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AUTHOR Bigelow, John D.
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ABSTRACT

This paper proposes a premise-based approach to translating courses from a classroom environment to an Internet environment, in which learning premises underlying classroom courses are extracted, then used as the basis for creating an Internet course. This approach is applied in developing an Internet section of an introductory management course. The following six premises are identified and organized into a learning model: learning as goal-based; learning as resource-based; conceptual thinking; use of feedback; active learning; and learning motivation. The resulting learning activity model consists of course goals, course structure, learning resources, learning activities, assessable outcomes, and feedback. Implementation of each element in the Internet course is described. Illustrations of supporting e-mail, Internet, and Toolbook resources are provided, and student reactions to the course are reviewed. (DLS)

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ED 427 650

Developing an internet Section of a Management Course: Transporting Learning Premises Across Media*

March, 1995

John D. Bigelow
Professor, Management Department
Boise State University
College of Business and Economics
1910 University Drive
Boise, Idaho 83725

RMGBigel@cobfac.idbsu.edu
(208)385-1267

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Suggested Conference Topic Area: The Web as Teaching Tool

Abstract

In universities we're seeing a rapidly growing interest in developing internet implementations of classroom courses. In translating courses from a classroom environment to an internet environment, how can we both build on the course development that occurred in the classroom environment, and avoid inadvertently limiting the possibilities of the internet course? The author proposes a "premise-based" approach, in which learning premises underlying classroom courses are extracted, then used as the basis for creating an internet course. This approach is applied in developing an internet section of an introductory management course. Six learning premises are identified and organized into a learning model. The author then describes how each element of the model is implemented in the internet course. Illustrations of supporting email, internet, and Toolbook resources are provided, and student reactions to the course are reviewed.

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In the past couple of years we have seen a vast surge toward use of internet. Whereas a few years ago the internet was an obscure reserve for academics and researchers, we now are seeing in excess of seven million visitors a day. Moreover, increasing access to internet, coupled with decreasing educational budgets has led to interest in the internet as a teaching/learning medium. At the university level, internet-based course development has moved beyond the occasional experimental course, to more broad-based course development; e.g., through the Globewide Network Academy and The Online College Classroom. Because of the low capital investments required to establish internet courses and because of the vastly extended prospective clientele for such courses, we are likely to see a lot more of them in the future. The University of Phoenix, for example, is advertising its on-line campus in Business Week.

The potential of the internet as a university teaching medium, however, has still to be explored. To be sure, we have a teaching model for on-line learning which has been developed over years of BBS

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(bulletin board system) and some internet development. Yet this model was developed under fairly severe computing and communication speed constraints. We now have capabilities and resources available to online teachers which were scarcely dreamed of in the early BBS days. When developing an internet course then, it is important to keep in mind the possibilities which the contemporary internet environment makes available, and not to simply adopt designs which were tailored to past constraints. It is important to remember too that much of university experience in learning has evolved in a classroom environment. How can we take this learning process and creatively transport it to an internet environment?

One way of doing this is to extract the learning premises which underly classroom designs, and to then reconstruct a learning design based on these premises in an internet environment. By building an internet learning design based on established learning premises, an internet teacher is required to stay close to learning issues, and use these premises as a basis for choosing appropriate internet learning elements.

There are undoubtedly other ways of developing an internet couse; e.g., by adopting designs of other internet courses or by applying a theory of learning. The premise-transport approach, however, has a particular benefit in this circumstance, since the internet course is to be offered as one section of a multisection course. Since the course is a core course in our college, it is important to maintain a fair amount of consistency among what is learned among sections. The approach taken here promises to provide that consistency while at the same time allowing creative reconstruction of classroom premises in an internet environment. In addition by building the course on a stated set of premises, this approach enables other instructors to critically examine the underpinnings of this course and to modify them as needed when adopting the resultant design to the learning needs of other courses.

The purpose of this article is to describe such a premise-based process undergone by the author in developing an introductory management internet course. This article begins with a discussion of premises about learning which underly current learning structures. These premises are then applied so as to recreate the course in an internet environment. Finally student response to the course are reviewed.

Premises about Learning

One historical image of learning is of the schoolhouse, where children are chanting sums together. A teacher who organized this kind of activity might provide a number of explanations as to why children were doing this, and some of them would involve premises about learning; e.g., repetition is necessary for mastery, and this kind of effort builds self-discipline. Similarly, in college learning we see students engaging in activities, and again teachers would rationalize these activities in part using premises about how learning is accomplished and the kind of learning that is desirable. The author investigated learning premises underlying classroom sections of the introductory management course, both through conversations with teachers of this course and through assessment of his own experience as an instructor of this course. Six premises were surfaced concerning learning in this course:

1. **Learning as goal-based**. The development of a clear learning goal helps in developing a course designed to accomplish this goal. It helps students understand the course and to contribute to learning. It enables student and instructor to evaluate learning and to develop improved learning designs.
2. **Learning as resource-supported activities**. Learning occurs through activity. These activities often require learning resources, such as readings, communication channels to others, case information, etc. A course structure, then, can be thought of as a system of activities directed toward a learning goal, and supported by learning resources.
3. **Conceptual thinking**. At the heart of this course is concept mastery. This is accomplished in phases, involving study and understanding of concepts, followed by application practice. The latter may start with straightforward application of a concept to a situation. Later application may involve both the diagnosis of situations and application of one or more concepts.
4. **Use of feedback**. Timely and effective feedback to students about the quality of their work is necessary for student, instructor, and course learning. Feedback derives from assessable outcomes of activities.
5. **Active learning**. A "metagoal" of the course is to support students' abilities to learn proactively.

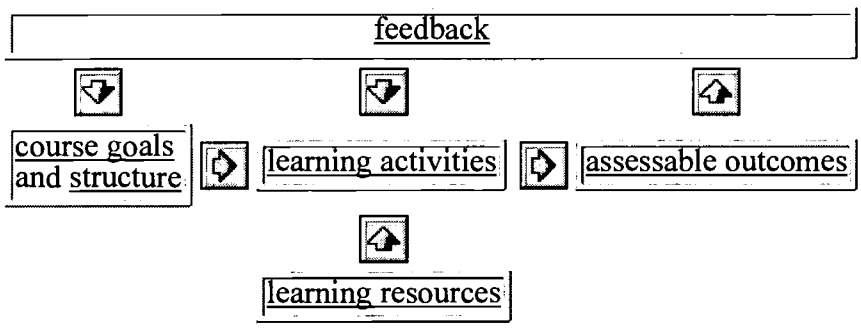
This is done through participation by students not only in target course learning but also in development of the learning structure.

6. **Learning motivation**. Student learning is a function of motivation. Extrinsic motivation for learning can be enhanced through a specific, challenging, and fair grading system, as well as instructor/class recognition of performance. This system, however, should be balanced with a program for developing intrinsic motivation for learning. Intrinsic learning is enhanced by student participation in the learning process, by increasing the perceived relevance of course learning, by developing a feeling of ownership and influence over the course, and by supporting individuation of learning so as to follow personal interest.

Other premises concerning the course were also surfaced, but did not have directly to do with learning. For example, the premise "if the course weren't so big, I would learn everyone's names and require more individual work" concerns activities felt to be potentially valuable by the instructor, but not feasible given the typical sizes of sections. Such premises could have relevance for an internet section, if it turns out that these constraints are lessened or eliminated in the internet section.

A Learning Activity Model

The above premises suggest a learning process containing the following steps:



The task now is to implement this set of premises in an internet environment. Figure 1: Steps of Learning Process

Application of Learning Premises to an Internet Environment

Course Goals

The introductory management course was chosen for internet delivery because: (1) the content of the course is primarily conceptual, and thus a more suitable prospect for an internet medium, (2) it is a multisection course, providing a choice for a large number of students, and (3) students with business majors may find this section distinctly valuable, either because it would help in developing a schedule, or because they are working and find attending any scheduled classes difficult. These assumptions will be revisited in the last section of this article.

The internet section of this course, then, was intended to accomplish the same goals as had been established for other (classroom) sections: *To provide a broad understanding of organizations as a basis for dealing with complex organizational issues*. Two objectives elaborating on this goal were also adopted:

1. *Participants' understanding of organizations will be expanded to include organizational:*
   - ***Management and Problem-Solving**: management and the process of addressing complex organizational problems.*
   - ***Environment**: the major elements of the larger context of organizations, including global competition, major technological changes, legal/political, and social issues.*
   - ***Adaptation**: organizations as structures designed to be adaptive to these elements, and different organizational and inter-organizational designs as means of doing so.*

- ***Policies and Practices***: *how organizational policies and practices (including culture, goal setting, diversity, leadership, motivation, and management information systems) shape or constrain goal attainment.*
- ***Innovation and Change***: *ways by which firms may organize for change, and means of furthering the innovative and entrepreneurial aspect of contemporary corporations.*

2. *Given complex organizational situations, participants will be able to draw on the above to raise and analyze issues, create alternatives, develop solutions, and plan implementation.*

Course Structure

An initial concern was how to communicate to students the nature of this internet course, and to do it via an internet medium. The "tree branching" structure typical of internet sites is often difficult to understand, since much of the substance of the site is one or more levels away from the initial view. Exploration of branches can, unless the designer is careful, get the inquirer lost in a maze of interconnected branching links and make it difficult to get a sense of the course as a whole.

A three-rowed "desktop" was used as the primary entry point for the course: the elements of the course were laid out in a rectangular set of cells each linking to some aspect of the course. The "mg301 desktop" is shown in Figure 2:

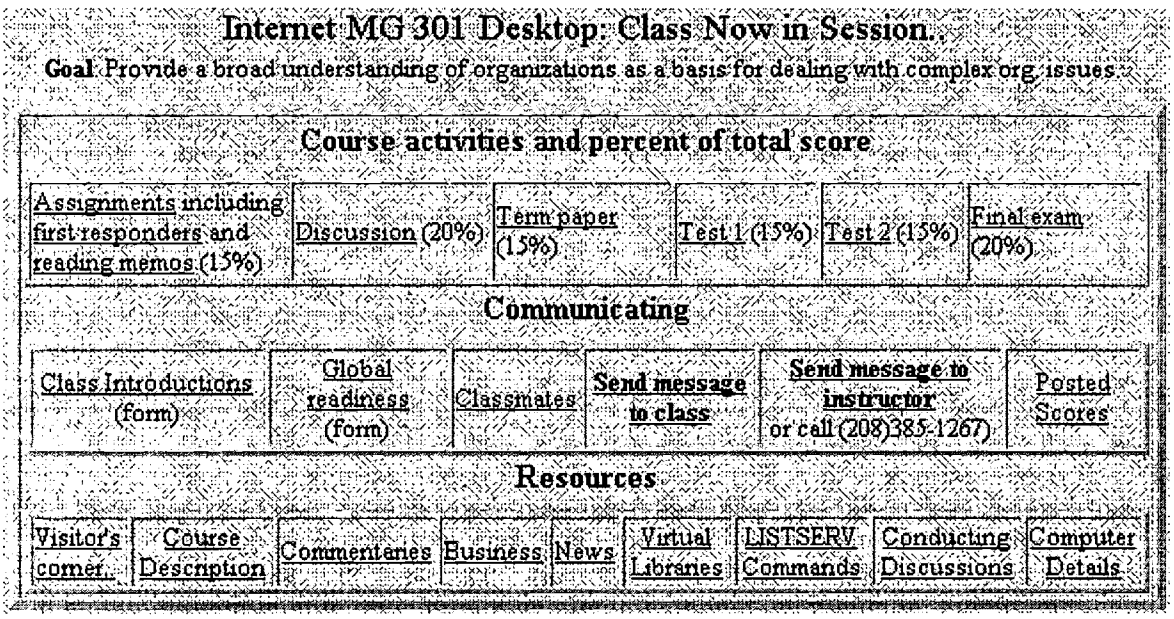


Figure 2: MG 301 Desktop

This desktop contained three rows. Since, in the author's experience, students wanted first to know about class activities and scoring, these were arrayed along the first row of the desktop. The second row contained communication tools, allowing students to communicate with the instructor and one another. The third row contained information resources, including links to internet, comments from the instructor, and help on computer and discussion aspects of the course. The "visitor's corner" was aimed toward prospective students, who may preview the site while the course is in progress. By arraying elements of the course in correspondence with the way students are likely to think about a course, this desktop design attempted to make the course as easily comprehensible to students as possible.

Learning Resources

The types of learning resources available to students in an internet course are different from those available to students in a traditional classroom context. A central resource of a traditional classroom is the scheduled class meeting, which makes possible face-to-face interaction among instructor and

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students. In an internet course this is replaced by interaction via internet. In this course all time- and-place specific interaction were traded for time- and place- inspecific (asynchronous) means of communication, in order to provide students with the greatest possible freedom of when and where they did their course work. Thus, classroom interaction was replaced primarily with (1) email, allowing each student to send memos to other class members and to the instructor, (2) a "listserv", or email address where students could send memos which would be automatically forwarded to all class members, (3) an internet site, where the instructor could provide information about the course, class members, and student performance, and (4) an internet forms submission process, where students could fill out internet forms on their browsers and submit them to the instructor.

Access to and supporting information about the use of these communication devices was provided on the mg301 desktop, particularly in the second row. A prerequisite for the course was that each student have his/her own email address and the capability of sending email. It is also possible to send email and internet forms directly from a correctly configured web browser, and information about how to set up a browser to do this was provided in the third row. The second row provided links whereby students could fill out and send forms, send notes to the instructor, contribute via listserv to class discussion, and access feedback about class performance.

The second row also contained information about class members, accessed via "classmates". The only information available to nonmembers, however, was members' names. Information about individuals, including their email addresses, was kept in an area of the site known only to class members. Individual feedback was listed in a public section, but indexed by "aliases" -- here, four character nonsense words. Each individual was informed privately of his/her alias, but did not know others' aliases.

Other means of communication, such as phone calls, letters, and face-to-face meetings were also used, but only on an ad hoc and occasional basis. For example, phone calls were more frequent at the course's start, when some students were having difficulty getting their email working.

A second type of resource for the course is more familiar to classroom courses: a textbook. Though a few online courses are replacing a traditional (paper) textbook with an online equivalent or CD-ROM, there continue to be a number of advantages to a paper text, which will not be recapped here. The text, Daft's third edition (1994) of "Management", by The Dryden Press, was also used in the classroom sections of this course.

The provision of a text also means that distant learners must somehow obtain that text. Since the class was comprised of people near either our Boise or Twin Falls campuses, this was not a problem. Since our distance learning program has already established procedures for enrolling and supplying people away from these areas, provision of a text is not anticpated to become a problem.

A third type of resource is available to internet students, but not necessarily classroom students: the internet itself. The internet is in effect a kind of library available to class members. While it is unsystematic and uncharted, it is also vast and current. A part of the challenge of this course was to explore this resource and determine how it may be used to further the course's goals.

Learning Activities

Assignments were given for each week of the course. These assignments generally included:

- **Readings** from the text. In addition the instructor assigned weekly "reading memos", in which each student wrote a note to another student in the class, commenting on the reading assignment. This assignment was intended both to help students to do the readings on time, and also to encourage thinking about the comprehensibility and relevance of the readings. Requiring that the memo be sent to a peer (with a copy to the instructor) was intended to help students in their writing by placing the memo in a specific context.
- **Commentary** by the instructor on the readings and course. Each week the instructor wrote a few paragraphs on the current week's reading. These paragraphs were to some extent a replacement for a lecture. The reading might be related to the overall learning plan of the course, to the course

goals, and/or to larger contemporary social happenings. These commentaries might also discuss the course, how it is going, and conclude previous assignments.

- **Discussion assignments**. Every two or three weeks a discussion topic was identified, and students were asked to provide 2-3 contributions to that discussion per week. Discussions might be on an issue related to the current course material (e.g., "why have a large-scale perspective of a firm?", or "Need a manager know the business?"), on developing the course (e.g., "how can we improve our discussions?"), and on complex problem-solving (e.g., "how can firms absorb the expense of equal rights and be competitive?"). Since students often prefer to make contributions later in a discussion, 2-3 "first starters" were designated to kick off each discussion. Later on a norm of spacing contributions 2-3 days apart was established.
- **Weekly assignments**. These were short assignments intended to further the course in some way. For example:
  - reading some resource material; e.g., on setting up a browser for email or on conducting email discussions
  - filling out a "get-acquainted" form
  - filling out a global preparedness form from the international chapter, or a leadership style questionnaire from the leadership chapter
  - finding an answer to a question through internet search
  - using the internet to update a case
  - assessing organizational structures from internet organizational charts
  - determining the location of a regional "mystery" site
  - subscribing to an internet newspaper (via CRAYON)

Some longer duration activities were also included, and these are similar to those often found in classroom designs: a term paper, tests, and a final exam. These are designed to be learning activities, but with outcomes which provide indications of course goal accomplishment. They are discussed in more detail below.

Assessable Outcomes

All assignments were tracked, and some course points were allotted to their satisfactory completion. Three activities however, were specifically designed so that the student products would serve as indications of course goal accomplishment. The first of these was the traditional multiple choice exam. The exam bank of the Daft text was imported to a Toolbook book, a page of which is shown in figure 3.

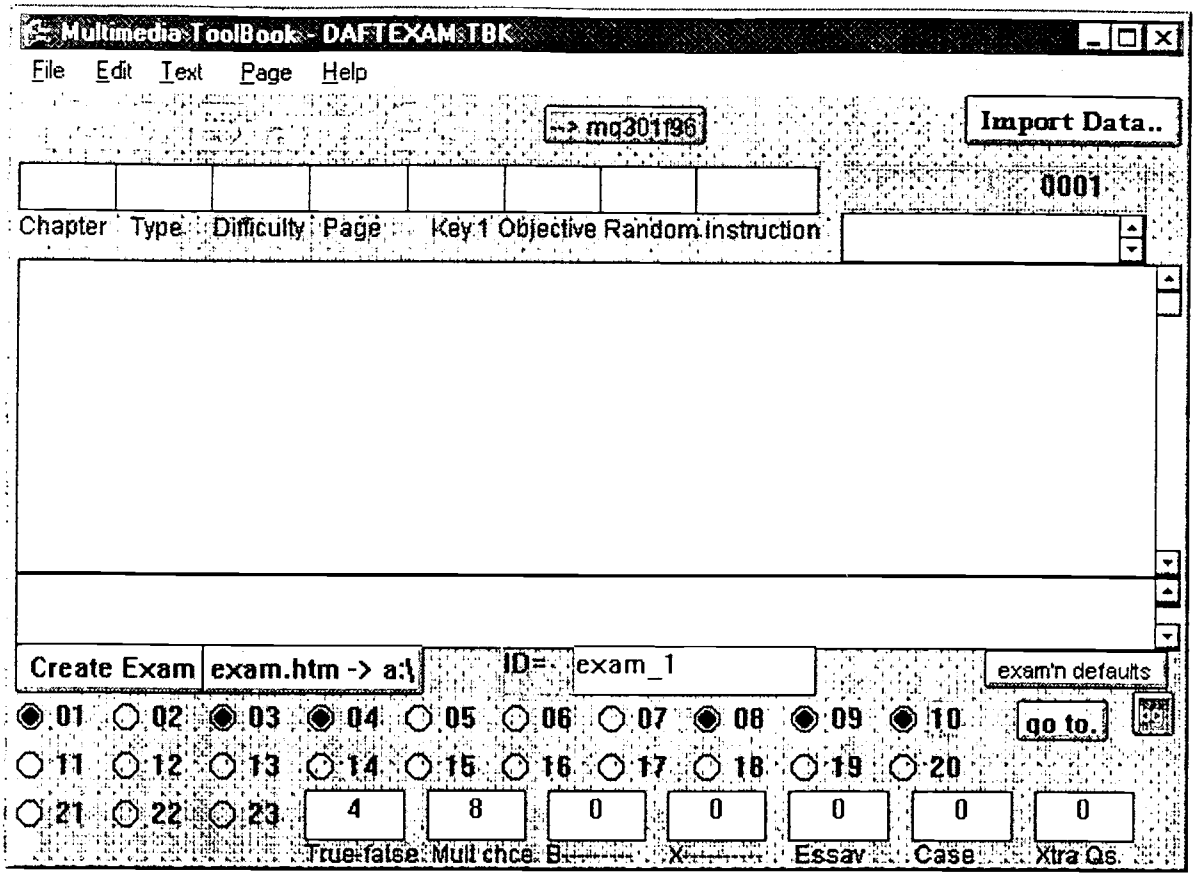

Figure 3: A sample page from the Toolbook exam book

Programs were written by the author which would allow the selection of chapters, question types, and numbers of questions, and the generation of an exam document in the form of an html form. Since questions were drawn randomly from a bank of some 2500+ questions, it was possible to generate a large number of exams, each covering the same material, and with a low overlap of questions between exams. Thus, while it is possible that some students might save exams and pass them along with correct answers to students in the next course offering, the old exam would help very little with the next exam.

At two points in the semester, 60 question multiple choice exam forms were made available in "test 1" and "test 2" on the first row of the mg301 desktop. Students had a week to complete the exam and send the completed form back. They were advised of academic honesty rules and the consequences for breaking them.

The second assessable activity was a term paper. Since a term paper is intrinsically an asynchronous activity the assignment for this activity was taken directly from the classroom-designed course. The assignment was listed in the top row of the mg301 desktop, and links to the specific assignment. Early in the course students were asked to submit topics (just as in the classroom sections), and were given feedback as to the topic's appropriateness. Papers were submitted near the end of the semester in the body of an email message and were scored in the same way as were classroom sections.

The third assessable activity was a final exam, also listed and described in the top row of the mg301 desktop. As with the multiple choice exams, this activity was imported from the classroom section design, but was given in a "take-home" form. It was submitted via email.

The equivalency of assessable outcomes between internet and classroom sessions was deliberate, both because as a core course, there should be a strong equivalency of learning among sections, and because of interest in comparing learning accomplished between the two. Suffice it to say at this point that (1) the internet and classroom populations in this course were probably not very equivalent, (2) classroom

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students did not have take-home multiple choice and final exams, and (3) the supporting resources for each group were distinctly different. These validity threats need to be dealt with before any conclusions can be drawn about equivalency of learning between internet and classroom sections.

Feedback

All student communication came to the instructor via email, whether it be memos, listserv, or forms. Given 18 students carrying out the assignments described above, it's not hard to calculate that the instructor received 100+ course-related emails a week. The first step in handling these messages was to organize them in a way which made them accessible to the instructor and to manipulation by programs.

The first phase in doing this was to organize the messages as they came in, into a series of folders. The author used Pegasus, which allowed both the creation of mail folders, and the naming of these folders. Some folders used are shown in figure 4:

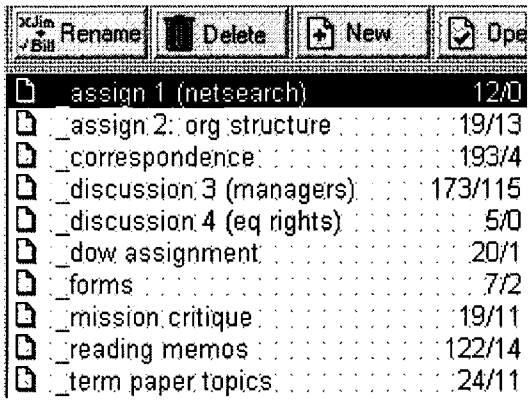

Figure 4: Organization of email Folders

These folder names began with a "_" so as to place them all together at the top of the list. Each was also given an 8 character name (e.g. "discuss1"), which became the actual name of the file containing these messages on the email server. One folder was used for forms, and in general a folder was created for each assignment. Notice that there was also a "correspondence" folder, for the many memo items that had nothing to do with particular learning activities. It's very important NOT to put misaddressed or "bad" messages into these folders, since such messages usually have irregular headers which may make the analysis of messages by computer exceedingly difficult. Such messages were put in the "correspondence" folder, and a memo was sent to the originator requesting a resubmission. The general philosophy of this approach was "no deletions": all messages sent during the course of the semester were put into folders somewhere, and kept for the duration of the semester. In this way the likelihood of losing a message was reduced--as long as the mail server maintained its integrity.

In managing the class, the only folder which the instructor reviewed in Pegasus mail was the current discussion folder, since the discussion contained a sequencing not maintained in the student pages. Most of the other folders were first imported to containers on students' pages in a Toolbook book, and read there. After importation, forms data was processed by an OpenScript (Toolbook) program before reviewing. A page from the Toolbook in which this is currently done is shown in Figure 5:

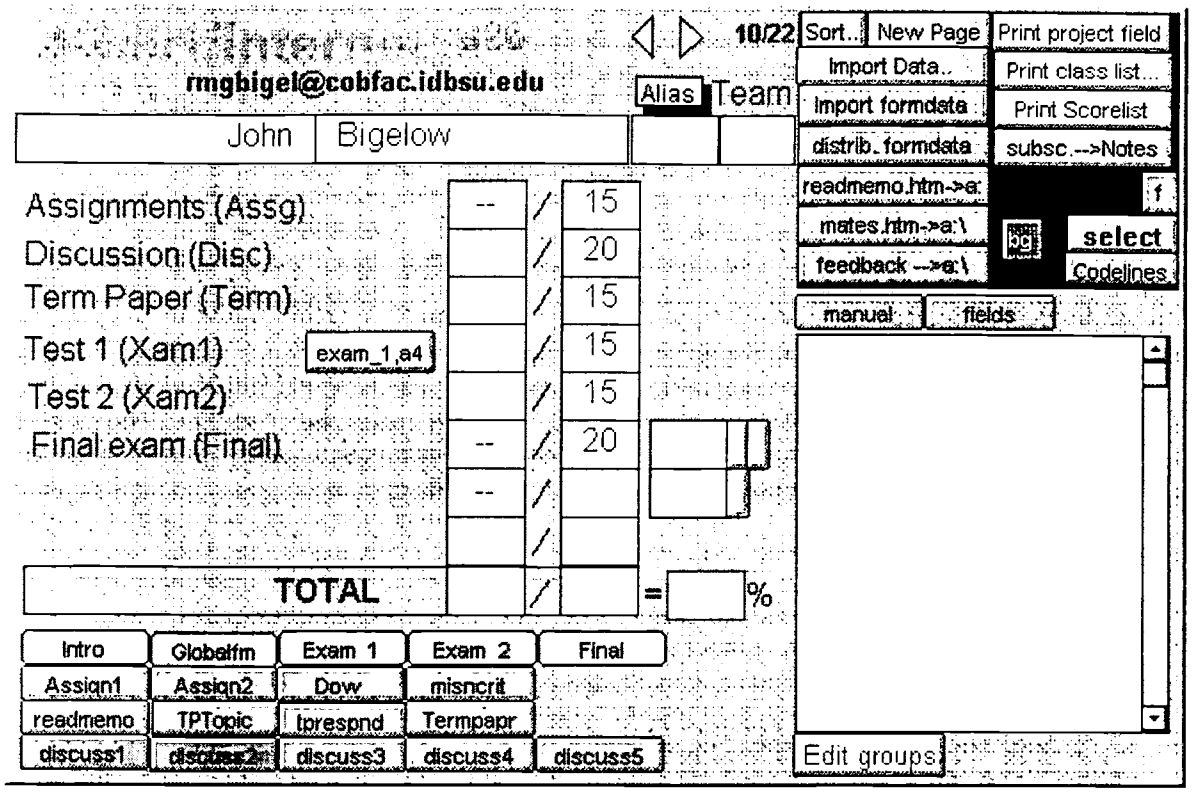

Figure 5: Student Information Toolbook

This process worked because a person's email is accessible not only via an email program (like Pegasus), but also directly as text files. Because the folders for this course were given names, it is possible for Toolbook to to open and read them. The Toolbook page shown above is the one for the instructor. Discussion items originating from the instructor wound up on this page. A series of containers were arrayed along the bottom of the page, with names which correspond to email folders. When there is content in these containers, they are green; otherwise they are grey. When right-clicked, they enlarge so that the memos contained in them can be read. When left-clicked, a program is run which imports the corresponding email memos into the container for each student. Note that this loading was a non-destructive process for the email folder (though it cleared the corresponding Toolbook containers first), so if a mistake is made, one can simply reload the email.

The containers of the top line of this bottom row contained form data. This kind of information looks different and was treated differently. The "exam_1,a4" button in the middle of the page scored exams, put scores in the container to the right of the button, wrote an html feedback file for each individual, and created summary information about how well the class did on each question. After scoring, the instructor reviewed questions with which individuals tended to have difficulty, and decided whether the question should be counted or not. Based on this, the instructor sometimes modified the exam scoring process and reran the scoring.

After updating student pages, a program was run which created an html file which provided detailed information about what has been received from students, scores on exams (with links to detailed feedback), and a summary of how the person was doing to date. This information was publicly available from "posted scores" on the mg301 desktop, but published by "alias", as described earlier, so as to maintain confidentiality.

Feedback was also elicited from students for the purpose of improving the course. This occurred naturally, as students encountered difficulties and sought help, but in addition some short discussions on how to improve the course were also scheduled, including an end-of-semester evaluation.

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Student Response

The course is halfway through its first semester, so more will be learned by the course's conclusion. At this point it is possible to identify both difficulties encountered by students as well as benefits which the course is providing.

Difficulties

The course was described as "pioneering", and in fact a number of unanticipated obstacles were encountered in this first round:

1. **Starting up**. A classroom "starts" according to a class schedule, and students show up at the first session. There is no equivalent event for an internet course. As a result, many students simply waited for something to happen. It was necessary for the instructor to search out/call/email a number of students, to instruct them to access the internet mg301 desktop, and to follow the instructions there.
2. **Getting up to speed**. A startup period of about two weeks was anticipated, in which students got their email and browsers working. This turned out to be about the right amount of time. While there were a few computer-ready students (these were often students with computer majors), a large proportion of the class was just beginning to establish email and browser capabilities. There was one Mac user, and one student working from campus computer labs; the rest were connecting from a home computer, either through the university's dial-up facilities or a commercial service. A wide variety of problems were encountered, some of which were new to the instructor: the listserv had been initially established as "moderated", meaning that student messages went to the instructor instead of to the listserv membership. Students seeking help from the BSU help line were told that their web browsers were "not supported". The membership roster of the listserv unaccountably disappeared on two occasions. Some people who signed up for the course apparently had not realized that it was an internet section, would not respond to inquiring calls, and subsequently dropped. People signing up from the Twin Falls campus were not initially recognized as being in the class. Early internet forms would not deliver more than the first 512 bytes of the submitted forms. Students working from home sometimes found that their phone connections had dropped while they were filling out forms. Browsers need to be configured before sending data, and some students had the frustrating experience of filling out forms, getting an error message when trying to send, and losing the data. Early feedback efforts by the instructor did not include all the materials sent by students, leading to considerable anxiety by some when they thought their assignments had not been received on time. Most of these difficulties are preventable, once they have surfaced. They are indicative of a new technology which is not yet working smoothly as an integrated system.
3. **Adjusting to the course format**. Once established, the difference between this section and traditional classroom sections became clear. Some students expressed discomfort that they could not see or directly interact with others. On the other hand, the full participation created by the process was appreciated. While the course was asynchronous there were still deadlines for completion of course activities. Some students timed their contributions to be just in time for these deadlines, in effect removing some of the asynchronicity built in to the course.
4. **Day-to-day frustrations**. The mail server went down periodically, and some students, working on a tight deadline, became frustrated when they found the mail server down and their deadline immanent. Similarly, the student working in the lab lost work when the lab went down. Our dialup facilities became nearly impossible to access between late afternoon and early morning. Thus many had to readjust their "anytime, anyplace" schedule to fit when the dialup facilities were available. As a result, many students joined commercial netservers. Access to the BSU www server has varied. At times it has been very slow, at others it has become entirely unresponsive. Listservs, which are known to everyone on the internet, have attracted "spamming". Thirty messages appeared one morning, of fictitious individuals attempting to join the class listserv. Two students received prank messages purporting to be from the White House.
5. **Submission feedback**. This is implicit in the above, but a clear issue in itself: Students attempting to send email currently do not receive feedback as to whether their messages got through. Some students would send a message several times, thinking that this would increase the likelihood of

success. This created problems for the instructor, who had to weed out the redundant messages. Particularly for exams, students would not only send the exam, but also a message to the instructor asking for confirmation of receipt. Thus, this lack of feedback created both anxiety for students and considerable overhead for the instructor. Again, this is a solvable problem, but requires someone with CGI (Common Gateway Interface) skills to produce the solution.

These difficulties have abated somewhat as we all gained expertise in conducting the course, but continue to be a significant source of frustration for many students.

Advantages

Lest it be thought that the internet course features nothing but disadvantages, students have also identified a number of positive values to the course:

1. **Flexibility**. It was anticipated that many of our non-traditional students would appreciate the asynchronous design of the course, since it would allow them to fit their course work into an otherwise filled work and family life. Several students did in fact express strong appreciation for this aspect of the course, and asserted that they would not otherwise be able to fit the course in.
2. **Creating a schedule**. It was also anticipated that the course would be attractive to some full-time students, since it would help resolve scheduling conflicts. About half the class was full-time students, and a number of them stated that they chose this section primarily because it helped them to create a semester schedule.
3. **Learning internet**. The fact that the course required use of internet was attractive to several students, who liked the idea that the course would not only deal with management, but also enable them to develop their internet skills. These students were also excited about the prospect of learning about the relevance of the internet for business.
4. **Full contribution**. It's rare to see a classroom section in which every student contributes equally; yet such contribution is instrinsic to the design of this course. Some students expressed appreciation for this, either because they were classroom contributors who felt that other class members should contribute more, or because they were somewhat shy in the classroom, and found the "public speaking" barrier to contribution removed.

In sum, the course provided both positive and negative values for students. Although many of the startup problems discussed above can be substantially ameliorated in the course's next offering, the day-to-day problems listed above don't seem to be about to disappear. Nonetheless, with some development, students in next semester's course may find its benefits to distinctly outweigh its disadvantages.

Footnotes

1. If you are reading this in paper format, the original paper is an internet html document. Underlined sections contain links which can only be accessed in the html formatted document, at http://www.idbsu.edu/business/mg/mg301/mg301pap.htm.

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10. Teaching with the internet

11. The Virtual Classroom (UConn)
12. Virtual Courses on the Web
13. Virtual High
14. Virtual Online University
15. The World Lecture Hall

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