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## Integrating Methods to Achieve an Effective Online Learning Environment

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### ABSTRACT

This paper examines the design and structure of the [Blackboard](#) online classroom for Media from a Liberal Arts Perspective (COM 458) offered at the [University of Illinois at Springfield](#). This study supports the case for an integration of both online and offline course materials and both computer-based and more traditional media. Discussion centers on the effective integration of each of these items in order to enhance student satisfaction and retention in an online environment. This paper includes a close examination of ways to match bandwidth demands for streaming [Real](#) media with student needs. It also includes discussion of how to enhance and analyze discussion board participation. Finally, discussion addresses ways to work around limitations of the Blackboard courseware.

### KEYWORDS

Asynchronous, Audio CODEC, Blackboard, CD-ROM, Discussion Boards, Multimedia, RealMedia, RealPix, RealPlayer, RealPresenter, RealVideo, Scripting, SMIL, Synchronous, VCD

### INTRODUCTION

With the tools now available, putting a course online does not need to be a daunting task. However, ensuring an *effective* online classroom environment can be more difficult. Even after years of online teaching, we are still learning what works well and how best to implement teaching strategies within the limitations of both the software and network bandwidth available to our students.

This paper presents a case study of [Media from a Liberal Arts Perspective](#) (COM 458), a four-semester credit hour communication course taught entirely online at the University of Illinois at Springfield. The course is designed for upper division, undergraduate students. Students may receive credit at the graduate level by completing additional assignments. Enrollment in the course is split among three groups: communication majors; students enrolled in the [Liberal Studies Online](#) degree completion program; and other students who choose to use the course as an elective.

This course went online for the first time in Fall 2001 and was offered again in Spring 2002. This online classroom has been developed using [Blackboard Courseware](#), currently version 5.5. As you will see, those features not implemented in Blackboard are made possible through a combination of

## Blackboard “hooks” and traditional HTML programming.

My goal in creating COM 458 as an online course was to recreate an interactive, seminar-like discussion atmosphere. Content was designed to increase student interest and involvement, and to engage them as much as possible in an asynchronous learning environment.

I had to address an additional challenge for this class. I asked students to critically analyze media, particularly television, using [Ernest Boyer's](#) schema for the elements of a well-rounded, undergraduate education. Since students do not physically gather in a classroom, it is not possible to show them all of the same representative programs in each of the Boyer categories. But trying to stream such programs has serious ramifications both technically and legally.

Full-motion video, even in limited resolution, requires far more bandwidth than the vast majority of students have available. It is simply impractical to try to distribute television programs for student viewing in this manner at this time. And even if the technical limitations could be overcome, the issue of copyright still remains to be addressed. While [fair use](#) (U.S. Copyright Office, 1976) provisions of the copyright law allow the use of a single, live or delayed viewing of copyrighted material, it does not allow the type of “on demand” viewing that would occur in an asynchronous, online, classroom environment.

In this case, the solution was simple: select programs readily available to most students either “over the air” or via basic cable channels and allow them to either watch or videotape the programs on an individual basis. While this method works generally well, there are also limitations; these are discussed later in this paper.

Implementation of these goals required a multifaceted approach. Streaming media is the primary lecture mode, but lecture notes are available in multiple formats (HTML and [Adobe Acrobat](#) files). A CD-ROM was created especially for students with a limited bandwidth Internet connection. Organization of discussion areas and means for private communication between individual students and the instructor are critical to the success of the class.

As COM 458 was developed, five criteria were used to determine the viability and effectiveness of the course: level of initial enrollment, level of retention, formal course evaluations, anecdotal evidence from student postings, and peer feedback.

One of the central beliefs on which this course is based is the number and nature of “transactions” via the course’s discussion boards. A “transaction” is defined as a continuous communication that is coupled with a response from a single student.

In a traditional classroom, the structure of this course might entail:

- Instructor led lecture
- Multimedia materials
- Interactive questioning as lecture is presented
- Class discussion
- Peer interaction moderated by instructor

For example, a teacher begins her or his presentation of materials. Subsequent to the beginning of the presentation, a student poses a question or makes an observation. That interaction constitutes one

transaction. The second transaction begins when the instructor responds to the comment or question, and continues until there is another interruption from a student. In the course of a single classroom session, hundreds--if not thousands--of transactions take place. Rapport with students that ultimately leads to their satisfaction with the class and the instructor is established through this ongoing series of transactions.

The situation is somewhat different in an asynchronous online classroom environment. It is not possible for students to interrupt or participate interactively in "real time." The avenue available for interaction is the discussion board. So while online lecture materials provide a stimulus, students complete the transaction by posting a message. The nature of this communication results in far fewer transactions over the period of a class session. A few dozen messages cannot be expected to replace the hundreds or perhaps thousands of transactions that occur during each meeting in a traditional face-to-face classroom; but there are ways to significantly increase the number of transactions, both between students and the instructor and among students.

While this paper does not scientifically investigate the following hypotheses, a belief in their value drives the design of the course.

H1: The effectiveness of online discussions is positively correlated to the number of individual transactions (messages) in the course discussion boards.

H2a: Student satisfaction with online courses is positively correlated to the timeliness of instructor response and interaction.

H2b: Student satisfaction with online courses is positively correlated to the amount of peer-to-peer communication.

H3: The level of student participation in the class is contingent on where the level of expected participation is set during the first week of the class.

## **METHOD**

This section describes the structure of COM 458 and how a number of elements were brought together for the class.

### **Use of "Live" TV**

COM 458 takes a critical approach to media--with an emphasis on television--within the context of Ernest Boyer's seven categories of learning. Students are asked to watch a television program each week that represents one of the Boyer learning categories. In a traditional classroom, copyright law allows the instructor to replay a videotape of a recently broadcast program one time only for instructional purposes. This is viewed essentially as "time shifting" and is protected by fair use.

Streaming full motion video using the bandwidth available to most students is clearly not realistic. Even if the bandwidth were available, server demands would require a great deal more hardware than the course provider has available.

Moreover, because students participate asynchronously the video would be accessed multiple times based on user demand. Unless broadcast/distribution rights are secured for each program to be used in the class, this situation is not covered under fair use laws. But the solution is a simple one:

Students in COM 458 are provided with a schedule of the programs they are required to watch. They can watch them at their leisure at home using over-the-air or cable signals. They can choose to watch "live" or videotape the programs on their own machines. Such use *is* allowed under current copyright

law since it is the individual student who is making the tape.

This approach leaves some problems unsolved. Even when the programs chosen air on basic cable channels, some students still may not have access. For this course, I have addressed the problem by choosing programs that also have episodes available for rental on videotape.

Broadcast schedules are subject to change. A show that is regularly airing when the semester begins can be canceled or pre-empted at any time. There is not much that can be done in such cases except to assign an alternate or switch the viewing schedule to accommodate changes.

### **Orientation Module**

As online instructors, we may forget that not everyone is a seasoned veteran of the online learning experience. In some cases, students may have taken other online classes, but nevertheless may not be familiar with the particular courseware being used.

From its inception, the design of COM 458 has included the preparation and production of an [orientation module](#) designed to provide all students with the basics of classroom navigation.

### *Simplification of Classroom Structure*

When a Blackboard classroom is created, most of the features available are turned “on” by default. This is adequate if all of the features are to be used, but most of us do not use all of the features in every class we teach.

My experience has been that the elimination of unneeded menu choices results in students reporting that the online classroom is easier to navigate. Blackboard also allows content areas to be named in several different ways. You are advised to use the label that best matches the language used in your school’s culture. It would be even better if Blackboard allowed you to label each content area with your own title, but they do not presently allow this extent of individual control.

### *Importance of Faculty Understanding Software Features*

While this may seem obvious, you can make both your own online experience as an instructor and your students’ online experience a better one by taking the time to thoroughly understand the features of the courseware. There are some very nice features that are not immediately apparent. Please take the time to read the documentation and experiment with features before the classroom goes “live.”

### **The Importance of Scripting**

One of the most important lessons learned after several years of developing multimedia learning units for online delivery, is that development needs to start with an outline leading to a written script for each learning unit. Without a script, actual production of the learning modules may become mired in unnecessary reworking of the media materials, which can become very time consuming.

An additional advantage is gained with script creation. It is an easy matter to convert the text only script into HTML format or create an Adobe Acrobat PDF file. This aids students in two ways. The text notes provide an easily printable version of the lecture materials for all students. Students with older computers may not be able to effectively use either the online media streams or the CD-ROM. But they can still read the lecture materials in a format that has minimal system requirements.

A number of factors contributed to deciding the final form for the multimedia lectures in COM 458. Earlier course materials were created in Microsoft PowerPoint as black on white “slides” accompanied by a low fidelity audio soundtrack. This resulted in a very low bandwidth synchronized “slide show”

requiring only 16 Kbps of bandwidth. This included an 11Kbps RealVideo stream and a 5Kbps RealAudio stream. For an example of this type of streaming lecture see <http://otel2.uis.edu:7070/ramgen/rschr1/333lectures/lecture1.rm> Note that this stream is served using a RealServer rather than via HTTP streaming.

### **Multimedia Encoding Schemes**

In order to provide a more engaging presentation, I experimented with a number of combinations of audio and video streams. In the end, I chose a stream that requires approximately 33.7 Kbps. That includes a 20.7 Kbps RealAudio stream and a 13.0 Kbps RealPix stream. With a solid 56K modem connection, the stream is reasonably reliable. But it is too much for a 28.8K modem.

Those instructors who are experienced with [RealPresenter Basic 8](#) will recognize that this is not a standard combination of media streams. While the technical details are too complicated for this case study, this bandwidth was reached via manipulation of the SMIL files controlling the multimedia stream, along with an additional step to encode the audio in the desired format. The only special tools required are a basic knowledge of SMIL programming and a simple text editor. The [SMIL protocol](#) is an HTML-like scripting language specifically designed to control a variety of media streams. SMIL files can be created and edited using a simple text editor (Clark).

At this bandwidth, full color presentations with a pleasing sound track (including high quality voice and background music and sounds) are easy to create. An example (the COM 458 Orientation Lesson) can be found at <http://online.uis.edu/fall2001/lis342/guide/guide.ram>

One of the challenges faced while experimenting with different types of streams was to limit distortion when anything other than simple voice tracks was used. This is explained by the nature of audio CODECs.

It seemed reasonable that if useful audio could be encoded in a 5Kbps RealAudio stream, only a modest increase in bandwidth should be required to allow for more complex audio tracks. But this was found to not be the case. Complex audio remained severely distorted at encoding rates lower than 20.7 Kbps.

When a voice track spoken at normal speed is encoded at 5Kbps, the compression scheme uses the "pauses" during the speech to "stuff" additional data to ensure a clean sounding--though somewhat "clipped"--audio signal. When the audio is continuous, which is the case when background music is used, there are no "spaces" in which to stuff the data. This results in the need for greater bandwidth.

### **CD-Enhancement**

As the development of the course began, my intention was to use a feature advertised as available in the Blackboard 5.0 courseware. It is possible to incorporate "offline" content into the Blackboard classroom simply by setting a single parameter in the user's profile to indicate the drive letter for the CD-ROM drive on their computer.

By providing each student with a CD-ROM and creating the proper links within the Blackboard classroom, it is possible to integrate higher bandwidth materials without having to rely on the student's Internet connection speed.

Unfortunately, this feature was broken in the distribution of the Blackboard software. Attempts to find a patch or get Blackboard to fix the problem were not successful. However, with the release of Blackboard 5.5, the CD-ROM "offline" content feature now works correctly.

The version of the CD-ROM now being used for COM 458 has been upgraded with several new features. The CD-ROM now “auto runs” on computers properly configured to do so. “Auto run” is a feature available in the Windows operating system. When properly configured, a CD-ROM with an appropriate “auto run” file on it causes the PC to automatically launch an executable file on the CD-ROM when the disc is inserted in the drive.

But there is a catch. The auto run feature will only launch an executable file. If you want to launch a web page (which is not an executable file) it is necessary to use one of several freeware programs designed to launch the web browser using the web file of your choosing.

The COM 458 CD-ROM automatically launches the student’s preferred web browser and displays an HTML page with an index to all of the materials on the CD-ROM as well as several links to sites on the Internet.

### *Problems to be Resolved*

Two additional problems have surfaced since the CD-ROM was prepared for the Spring 2002 semester. First, the “auto run” feature can cause confusion when the CD-ROM is being accessed directly from the Blackboard classroom. Second, as currently configured the CD-ROM is compatible with Microsoft Windows-based operating systems only. Careful structuring of file names to universal form will allow future editions of the CD-ROM to be used on most Macintosh OS computers as well.

### **Hybrid Use of Blackboard and non-Blackboard Storage Space**

Blackboard provides a number of user-friendly ways to add content to the classroom. These methods work well when you want to add, for examples, a class syllabus or a Word document.

The Blackboard environment is very limited in its ability to deal efficiently and effectively with multiple calls to the same document. The URL associated with materials added to the Blackboard classroom that uses the tools provided by the manufacturer is very complex, lengthy, and non-intuitive.

The “work around” is to use storage space outside the Blackboard server environment. At UIS, additional servers are available where folders and files can be uploaded using FTP (file transfer protocol) or by drag and drop from Windows-based computers. It is then a simple matter to create a standard URL call in HTML within the associated Blackboard document. This can be done as many times as necessary, and allows for universal replacement of the content materials without doing a new and separate upload for each place the file is used. This can even be done across Blackboard classrooms, since the URL has nothing to do with the Blackboard server.

This is also particularly useful when dealing with Real Media files. Whether the materials are uploaded to a Real Server, or simply streamed via HTTP protocol, the course instructor can easily point to the proper URL in order to link the stream. That is not very easy to do using only the Blackboard provided methods of connecting content files.

### **Communication Area Structure**

#### *Session Discussion Boards*

With the lectures in place, we can turn our attention to the communication areas. In COM 458, two distinctly different types of areas have been created: session and private “group” discussion boards.

Class session discussion boards are created for each of the sixteen weekly sessions. Within each session’s discussion board, discussion questions (labeled 1-1, 1-2, 1-3, etc. to indicate Session 1 DQ 1, Session 2 DQ 2, etc.) are posted by the instructor. Students are invited to post their response to the

discussion questions as a “reply” to the root message. This provides a visual structure to the discussion and helps both instructor and students to keep the materials organized.

### *Private “Group” Discussion Boards*

The author’s earlier experience in offering online classes involved the use of traditional HTML based web pages supported by WebBoard discussion software. While students generally report that they prefer the Blackboard discussion board scheme, WebBoard does have some advantages.

In WebBoard, each topic can be configured to allow all users, or just a sub-set of users, access. Blackboard does not have the same flexibility but does include a feature that can be manipulated to work in a similar fashion.

Blackboard allows the creation of work “groups.” Within such groups, discussion boards can be created that are only available to members assigned to the group. In WebBoard, my design included a private discussion area for each student to communicate directly, and privately, with the instructor. In order to do this on Blackboard, each student has to be set up as a “group.” The result is a similar communication area, but only with additional effort.

This “work around” in Blackboard also makes it difficult to check for new messages in the group areas. While the entry points for the class discussion areas are displayed on a single page and note any new messages, it is necessary to click through several levels on *each private group area* to check for new messages there.

### *Visualizing Classroom Discussion as a “Tree”*

One of the most critical goals of the classroom design is to create an atmosphere that encourages and supports not only student responses to the teacher’s discussion questions, but also peer-to-peer interaction. In many classrooms, the discussion board “tree” may look like this:

#### Discussion Question 1

Student 1 Response

Student 2 Response

Student 3 Response

This is good as far as it goes. It is analogous to a classroom instructor posing a question and receiving individual responses from three different students. In this scenario, each student has the advantage of being exposed to the answers from other students, but there is no peer-to-peer interaction going on.

The goal is to not only solicit answers to the instructor’s questions, but also create interaction among class members. Here is an example of a discussion “tree” that shows that type of interaction:

#### Discussion Question 1

Student 1 Response

Student 2 Response to Student 1

Student 3 Response to both Student 1 and 2

## Student 2 Response

### Student 1 Response to Student 2

### Student 3 Response to Student 1

## Student 3 Response

As an instructor, I have observed that one is lucky to see this type of interaction occur spontaneously. Therefore the method I use to create the preferred peer-to-peer environment is to lead by example. That is, if I do not see students responding directly to the posts of others, I will intercede with a response directed to two or more students by name and ask them to comment on the other's message(s). It does not take long before this begins to happen without my intervention.

### *Subject Lines*

One of the problems that students often report concerns the difficulty of trying to follow a discussion as it grows. Much of this problem can be traced to subject lines that are no longer appropriate. The thread starts as "Discussion Question 2-2," but by the third message it has gone off on a tangent--perhaps spurred by the original question, but no longer related to it.

I encourage students to use appropriate subject lines. Even when they do not do so, I change subject lines as necessary in my own posts to best reflect the nature of the discussion. Unfortunately, Blackboard does not allow even the classroom instructor to change either the subject line or content of posts from students. WebBoard does allow administrators full editing privileges.

### *Timely Response*

There are several schools of thought about how an instructor should budget her or his time in the online classroom. One view maintains that it is more efficient to check the discussion boards fewer times each week and respond to messages in one longer sitting.

An alternate view is that online instructors may benefit and encourage more interactivity if they increase their visits to their classrooms. In my case, I generally check my online classrooms multiple times each day. By doing so, I am never confronted with a barrage of messages, and my students receive timely input on their postings. While I have not yet quantified the effect empirically, it appears to me that this increases the overall level of communication in the classroom, both with the instructor and among their peers.

### *The Value of "Private Group Areas"*

A number of online instructors prefer to use traditional e-mail to communicate privately with their students. If you can encourage students to cooperate by using key words in their subject lines, it is possible in many e-mail clients to set up "rules" or "filters" to automatically sort incoming messages; but this is far from foolproof.

As an instructor of multiple online classes each semester, I have found that creating private communication areas within the classroom environment helps both me and the student to keep our communications organized. WebBoard worked better in this regard, but Blackboard also works well, albeit with a few irritations.

### *Other Uses for Discussion Boards*

The events of September 11, 2001 brought to my attention a feature of the electronic classroom that I

had not previously noticed. Within hours of the events that morning, I had created a new discussion area for students to discuss media coverage of the events. It was a natural for the COM 458 class, which examines media within a cultural context. It was easy to incorporate current events into the class curriculum. The immediate nature of electronic communication kept the discussions timely and enhanced student satisfaction with both the course and peer-to-peer interaction.

Discussion boards were also used to create "Poster Session" areas for the students' mid-term and final papers. Papers were posted as an attachment in a discussion board along with a 300-word plain text abstract. Students were asked to read and share their comments on at least two of their classmates' papers.

### **Asynchronous vs. Synchronous**

Here, I must admit to a personal bias. Some instructors have indeed had very good success using synchronous, near "real time" chat rooms, or other variations of instant messaging. But my personal experience has been far from positive.

For example, early implementations of the feature in WebBoard were terrible. Messages were often delayed for an inordinate amount of time. In a class of any size, it became difficult to manage all of the participants.

As an alternative, I do encourage smaller groups of students to experiment with this communication method; but I do not regularly use it myself. As a result, my classrooms are designed for asynchronous learning.

Most students seem to prefer this approach. While they enjoy interacting in a "live" fashion with their classmates, scheduling is a real problem for both them and the instructor.

### **EVALUATION**

By all accounts, the Fall 2001 first offering of COM 458 was a success. Even early signs indicated an increased likelihood for success. Based on word of mouth, the class filled to capacity within the first week of registration. A lengthy waiting list existed when the class began. There was no attrition, with all students completing the class.

Course and teacher evaluations were significantly above university averages, also reflecting a high level of student satisfaction with the course. Participation levels were quite high. As the course developed, a number of students took the initiative and posted questions and observations of their own relative to the week's topics. Feedback from students led to the enhancements to the CD-ROM described earlier and to the inclusion of additional discussion questions. Students provided frank feedback about what they liked and what they would like to see changed. There were many "likes" and few requests for changes.

The success of the class far exceeded my expectations, particularly in the area of peer-to-peer interaction. I have always found that to be the most challenging aspect of the online classroom. Until additional sections of the course are complete, it is hard to know how much of this success can be attributed to the course content and structure, and how much of it was the result of an exceptional group of students.

Early indications are that the second offering (Spring 2002) will have similar success. This section of the course also filled within the first few days of registration. The waiting list (which was eventually capped to not allow any more students on the list) showed that another section of the course would have filled as well, had their been faculty resources available to teach it. As of four weeks into the course, participation is at levels similar to the Fall 2001 section.

A small number of students, those with older computers, and those with less developed computer skills, did report having trouble using the CD-ROM in some cases. The CD-ROM itself was shown to be fully functional in all cases. Regardless of the level of technology employed, such problems are unavoidable. Perhaps the best that can be done is to be clear about the technical requirements for the course.

## **SUMMARY AND RECOMMENDATIONS**

It is possible to balance technical limitations with the needs of students to create an effective and engaging online classroom environment. To ensure the greatest success, instructors may benefit by partnering with other faculty or staff with expertise in incorporating technology in the most effective ways possible. At UIS, for example, the [Office of Technology Enhanced Learning](#) (OTEL) serves as such a resource.

It is important to keep in mind that creating a quality online learning experience requires a great deal of time and effort. While the same is true in the design of any learning experience, the challenges of technology add significantly to the human cost factor, especially in the start-up of a new course or incorporation of a new technology.

Instructors wishing to replicate the approach described here are advised to do several things:

- Give yourself plenty of time to develop the course
- Assume going in that things aren't going to work as you planned
- If you don't possess the technical knowledge yourself, team with someone or an organization that does
- Always begin with an outline and script
- Challenge the technology to work for you rather than limit you
- Resist the desire to incorporate a technology just because it's new or "neat"
- Make sure your students can see your own "style" coming through. That's not as easy as it sounds in an online environment.

### **Videotape, VCDs, and DVDs**

Video lectures, such as the type created for COM 458 using Microsoft [PowerPoint](#) and the [RealPresenter plug-in module](#) (Ward, 2001), can also be used to create a standard VHS videotape for distribution. This approach requires an appropriate computer to NTSC scan converter card or external module.

VCDs (video CDs) are a format that uses a standard CD-R or CD-RW and appropriate CD "burner" but creates files that will play on most DVD players. This offers another way to distribute high definition video lectures and other materials to students in an economical manner.

While still at a premium price, DVD burners are also becoming available for home and educational use. Distribution of DVDs for online classes will likely become a widespread practice in the next two years.

All of these approaches have been tested in conjunction with the COM 458 class, but have not been implemented as a regular part of the course curriculum.

### **Blackboard Learning Units**

Version 5.5 of the Blackboard courseware introduces a new feature called “learning units.” You can visualize learning units as an HTML slide show controlled by the user. It allows screens of information to be coordinated as a unit rather than as individual files or one long web page.

Some textbook publishers are creating ready-to-implement learning units associated with their textbooks. This format has some value, and is a technique that experienced online instructors have tried in the past. Blackboard just makes implementation easier.

### **CONCLUSION**

This paper has presented a case study of COM 458 *Media from a Liberal Arts Perspective* at the University of Illinois at Springfield. My experience with this class supports the integration of both online and offline course materials and both computer-based and more traditional media. Key to the successful implementation of this strategy is the effective integration of each of these items in order to enhance student satisfaction and retention in an online environment. It is important to match bandwidth demands for streaming Real media with student needs. Various ways to enhance and analyze discussion board participation were discussed, as well as methods for working around the limitations of the Blackboard courseware.

### **AUTHOR NOTES**

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Additional thanks go to the faculty and staff of the Individual Option and Communication programs at UIS who have contributed to my growth as a scholar and educator in innumerable ways.

A special word of thanks goes to the students of COM 458 at UIS who through their hard work and excellence as media scholars have helped me as I continue my quest for an improved online learning experience.

### **REFERENCES**

Boyer Center. (2001). Biography. Retrieved February 20, 2002 from the World Wide Web:  
<http://www.boyercenter.org/bio/index.html>

Clark, S. Tutorial: RealSystem G2 & SMIL. Retrieved February 20, 2002 from the World Wide Web:  
[http://www.webdeveloper.com/advhtml/advhtml\\_tutorial\\_G2SMIL.html](http://www.webdeveloper.com/advhtml/advhtml_tutorial_G2SMIL.html)

U.S. Copyright Office (1976). *Reproduction of Copyrighted Works by Educators and Librarians*. Retrieved February 20, 2002 from the World Wide Web:

<http://www.loc.gov/copyright/circs/circ21.pdf>

Ward, L. (2001) *Creating Dynamic Online Lectures with Real Presenter*. Retrieved February 20, 2002 from the World Wide Web: [http://illinois.online.uillinois.edu/pointers/2001\\_05/index.html](http://illinois.online.uillinois.edu/pointers/2001_05/index.html)

## **BIOGRAPHICAL STATEMENT**

Jim Grubbs, Assistant Professor of [Individual Option, University of Illinois at Springfield](#), holds a Ph.D. in Communication and Culture from [Indiana University](#). He is also a former Faculty Associate in the [Office of Technology Enhanced Learning](#) at UIS.

Jim was one of the first online instructors at the University of Illinois at Springfield and has taught online continuously since 1997. His background includes extensive work in the broadcasting industry and as a telecommunications/network engineer with [Ameritech](#).

He has developed online courses using traditional web pages, [WebBoard](#), and [Blackboard](#) courseware. Jim specializes in finding work arounds for limitations in commercial courseware. He is well versed in Windows, Macintosh, and UNIX operating systems. Jim is the recipient of multiple grants for online development from OTEL and the [Liberal Studies Online](#) program at UIS.

In addition to his academic work, Jim, along with his brother Jon Grubbs, consult with both commercial and not for profit clients, especially those wishing to incorporate streaming technologies as a part of their web presence.

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