. Also included are audio, video, chat and whiteboard capabilities.

Although the software is free it has a few quirks. The most important one is the need to find other users. This is best accomplished using an Internet Listing

Server. This is a web server that has a piece of free software installed. Several are available, but most have too many non-student users. There are several solutions. One is to run your own server and just not tell others the address. The software is now listed as unsupported, but still free through this week. The server needs to be running Windows NT server 4.0 and Internet Information Server. Be careful, it is hard if not impossible to get Exchange server (see Chat below) and ILS to exist on the same server. The other solution is to hard code the IP address into the computers and directly call the other computer. This is a somewhat cumbersome way of dealing with the issue; particularly since system administrators might have a different viewpoint. At the same time, IP addresses are associated with a computer and not a student. The ILS offers the ability to direct communications to a specific user instead of a machine.

The other limitation is that this product will only allow 2 computers to videoconference together easily. There are schemes for multipoint video collaboration, but it is not intuitive. Another solution is one of the many H.323 reflector packages available. This software will allow an Internet server to route conferences to many computers at once. In either case, this is a difficult action and might be better done using other tools.

The latest versions of NetMeeting do not like the older versions. A major change in architecture was performed in the release of version 3. With version 3, multiple points can collaborate and share together. Chat and white boards are available as is shared programs. What is still a minor hitch is the ability to share multiple video streams. Realistically a student can only view one video source at a time.

## 2 CU SEEME

Very much an icon of video and audio conferencing, this package was originally free and now costs a minimal amount of money. This tool allows students to share video, audio and chat. A major bonus is the cross platform functionality. Both Macintosh and Windows clients are available.

Honestly, the system has some bugs. However, since the tool is commercially available, it is also commercially supported. It is important to realize that many of the issues associated with NetMeeting are still an issue with CU SEEME. Both multiple point and identifying locations can be an issue. What is missing is the ability to share documents.

## 3 MOO's and MUD's

These are generally a throw back to the telnet days of the Internet. There are a few upgrades that allow video capabilities and one or tow of these systems allows for sounds to be installed. These systems are designed as worlds. They each have rules of conduct and limits as to the ability to create pieces of the world. The three unique features of this tool are its ability to create an entire persona including descriptions of clothing and height, the ability to create/interact with objects (newspapers, rocks, pets, buildings), and the ability to write descriptively. These worlds are built upon the individual user's descriptive writing ability.

The systems are generally based upon the C programming language. They often require a mainframe computer to run. The security on these systems is incredible, but complex. If you either have direct access to a world, or have the programming talents available, these systems could be a powerful tool. Not many times in their lives will children be able to choose who they are. More importantly, in these systems, students must interact. Often the lack of pictures could serve to stimulate the imagination. Without question the typing and writing skills of students using these systems is dramatically improved. The major limitation is the ability to support such a system. There are still several educational MOO's available, however.

#### 4 Chat

For some reason this tool has gained a terrible reputation. For the most part chat allows users (depending on the chat software, two or many) to write brief notes to each other. Although in its purest form it does not allow the sharing of information, it does allow simple exchanges of ideas.

Many different forms of chat are now available. Some of the common versions are ICQ, Yahoo messenger, AOL Instant Messenger, Microsoft and JAVA chats. In general these packages can communicate with each other only if they share a protocol (such as IRC chat protocol) and a host sever. For example, it is possible to configure AOL Instant Messenger to log into a server other than the standard one. Assuming that the appropriate software is running on the server, users can find each other, but the outside world is effectively blocked. Most of these tools are free.

Microsoft offers a special flavor in this array. Although it is only for the Windows platform, Microsoft Chat offers both comic capability and filtering. Comic capability is available in later versions of Microsoft Chat. This will allow the students to choose the character that they display, and the expressions. The chats will appear as comic strip frames. Yes your students could take the place of the children in the now retired comic strip we all read for years. This is a much more interesting system than the simple line-by-line text chat.

Filtering allows the administrator in a chat room to place software on to the server that runs the chat to block out any offensive word. Unfortunately, as with most filters, the naughty word needs to be known. Also it is preferable to own the chat room to ensure that no unwanted users are entering and that the naughty words are listed for blockage. The chat server software is included as part of the Exchange server software from Microsoft. It is a free add on. Unfortunately, without purchasing a list of naughty words, you may end up having to type them yourself. The system requirements for the server are an NT server with exchange server and Internet Information Server running.

Before leaving the topic of chat, a special category I snow opening up on the world. These are voice chats. Do not confuse these with programs such as dial pad that use the Internet to place phone calls. Yahoo Messenger has a voice chat feature that is easy to use and allows students the opportunity to hear each other's voices. Do not discount the effects of having children hear each other's voices. Honestly, being raised in Chicago I had never spoken with a person using

a southern accent until I moved out side the city to attend college. Voice chats allow students to learn about accents and pronunciations.

## 5 Websites

So everybody wants to have one, why not be a lemming and take the plunge? The posting of websites is simple today. So simple in fact that many teachers are webmasters form their desktop computer. Posting information either publicly or to a non-published address can be an effective method of distribution, however we must concede some important limitations.

Although viewing web pages is hardly limited to a platform or even a software package, we must concede the issue of collaboration. Web pages are generally the classic case of classicism. The student can view what others have created/posted, but never truly have the option of interacting. Several web sites allow for the free posting of information. A simple shared user name and password could allow student from any location to edit the work of other students. Although this could appear to be a simple system, several issues must be addressed. The primary issue is that of control. Unlike chat and collaboration software tools, websites are truly public. Some control of the material published is prudent. If not for editorial style, just remember what middle school boys often do with the phone number of a certain girl. Using clear editorial structure, a posted website may facilitate the collaboration among students.

## 6 Threaded discussions

These are a special method of posting web information. Often used for asynchronous (not in real time) communications among groups, this system allows the average user to post or respond to information using any modern web browser. The advantages are that the students do not need to be in the computer lab at similar times. This is important when collaborating across timelines. Or just with schools on a different timetable.

The administrator has the privilege of deleting messages that are inappropriate. At the same time, if the discussion is posted on a local server, security can be enacted that will either disallow a stranger from viewing or posting information. Fundamentally this is a simple tool and easy to use. Having access to a web server is a bonus. More importantly this can be a slick data collections system allowing students to directly report their data to others.

## 7 Interactive communities

These commercial systems allow many advantages. Certain of them include Chat capabilities. Most important are the abilities and tools for posting information. With Chat, these can be a serviceable method for allowing collaboration and real time interaction. Without chat, the system allows for the orderly posting of data and ideas. Several sites offer this capability, included are Ecircles, Family Shoe box and Big Chalk.

Although each has its own flavor, Bigchalk can be used as an example. This site allows the teacher to have approval rights to any content that students wish to post. This ultimately answers the question of editorial review prior to the

posting of content to the Internet. When chat is included, it allows real time interaction. What is not available is the ability to collaborate effectively in real time.

Although we may not realize it, but the web has a tollbooth at the on ramp. The toll is paid in hours of learning HTML and hours of support time in managing a web server. I have wondered recently, how many school web servers were used to perpetrate the Denial Of Service attacks on companies like Yahoo. The cost of web sites is normally cumbersome. These electronic communities generally allow the use of HTML coding for students who know their way around an editor, but also use templates that require no specific knowledge other than the ability to type in a form. Additionally since the pages are created from a database stored on a commercial server, the school does not need to maintain one for this purpose.

## **Summary**

Students are young people. People are social creatures. As such they desire the ability to interact with others. The interactions available within a classroom have the negative aspects of being with students who probably share similar views and experiences. By opening up the field for interaction with students outside a single school building, students are afforded the opportunity to learn from others and enlighten others.

At one point, the technology to provide collaborations was cumbersome. Then the technology became so accessible that we were concerned that the students would come into contact with persons they should never meet. We now have the wisdom to use these tools in a manner that is consistent with the curriculum and detached from the outside world. The only things missing are the links to allow teachers to contact other teachers. These links can very well be made over lunch at a national conference.

Ultimately, the use of Internet collaborations fits into my model for the use of technology in education. The model states that computers in schools serve three primary functions, taught to prepare students for the workforce, taught to prepare students for life, and used to improve the quality of content instruction. Internet collaborations fulfill all three roles at the same time.