Best Practices for Online Learning in Interactive Media and Animation

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ABSTRACT - *This informational article presents a successful framework of best practices for interactive media and animation online learning environments that can be applied to all computer graphics technology distance courses. Observation-based research and an online survey was used as follow-ups to prior studies by Harris & Blue (2008), and Harris, Duff, & Lestar (2007), which focused on the perception of the student. This information article focuses on a presentation of ideas from the perspective of the professor. Computer graphics technology courses can be taught successfully online, but with different approaches to learning and different approaches to teaching.*

I. Introduction

Schlosser & Simonson (2006) defined online education as "institution-based, formal education where the learning group is separated geographically, and where interactive telecommunications systems are used to connect learners, resources, and instructors." Even though the approach to teaching online is different from face-to-face instruction; however, the teaching pedagogy, required content expertise, and need for meaningful learning remains constant.

Knowledge of teaching pedagogy leads to successful online teaching. Instructors who have basic knowledge of learning theory, specifically online learning theory, have a distinct advantage (Simonson, Schlosser, & Hanson,1999). Teachers who can translate their face-to-face skills in managing collaboration, engaging students in activities, and asking effective questions, to the virtual world, will be successful online instructors (Crys, 1997; Harris, Duff, & Lestar, 2007; Abel, 2005; Chickering, 1987).

And of course, it is understood that faculty should have content expertise. In addition, faculty need to know copyright compliance, and institutional content ownership.

Jonassen (n.d.) who examined the characteristics of meaningful learning as guidelines for designing constructivist learning environments, says that meaningful learning is composed of a variety of adjectives. It should be reflective, conversational, active, and collaborative. Online events should be intentional, contextual, constructive, and complex enough to show rigor. The first time a course is taught online, it requires a commitment of time to course design and production, weeks before the course begins. Online teachers who use the technical features of the interactive interface will provide a much more robust experience for the students. Crys (1997) even goes so far as to say that instructors who can apply graphic design and visual thinking skills to their online course, have the potential for a more successful distance learning course.

How does an instructor decide what Course Management System (CMS) or Learning

Management System (LMS) to use for his online course? If the instructor is committed to develop the digital assets, is a content expert, and has a grasp of teaching pedagogy, where does he begin? Unless instructors select to use an open sourced CMS, they are usually limited to using the software that is licensed by their university to deliver the online course.

Blackboard, a Washington, D.C. company, which hosts the online interface of more than 5,000 institutions worldwide, bought out WebCT several years ago and recently bought out ANGEL Learning of Indianapolis. When the author designed and implemented an online graduate program for industry professionals and online graduate students, there were several practices that were learned for online learning success (Harris, Duff, & Lestar, 2007; Harris & Blue, 2008). The course that was used as a pilot test for collecting continuing best practices for this study was CGT 581 Storytelling for Interactive Media and animation, which was taught by the author the summer of 2009 at Purdue University through the Department of Computer Graphics Technology. The course was accessible through BlackboardVista, which is the CMS used at Purdue University. Other universities using Blackboard include The University of Texas at Austin, Arizona State University, The University of Cincinnati, The University of Manchester, and The Caribbean University in Latin America. Other CMS/LMS's are ANGEL Learning, Desire 2 Learn (D2L), eCollege, or other open source models, such as Sakai, Moodle, etc.

The benefits to using a CMS like Blackboard is that grades can be distributed to the students securely and electronically, grades can be submitted to the registrar, online tests can be given, student progress can be tracked, and assignments can be distributed and received online. Students use a CMS because they have 24/7 access to the posted course materials. They can network with other classmates online and collaborate with them. They can receive feedback on their work without waiting until the next class begins. They also have the convenience of turning in their assignments electronically (Blackboard, Inc., 2009).

II. Best practices: Preparation workshop

A best practice is that prior to taking the course, students should be required: (1) to participate in either a face-to-face workshop on the online experience, or (2) to review a tutorial either before the session begins or as a part of the first week. This prepares them for the technical expectations of the course.

Since it is important to address the different learning styles of students, a professional training workshop should also be arranged for the faculty who will be teaching online. Teachers are content experts, but not necessarily technology experts. This is especially true when adjuncts are used to teach the online courses. It is important for faculty to take advantage of these opportunities. This is the best place to begin the journey of online content design.

There are a number of comprehensive websites about best practices for online learning (Refer to Figure 1).

URLs for Online Learning Best Practices

RODP Standards and Template Guidelines at rodp.org
SREB Principles of Good Practice at ecinitiatives.org
TLT/Seven Principles Library at tltgroup.org
Good Models of Teaching with Technology as knowledgeloom.org
Assessment at uts.edu.au
Good Practices in Student Assessment at ucd.edu
http://www.a-hec.org/IsL_2005.html

Figure 1

III. Best practices: Incentives and rewards for faculty

Research has shown that if a college wants to increase the number of distance learning courses and students, a system of faculty incentives and rewards should be in place by the administration to encourage the effort that goes behind developing and delivering an online course (Simonson et al., 2006). Putting together a totally online course requires a lot of preliminary work before the start of the course.

At Purdue University, the information technologists offer an annual workshop to those professors who are interested in constructing an online course. There are technical consultants who work one-on-one with the professors to answer any technical questions about the BlackboardVista interface features. During the course delivery, reliable and timely technical support is a top requirement for the success of an online class.

TLT (Teaching & Learning Technologies) Distance Education Incentive Awards Program at Purdue University offers a $3,000 incentive award to the faculty member who builds and teaches the most high quality totally online course of the year. The faculty member will be recognized at the annual TLT Conference awards presentation.

IV. Interface design

The first thing a student sees when accessing the online course is the interface design. It should be as transparent as possible (Mehrota, Hollister, & McGahey, 2001). The Blackboard interface design of 2006 had appeal to the online students (Harris, Duff, & Lestar, 2007). When Blackboard merged with WebCT and ended up with BlackboardVista, many students complained about the confusing interface (Harris, 2008). The homepage of a site should be visually pleasing, and the navigation and structure should be easy to understand. In order to visually simplify the interface, the author suggests using a custom HTML template and working with the IT department to make sure it is uploaded on the Blackboard server. The technical consultant at Purdue have developed several customized templates to select.

The interface design that was used by the pilot course (refer to Figure 2) had a mug shot of the professor, name and number of the course, website address, e-mail address, and a number of customized colorful icons that were created in Adobe Illustrator by the author. The links on the homepage were: (1) Start Here, (2) Introduce yourself, (3) Assignment Dropbox, (4) Learning Modules, (5) Syllabus, (6) Quizzes, (7) Discussion Boards, and (8) Virtual Office. The students have the option of clicking on the arrows on the left border to reveal the limited Blackboard menu with the following: (1) Announcements, (2) Mail, (3) Media Library, (4) Web Links. There were also “My tools,” to reveal additional tools for the student: (1) “My Grades,” (2) “My files,” and (3) “Notes.”

V. Online Tools

CMS/LMS options give the instructor a variety of capabilities, such as a bulletin board function, a real-time chat feature, file upload capabilities, e-mail communication from the classmates, areas for announcements, course information, assignments, and external Web links. In addition, a CMS/LMS usually offers testing capabilities, grade book features, and the ability to track the student online time and use of the program (Refer to Figure 3).

Homepage

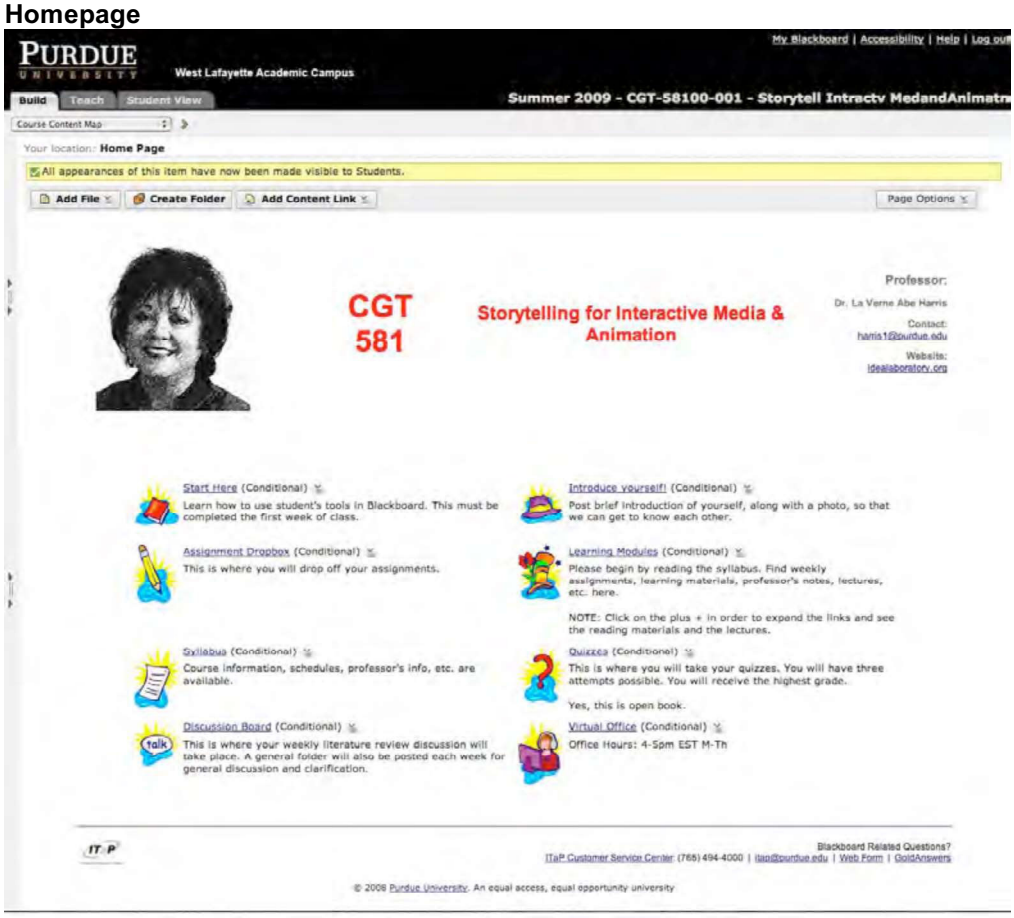

Figure 2

Purdue University Centrally-managed CMS

Tools	Features
Communication	Announcements, Chat, Whiteboard, Discussions, Mail, Blog, Journal
Presentation and Content Delivery	Syllabus, Learning Module, Media Library, Web Links
Assessment	Assignment, Self-Test, Survey, Quiz
Management	Grade Book, Group Manager, Activity Tracking
Student	Notes, My Grades, My Files, To-Do List

Source: 2009-2010 Distance Education Faculty Technology Workshop, Purdue University

Figure 3

VI. Online communication

Many students sign up for an online course with the misunderstanding of the expectations (Harris & Blue, 2008; Harris, Duff, & Lestar, 2007). They believe online learning is completely self-paced, takes less time and effort than a face-to-face university course, and offers no interaction between the classmates. Encouraging contact among students, and also between students and faculty is an important best practice, because it forms an online community. In the CGT online course, communication was encouraged through supporting academic and learning resources and communication features.

Supporting resources in the pilot online course included a "Start Here" link. A system for online university research should be in place so that students can do their research using online resources that are equivalent to the on-campus student resources. A system for online research access and support should also be in place. A "Web Links" list of URLs can be added linking the student to the online library and technical help. When students are not prepared for online learning, an online tutorial should be available

one week before the course begins. The "Start Here" link provided an optional online learning tutorial and optional quiz. Textbooks need to be ordered or purchased early, since most online courses are shorter than on-campus courses.

Communication features used to encourage a virtual community included an interview of the professor, profiles of the students, weekly general discussion forums, and virtual office hours.

Profiles

One best practice is to produce a movie clip – "Meet the Professor" -- as an interview of the professor, so that students could get to know the instructor's background. This can be produced using video capture of iMovie that comes free with every new Macintosh computer, or using iSight, an affordable webcam that is hooked to your Macintosh computer. If a PC is used for production of the online assets, then a webcam can be hooked to the computer and used with free tools for recording webcam videos. Windows Movie Maker comes with Windows XP and Vista, or you can download a freeware webcam recording tool called Broadcaster StudioPRO.

A "Student Profile" link was established so that each student could also introduce himself or herself and post a photograph. This helps form professional networking for the students. Demographic information can be provided, such as profession, educational level, age, background, family, etc. Posting the reason for taking the class also helps with the networking.

In prior online courses, many of the students were industry professionals. Some of the traditional graduate students developed business relationships with the industry professionals to help them with future jobs. That is why it is important to remember that online behavior could be observed by your future supervisor.

Weekly General Discussion Board

Each week two threaded discussion forums were set up. One was the "General Weekly Discussion" forum where students and teachers could post conversational questions and statements about the lectures, assignments, deadlines, frustrations, kudos, etc. Everyone participates in responding to the posts, not just the instructor. This is part of the classroom participation.

Virtual Office Hours

For prompt feedback, virtual office hours were set up, so that students knew that there was an established time to virtually chat with the professor. Because students who were taking this course were from countries outside of the United States, or from different states, or were working during the day, this feature was not utilized as much as the general discussion board or e-mail. There were boundaries established for communication with the professor, so that the expectation was not that she was available 24-7. Communication began at 8:00 a.m. on Mondays and continued to the end of the day on Fridays. After Friday evening the students understood that they could communicate with each other, but that the professor would not be online until Monday morning; otherwise, students will be e-mailing at 1:00 a.m. and expect a response right away. This boundary helps students monitor their time and deadlines, and learn to respect the time of the professor.

In a course offered during the autumn or spring semesters, at least one Adobe Connect conference presentation should take place.

VII. Online presentation and content delivery

The content of online courses should be as rigorous as face-to-face courses of the same subject matter. Learning can be supported using a variety of strategies, which include creative thinking, critical thinking, and problem solving. Through role playing, hands-on experience, as well as gathering information, and content analysis, online learning takes place. This takes preliminary planning and organization on the part of the instructor. Since Murphy's Law often plays into the delivery of technology, have a Plan B that can be deployed if the primary delivery system should fail at some point. Having google e-mails as backups, and using googledocs is an emergency alternative method of delivery.

Introduction to the Online Course

The pilot course content delivery began with a short movie clip of the introduction to the course of the professor talking. In the movie clip the student is given information about the course expectations and deadlines, the interface, navigation, and content of the course. High expectations were communicated as well as a respect for diverse talents and ways of learning.

The course syllabus for this course was produced using Dreamweaver, so that any revisions to the content could be easily uploaded to the University server. Straight HTML, Adobe Acrobat file or a PDF can also be posted, if Dreamweaver is not used. A section explaining the minimum computer requirements should be listed either on the syllabus or in the "Start Here" link.

Learning Modules: Lectures

Each week there were lectures posted. Some lectures were from the CD in the textbook, and the others were produced. If you are using a PC to construct your lectures, you can use a piece of software called "Presenter." Students with different platforms can view the files. If you are constructing your lectures using a PC or Macintosh computer and you only have Microsoft Office software, you can narrate Powerpoint presentations. Using lots of graphics makes the presentation more interesting to view. Audio files can be made visible, so that the students can copy the audio file on their iPODs. It is important to find out the file size limitation of uploading to your server. Most of the lectures in the CGT course had to be sectioned into modules. To reduce the file size, it is suggested that audio files be linked, not embedded.

Learning Modules: Reading

Both textbook readings from the two required books, and journal article(s) were posted each week. Additional handouts, articles, or URLs were posted for reading or reference.

Research Discussion Board

The second threaded discussion forum is an academic research one. So that the students continue to collect journal articles for their literature reviews (for the thesis or directed project), practice mini-literature reviews are posted. A storytelling article was posted each week. The students read the article and textbook reading first, then found an additional article on the topic, and posted their answers to the research discussion question. The posting should be

several paragraphs of academic writing and in third person (like a literature review), with APA citings, and a reference list at the end. The citings refer to: (1) weekly posted article, (2) the additional attached PDF journal article. Students were required to respond to two other posts. They could do this in first person and with or without citings. An example of a discussion board post was posted for their reference. The research activity was worth 25 points each week with up to 15 points for the original post, and up to 5 points each for the responses.

Weekly Activities

Weekly activities can consist of challenges and reflection. The "Creative Thinking Hat Challenges," which involved creative problem solving or hands-on activities allow the students to use their imaginations. The "Critical Thinking Hat Challenges" allow the students to meet the challenge of the critique and learn to think with logic.

Assignments were written in Microsoft Word and "dropped" in the digital "Assignment Dropbox." When the assignments were graded, they were returned electronically to the student with a matrix of their grading criteria, as well as comments from the instructor. All assignments were due by midnight on Sunday.

Weekly Reflection Activities

In a semester course, which is a longer session than summer courses, a best practice of blogging should be implemented. In past courses students kept an online journal that the instructor had access to read. Participation in the journal was worth 10 points each week. Each student reflected upon the concepts learned during the week and selected one to discuss, and/or express areas of confusion or concern.

Presentation Tool: Adobe Presenter

Narrated lectures with PowerPoint, self-study tutorials or demonstrations, research presentations, or interactive quiz reviews can be produced with Adobe Presenter. This tool produces dynamic presentations with narrated voice-overs, and can be published as a presentation on Adobe Connect server, your server, or as a PDF file. This presentation tool production was initially limited to the PC platform; however, Bootcamp comes with every new Macintosh computer so that Windows Presenter files can be produced on the Mac platform. Presenter can be viewed from all platforms. Adobe Presenter incorporates videos, software simulations, animations, and quizzes through use of a plug-in fully integrated with Microsoft PowerPoint. For hearing-impaired students, add notes to the PowerPoint slides. A sample can be found at https://admin.adobe.acrobat.coma227210/getstartedpresenter/.

Presentation Tool: Adobe Connect

Adobe Connect is a real-time conferencing tool with video and audio that can be used as a presentation or collaboration tool. Adobe Connect develops reciprocity and cooperation among students and encourages active learning. PowerPoint presentations can be uploaded and files can be shared with the participants to deliver lectures virtually. This tool allows for great opportunities for guest speakers through the use of a headset/microphone and a Web camera. If you own a Macintosh computer, you probably have a camera already built in the monitor. Virtual office hours, breakout rooms for student team work, chatting, hand-raising, and drawing on a white board are some of the features of this online tool. All meetings can be recorded and stored on the Connect server for those students not able to attend the

conference meeting (http://gomeet.itap.purdue.edu/p69478892). On a smaller scale, the freeware version of Skype (www.skype.com) works well for small group meetings.

Screen Recording Software

Screen recording software is an online tool that is very helpful if you are demonstrating the use of software, or you want to capture an Internet session. Screen content, movement and audio are captured. The tools allow for post-production editing and have many publishing options. If you are looking for a freeware for audio only, try downloading Audacity (www.audacity.com) for producing audio, and edit in Adobe Soundbooth.

IIX. Online assessment

Course outcome assessment activities should be integrated as a part of the course delivery. The learning outcomes should be listed each week indicating that through the weekly activities, the student will achieve these specific outcomes.

Course learning outcomes were posted in the syllabus in the pilot course, and also on a weekly basis. The following is a list of outcomes for the online course:

1. Effectively navigate through the BlackboardVista interface.
2. Identify the basics of storytelling for interactive media and animation.
3. Apply creative thinking approaches to solving problems.
4. Build a story with the focus on content, context, conflict, and plot.
5. Analyze the differences and similarities between a storyboard, an animatic, and the final product.
6. Compare the relationship between acting and the character's emotions and body language.
7. Describe how to develop a character in a story.
8. Describe how space and time change a story.
9. Gather, analyze, and apply knowledge from academic research and storytelling resources.
10. Write the beginning of a literature review on storytelling.
11. Write a script for an interactive media or animation short.

Grading matrixes were developed by the author, so that students understand the criteria for the grades. A grading matrix was developed for each of the following activities: (1) creative thinking challenge (Refer to Figure 5), (2) critique thinking and inquiry challenge (Refer to Figure 6), (3) research (Refer to Figure 7), and (4) short script communication (Refer to Figure 8).

Comparison of Screen Recording Software

Software	SnapzProX	Captivate	Camtasia	ScreenCorder
Co.	Ambrosia	Adobe	Techsmith	Matchware
Platform	Mac	PC and Mac	Windows XP/Vista	Windows
Cost	$69	$249	$179	University license
Features	Records full motion video with digital audio and an optional microphone voiceover on your computer screen; Great for demonstrations; Saves it as a QT movie or screenshot	Automatic creation of callouts Interactivity options Flash Quiz options are a good feature	PowerPoint plug-in provided Record from attached video camera to include in presentation Variety of video formats produced Full-motion video editing capability	AVI, WMV and Flash video Easy and quick editing
URL	http://www.ambrosiaw.com/ utilities/snapzprox/	http://www.adobe.com/products/captivate/	http://www.techsmith.com/camtasia.asp	http://www.matchware.com/en/products/screencorder

Figure 4

Creative thinking challenge matrix

Summer Module III: CGT 581 Storytelling for Interactive Media & Animation Harris

GRADING MATRIX	Excellent	Competent	Needs Work
Weekly Activity: Challenge Creative thinking solution	• Solution is centered around creative thinking, which shows a high level of conceptual ability and imagination.	• Solution shows a creative concept, but the solution is not always fully developed.	• Solution shows weak creative thinking.

Figure 5

Critique thinking and inquiry challenge matrix

Summer Module III: CGT 581 Storytelling for Interactive Media & Animation Harris

GRADING MATRIX	Excellent	Competent	Needs Work
Weekly Activity: Critique Thinking & inquiry	• Critque is centered around critical and creative thinking, which shows a highly developed awareness of historigraphic or social issues and a high level of conceptual ability.	• Critique shows an analytical structure and a central concept, but the analysis is not always fully developed or creative.	• Crtitque shows a weak analytical structure and no creative thinking.

Figure 6

Research matrix

Summer Module III: CGT 581 Storytelling for Interactive Media & Animation Harris

GRADING MATRIX	Excellent	Competent	Needs Work
Research Assignment	• Read 2 posted articles	• Read 2 posted articles	• Read 2 posted articles
Knowledge & understanding Similar to Chapter 2 Literature Review	• The Discussion Board posting with 3 citings and APA Style refs demonstrates a depth of understanding by using relevant and accurate detail to support weekly topic	• The Discussion Board posting with 2 citings and APA Style refs demonstrates a depth of understanding by using relevant and accurate detail to support weekly topic	• The Discussion Board posting with 1 citing and APA Style refs demonstrates a depth of understanding by using relevant and accurate detail to support weekly topic
	• Research is thorough and goes beyond what was presented in class	• Research meets course requirements	• Research is weak and not in appropriate format
	• Response to 2 other postings	• Response to 2 other postings	• No responses to other postings
	• Posted one article on topic	• No article posted on topic	• No article posted on topic

Figure 7

Short script communication matrix

Summer Module III: CGT 581 Storytelling for Interactive Media & Animation Harris

GRADING MATRIX	Excellent	Competent	Needs Work
Weekly Activity: Short script Communication	• Script is imaginative and effective in conveying ideas to the audience.	• Techniques used are effective in conveying main ideas, but are a bit unimaginative.	• The script fails to capture the interest of the audience and/or is confusing in what is to be communicated.

Figure 8

Assessment Tool: Blackboard Quizzes

A weekly quiz was posted as a review of weekly concepts. The student had three attempts to take the quiz. In the first quiz the scores were averaged. After that a new approach was used. The students had three attempts, but only the highest score was automatically recorded in the gradebook. The students used their first attempt as a study guide. The questions were randomized for each attempt. The author created a Microsoft Word document of the quiz and copied and pasted the questions and answers into the assessment feature. The scores were released to the students so that they could see their improvement on the quizzes.

Assessment Tool: Respondus

This online tool allows the instructor to create exams and surveys offline, whereas Blackboard assessments are produced online. The drawback is that is only available in the Windows environment, and not compatible with the Macintoah computer. It also does not offer a JAWS feature. The advantages are that it publishes directly to the CMS, imports questions from Microsoft Word, and exams can be printed directly from Respondus (http://www.itap.purdue. edu/tlt/Respondus/).

Assessment Tool: StudyMate

This assessment tool gives students an enjoyable way to study content through gaming activities. StudyMate offers 10 different Flash-based game activities that can be used with different content: (1) Fact Cards, (2) Fact Cards Plus, (3) Flash Cards, (4) Pick a Letter, (5) Fill in the Blank, (6) Crosswords, (7) Glossary, (8) Quiz, (9) Challenge, and (10) Glossary. The online interactive games can be played on iPods and Sony play stations. These are for review of concepts and can be used to study for parts of the quizzes. They offer a connection to the gradebook. The content can be imported from Microsoft Word and published directly to the CMS. Samples can be found at http://www.respondus.com/studymate/samples.shtml (Respondus, 2009).

Online Course Evaluation

Each semester all courses and teaching at Purdue University are reviewed and evaluated by the students through an online survey (Glotzbach, Burton & Co, 2008). There is evidence that online evaluations are generally lower than face-to-face because of student expectations of what an online course should be (Harris, 2009). It is advised to have a forum or a survey to discuss the online experience with the students to make sure that the course delivery and expectations are clearly defined and understood before or during the first week. The medium selected to deliver the course should be evaluated on its pedagogical effectiveness, receptivity to a variety of learning styles, accessibility to students, and responsiveness to the time and place limitations of the students. Feedback on content and organization of the course are also items to be surveyed (Simonson, et al., 2006).

Other Online Tools

Blackboard SafeAssign is an online tool for instructors that is used as a way of detecting plagarism. Streaming servers allow for hosting media files for online viewing. Software Remote is a tool that allows the student to have access to the software available in the on-campus laboratories. Signals is an intervention online tool that can be used to notify the instructor if a student is falling behind in the course. It is based on logins, grades, and time spent in the user interface. A number of other tool are listed at http://www.itap.purdue.edu/tlt/services.cfm

IX. In summary

Best practices in online learning requires a different approach to teaching and course preparation. The instructor becomes a facilitator of knowledge and discussions. It is even more important to interact online with each student so that the students remain engaged. It is a good practice to work closely with the IT department and select technologies that are well supported, tested, reliable, and can be adapted to a diverse curriculum. Most importantly, an online teacher must be able to translate knowledge and learning in new media to form online learning communities.

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