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From the editor…

Welcome to the January 2008 issue of Learning Technology.

This newsletter focuses on bringing emerging technologies in education to the readers. New developments and practices with learning technologies are the core of this newsletter. This issue covers enhancements on existing course management systems to 3D virtual classrooms.

Antunes et. al. describes a way of monitoring the students' within a virtual classroom. They discuss a pilot study conduct to identify the key points in tracking students' activities on formal learning sessions within a virtual classroom. Railean describes issues relating to design problems on non verbal interfaces and the role of feedback. Chiazzese et. al. describes a tool named GYM2LEARN which enables students to annotate web pages. This tool can be used with web based learning tools so that the students can takes notes while learning through the web.

Franco looks at how online courses can be designed taking into account the different learning styles of the students. Schroeder and Tutty looks at the use of Adobe Acrobat Connect tool to promote online community and limit isolation. Veglis describes the new enhanced features in Blackboard Learning System and how they are implemented within the institution.

This newsletter focuses publishing new and emerging technologies in education focussing on advanced learning technologies and its usage in different contexts. Please feel free to bring forward your ideas and views.

Besides, if you are involved in research and/or implementation of any aspect of advanced learning technologies, I invite you to contribute your own work in progress, project reports, case studies, and events announcements in this newsletter. For more details, please refer author guidelines at http://lttf.ieee.org/learn_tech/authors.html.

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Managing 3D Virtual Classrooms

Introduction

Although online distance learning is not a novel subject, recent emerging technologies expanded the notion of what a remote virtual learning environment could mean. One such technology is 3D virtual worlds.

3D virtual worlds can be described as online, persistent, avatar-based, virtual social spaces that provide users a sense of immersion and allow the interaction with other users and the environment. These worlds combine the sense of "being there", also found in Virtual Reality (VR) systems. However, VR systems lack the ability to incorporate several students simultaneously in a learning situation; they also don't provide students with the communication and user interaction capabilities available on social environments to foster the development of collaborative tasks. This ability and capabilities are found in 3D virtual worlds. Some, e.g. Active Worlds[1] and Second Life®[2], also allow the users to create world content, and furthermore provide the tools to develop novel in-world objects and a programming API to render possible the development of behaviour-rich content, tailored to instructional needs. For instance, Dickey [1] presents two case studies where Active Worlds was used to support synchronous and asynchronous online learning as well as provide a friendly virtual campus.

Moreover, institutions may take advantage of these new affordances to provide virtual classrooms that support integrated synchronous and asynchronous interaction far beyond that which is traditionally found in asynchronous Course Management Systems (CMS) and bandwidth-consuming videoconference tools. Since content can be created and scripted by the users themselves (and not only by specialized content developers), virtual worlds can be used to implement diverse laboratory classes. In particular, it can be used in a similar way to traditional face-to-face computer science programming labs where students' have to accomplish a programming assignment.

One issue that arises is: how can one monitor students inside these virtual classrooms, in order to better understand their difficulties and plan (and provide) adequate measures? Several examples, e.g. CourseVis [3] or Moodog [4], can be found, mostly concerning asynchronous learning supported by CMS. These systems rely on data collected by CMS to provide instructors with some insights on the students of the course. On the other hand, Chen [2] presented a system based on synchronous videoconferencing communication that is able to provide classroom activity indicators (speaking, making gestures, or moving in their seats) based on each student's corporal behaviour.

Though it is valuable information to know how present systems allow course management and distant student tracking, more research is required since virtual worlds' learning affordances do not directly map onto traditional teaching practices.

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[1] http://www.activeworlds.com/
[2] http://www.secondlife.com/

In order to better understand how learning activities are performed inside virtual worlds and how can be managed a pilot study was conducted.

Pilot study

During the fall semester of 2006, a pilot study was conducted to identify key points about tracking students' activities on synchronous formal learning sessions inside the virtual world of Second Life. Ten first- and second-year computer science students of the University of Trás-os-Montes e Alto Douro (Portugal) participated in this study along with two teachers.

At the beginning of the semester, students were given one programming assignment that should be completed by the end of the semester. Attendance was required once a week for two-hour synchronous sessions during which teachers would provide lecture material and students could state their doubts, in order to overcome their difficulties and misunderstandings. Figure 1 shows one such session. Students could develop their assignments both during these sessions and beyond them.

Figure 1 – Example of a synchronous session.

Students were asked to develop and script objects in order to accomplish a desired behaviour. (The image was edited to preserve students' anonymity.)

Among others finding, this study showed us Second Life lacks the capabilities to proper manage instructional related information (e.g. assignments, submissions, attendance).

We are currently developing an ongoing project in order to support the management of student assignments inside virtual worlds that is able to track, store and reproduce in-world students' actions. An existing project, Sloodle [5], aims to give Moodle CMS a 3D representation inside Second Life. Instead of recreating the same existing features of a CMS inside a virtual world, we are extending CMS functionality to support the management of synchronous activities inside virtual worlds and track students' in-world actions so instructors can have a detailed view of each student' path.

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Non-verbal conversational interfaces and feedback

Abstract
In this paper, we describe the design problems of the non-verbal conversational interfaces for the electronic textbooks and the role of feedback.
Key words: Conversation, feedback, type of answer

Introduction

If it is predicting to pass the Turing Test by 2010, we can already have the technology for the analysis of the possible students' answers. Is it possible to make this concept a reality?

Conversation in the didactical process

In the didactical process optimal conversation is a"dialogue between teacher and student in the process of instruction" [1] and represents "a complex dynamic system" [2]. The dialogue is realized between two partners, in which one is the sender, encoder or subject (teacher + instructional resources for teaching) and the second is a receiver, decoder or object (learner + style and methods of learning). Both partners use language for teaching or learning realized in two forms: verbal and non-verbal. The verbal conversation is "conceptual, logically codified, serves for conceptual integration of information and is semantic" [3], but non-verbal conversation uses images, mimicry, gestures; logical uncodified language is addressed to affections. In the electronic textbooks the non-verbal conversation is design through specific non-verbal conversational interfaces. The main role is given to the electronic text that can include different font, size, color, diagrams, and tables, audio and video files and feedback.

From the other point of view the didactical process can be considered a subsystem of the educational system in which equilibrium is maintained as the result of two algorithms: the algorithm of the student activity and the algorithm of the professor activity [4]. But, "if the whole is at a state of equilibrium, each part must be in a state of equilibrium in the conditions provided by the other" [5]. So, we can consider the condition of equilibrium:

$$\{A\} \underset{\longleftrightarrow}{feedback} \{B\}$$

where {A} is teacher's set and include teacher' bio-psycho-pedagogical characteristics, instructional resources, competences, methods of teaching etc.); {B} is student' set included student' bio-psychological characteristics, methods and techniques of learning etc.

An exchange of messages is realized between A and B through feedback. The feedback can be positive or negative, but only the effect of the negative feedback stabilizes the system. On the other hand, the external factors, which influence the state of the equilibrium, determine the quality of the input and the needs for output. In our case (the contemporary didactical process) the input dates are determined by the psychological characteristics of the native digitals and the needs for specific technologies for teaching and learning based on new models and theories (figure 1).

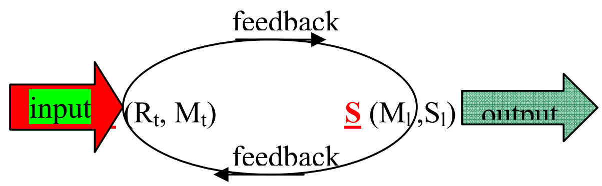

Figure 1. Contemporary didactical process

New forms of the input and output determine the needs for specific aim and objectives that can be realized through new instructional and assessment resources (R_t), methods of teaching (M_t), but also through students' methods of learning (M_l) and style of learning (S_l). As a result in the design of the conversational interfaces a total cumulative effect of teaching and learning can be considered.

Teacher' set

The functionalities that support the learner in the computational didactical process include the following entities: "Tutor, Monitor, Fellow Learners, Learning Materials, Informational Sources and Tools" [6]. In same cases the tutor can be a human teacher, but in other ones the function of the real teacher can be included into "intelligent tutoring system" [7], "AutoTutor"[8] or "e-tutor"[9]. Nevertheless, the tutor's functions (*input dates*) correlate with the necessity of the student to be adaptive to the needs of the external environment (*output dates*).

"Digital natives" [10] are included in the contemporary didactical process. As results, the specific form of the output can be considered the needs of society in "expert competence" [11] knowledge. This specific form of the output resulted from specific output dates determines the necessity in new teacher's resources, theory and technologies for teaching and learning. One possible solution is technology that includes behaviorist, cognitive and constructivist methods for learning in the same didactical process.

Student' set

Student' set include bio-psycho-pedagogical characteristics of the learner. Biological characteristics of the learner determine the interdependence between the instructional context and the level of the adaptivity at the environment. Psychological characteristics correlate with the style of learning. Pedagogical characteristics determine the effect of formal educational system at the process of learning.

At the moment, intelligent tutoring systems "can support the student in the process of problem solving, provide intelligent analysis of problem solution, and construct for each student an individual learning path, including individual selection of topics to learn, examples, and problems"[12]. Only the effect of the didactical process realized by the computer through feedback in the design is taken into consideration.

We consider that to be effective the student can be included into a real personalized process. This process can be initiated by the teacher (real or virtual), but at the specific moment the student will have the possibility to be included into self-regulated process. The specific moment is individual and depends on the student' bio-psycho-pedagogical characteristics.

Feedback and the variety of the students' answer

In the didactical process feedback is a loop between the teacher's set and student' set. In comparasion with the traditional learning in computer mediated instruction dialogue is mainly nonverbal. Lets us analyse all possible students answers and the role of feedback using Deatlov and Şerbakova [15] classification of computer didactical tasks (figure2). The author divided all possible students' answers into elective and constructive forms. Both forms can be observed in sentences, words and symbols and they included 7 types of didactical tasks. Pure elective answers need activities based on remembering and the pure constructive answers – activities based on creating according to Bloom's taxonomy.

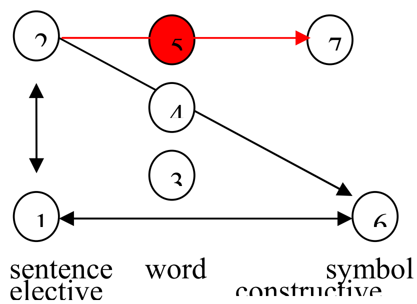

Figure 2. All possible forms of students' answers

Study the interdependence between the possible students' answers included into educational software and new terms of the Blooms' taxonomy defined by Anderson and Krathwohl, 2001 (table 1) their can be observed that task of remembering (type 1 and 6) at each level (sentence, word, symbol) can be easy analysed by the computer program. Type 4 can be programmed and visualized through concept map technique. The solution for all these tasks can be finding into memory of student or in the educational software data base.

Tasks of understanding (type 2, 5 and 7) are more difficult to be solved by the student and analysed by the program as a result of the implication the psychological process (table 1).

Table 1 The dependence between the type of the didactical task and possible forms of answer

	Type of didactical task	Possible forms of answer
1	Task of remembering	pure elective – multiple choice answer consisted by words or phrases
2	Task of understanding	formal constructive - summarize of relevance elements using picture
3	Task of applying	elective from set of words – intermediary between sentences, words and symbols, included all possible forms of encoded elements into cognitive schemas
4	Task of analyzing	elective – constructive - for situation where it is possible to group elements encoding into cognitive schemas according to rules
5	Task of analyzing	constructive form consisted by set of words applied for construction the phases with the same meanings.
6	Task of evaluating (self-assessment)	formal elective consisted from selection the specific symbols (logical, mathematical) encoding into cognitive schemas
7	Task of creating	pure constructive combine all possible forms of elements and student's answer into a functional whole that generate new ideas

Conclusions and future work

Based on our research, which indicates that didactical process is a bidirectional conservational process realized between teacher's set and student task the article suggest that in the design of the conversational interfaces a total cumulative effect of teaching and learning can be considered. Comparative analyse of Bloom's taxonomy and Deatlov and Şerbakova's classification of the didactical tasks divided into elective and constructive indicate that low, intermediary and high level. Low level tasks are based on the memory and can be easy programmed. Intermediary tasks are based on the memory and thinking cognitive processes and can be visualized through concept mapping. High level tasks are based on the thinking and decision-making processes. These tasks are personalized to the students' needs and at the moment we didn't have the effective intelligent technology for it analyzing.

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GYM2LEARN – A Web Annotation System for Text Comprehension

The aim of this article is to describe Gym2Learn, a web annotation tool for text comprehension. Interest in this tool developed from the observation that online study is often limited because browsers are unable to offer students a set of functionalities to support reading and comprehension activities. As a consequence, during the last few years, much research has been carried out to study the possibility of creating innovative and flexible tools that allow students to actively elaborate the online content.

Gym2Learn uses an annotation method as a way of applying and controlling some text comprehension strategies during a web learning activity. The system supports the student in the three different phases of assessment, training and execution. The *assessment phase* consists of an online questionnaire to evaluate students' metacognitive skills . The *training phase* provides a linear hypertext in which the students learn four comprehesion strategies (recalling previous knowledge; formulating hypotheses and verifying them during surfing; asking and answering questions to verify comprehension; identifying important parts of the text) following a metacognitive approach. The *executive phase* allows students to apply cognitive strategies that they have learned during the training phase and to enrich web pages with annotations. During this phase, notes are displayed through icons inserted in the portion of hypertext where a student has used system functionalities, as shown in Figure 1. Gym2Learn also shows notes in a sidebar arranged by typology. As a consequence, a student can monitor his work during learning activity.

The sidebar provides the functionality to create a document in rtf format from the annotations selected by the students and considered important for their learning objectives.

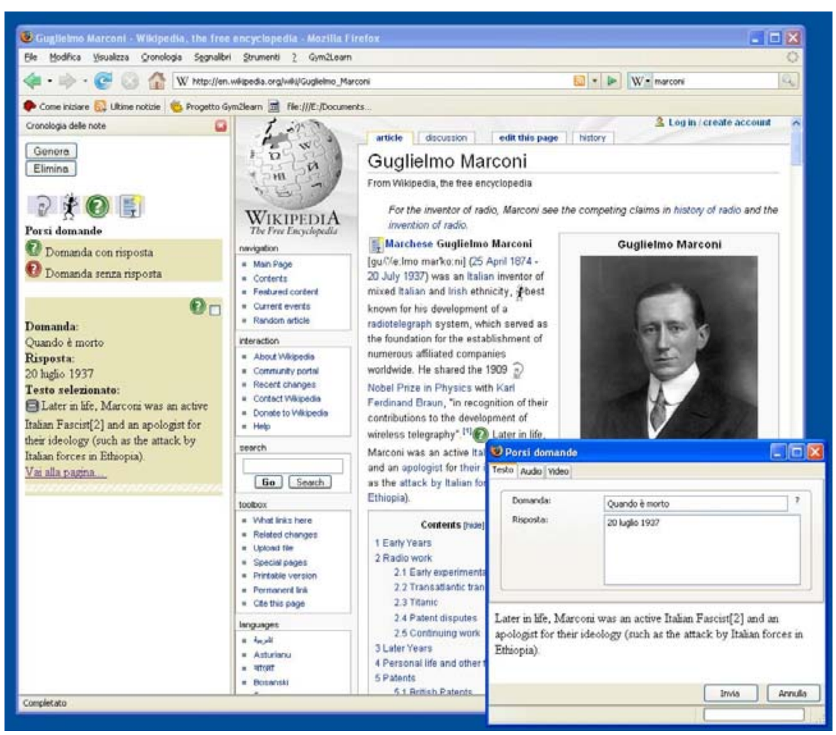

Figure 1 – Screenshot of Gym2Learn system

This phase is highly relevant because it involves different study strategies (abstraction, categorization and synthesis) which are typically used in a traditional learning activity [1]. This phase offers an active role to the student for elaborating their notes and producing a personal document with the annotated ideas.

The annotation functionality implemented in the Gym2Learn system is based on a key issue regarding the term “note”: according to Slotte and Loka [2] and Azouaou et al [3], a note concerns both the *process* of note-taking and the activity which gives rise to the note (*product*). From this point of view, the annotation is not simply a way of classifying contents in a specific typology of note but also corresponds to the behaviour of activating a cognitive strategy for text comprehension that becomes visible and can be recalled from the note. While most annotation systems emphasise only the final product of the annotation process, a note inserted by a student who uses Gym2Learn is at the same time both the process and product of the application of a cognitive strategy.

From a technological point of view the annotation system is modelled as a class of metadata. For the implementation of this architecture the system adopts the Annotea server and extends the RDF schema with the introduction of a specific namespace characterized by 4 types of annotation corresponding to the following comprehension strategies:

- previous knowledge;
- formulating hypotheses and verifying them during surfing;
- asking oneself questions and answering them to verify comprehension;
- identifying important parts of the text;

For each name space, specialized tags were defined to store specific data of every single type of note. Gym2Learn developed as an extension of the Firefox browser interacting with the Annotea Server. When the user defines a new annotation, an RDF [4] fragment is created and sent to the Annotea server. The server replies with the RDF file with the information requested by the client (Fig. 2).

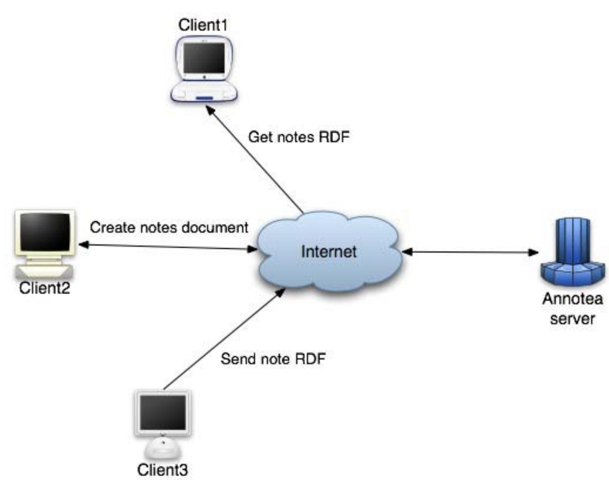

Figure 2 – Interactions between clients and the Annotea server

Note visualization is possible through an XSLT transformation document linked to the RDF supplied by the Annotea server. Thanks to Javascript and Ajax technology it is possible to execute some operations on the notes, such as visualization of notes by typology, modification and deletion of notes and generation of an rtf file document containing their data; Apache FOP is used to generate this document system.

In conclusion, the system introduces students to some of the main text comprehension strategies and allows them to improve their study experience on the web using a personalized note-taking procedure. In 2007, Gym2Learn was tested in different kinds of schools. The initial results were promising because some students improved their metacognitive skills and, moreover, the tool is flexible and can be effectively adapted to different learning contexts. The system is currently being tested in high schools in Palermo.

The implementation of Gym2Learn is included in the project CORFAD "Centro di competenza per la promozione e il testing di metodologie e prototipi di ambienti per l'Orientamento e la Formazione A Distanza", funded by the Industrial Department through the European Regional Operational Programme for Sicily 2000-2006.

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Designing online courses in the light of learning styles

Introduction

No one can deny the impact of technology upon the field of education. One of these impacts has been the online medium of delivery of education, often called e-learning, which can change the way one learns dramatically. However, this also raises concerns related to the strategies for designing learning environments.

The need to offer distance learning courses has led to instructional designers rushing to deliver content through web-based systems and little or no thought has been given to the quality of this content. The application of technology in education seems to be ineffective if it purely mimics the traditional face-to-face classroom. This paper argues that the way forward lies in addressing different learning styles when developing learning objects. This belief is consistent with the view expressed by Garland and Martin (2005:1) that the learning style of all students must be considered when designing online courses.

Learning Styles

Psychologist Howard Gardner's work, *Multiple Intelligences* (1993), has been effectively used by educators over a number of years. The successful application of this theory in traditional classroom environments has paved the way for its application in an online learning environment. The theory provides instructional designers and e-teachers with a stimulus for matching technology facilities to learning styles, thus improving students' adaptivity to learning systems.

Gardner (1993) views intelligence as the ability to solve problems or to develop products that are important in a given environment or cultural community. He (GARDNER, 1999, p.41-43) originally proposed seven types of intelligences: verbal-linguistic, logical-mathematical, visual-spatial, bodily-kinaesthetic, musical-rhythmic, interpersonal-social and intrapersonal-emotional.

The aforementioned intelligences are both biological and acquired. Furthermore, they are capable of changing over time. Human beings possess all of these intelligences, having some more developed than others. According to Gardner (2003:13), it is "fundamentally misleading to think about a single mind, a single intelligence, a single problem-solving capacity".

Under no circumstances, should educators label a student as being only talented in a certain area. Their role should be of encouraging learners to have their multiple intelligences developed. Accordingly, web-based activities can serve this purpose as they offer a rich environment for enabling learners to develop their capabilities and potentialities.

Learning Objects

The possibilities for integrating educational technology with multiple intelligences are various. One example of educational resources being employed in technology-supported learning is called Learning Objects. The IEEE (2002) standardization draft defined learning objects as any entity, digital or non-digital, that may be used for learning, education or training. New Media Consortium (NMC) defined learning objects as any grouping of materials that are structured in a meaningful way and are tied to an educational objective (Johnson, 2003 in Smith, 2004).

There are various attempts to characterise learning objects, but as the focus of this paper is on digital learning objects, the definition from Koper (2003) will be considered most suitable. He refers to learning objects as "units of learning" defined as digital objects with a specific educational purpose

The process of development of learning objects, which should aim, first and foremost, at providing efficient and customised resources, has to take into consideration primarily the student. Reigeluth (1999) says that apprentices must be at the top of the instructional structure.

The implementation of learning objects taking into account the theory of multiple intelligences provides an environment for the students to exercise their potentialities, allowing dynamic approaches to be adopted.

Designing learning objects which can cater for an array of learning styles may sound daunting but in fact it is far from being an insurmountable task. Backer (2001) suggests considering eight questions when doing so:

1. Who are the learners?
    (a) What will be the learning outcomes of the multimedia subject, or course?
    (b) What will be the content of the multimedia, subject, or course?
    (c) How will the content be ordered?
    (d) What teaching methods/learner activities will be used?
    (e) What media will be used?
    (f) How will the learning be assessed?
    (g) How will the subject/course be evaluated for improvement?

Theoretical Foundation

The role of social interaction in the development of cognition is fundamental for learning to take place, either in face-to-face or online classroom. For Vygotsky (1978:57) it was the interaction with teachers or peers that allowed students to advance.

The Vygotskian theory of zone of proximal development, i.e. the distance between what students could accomplish by themselves and what they could accomplish when assisted by others, enables us to understand how socioconstructivist environments can provide fruitful learning opportunities. E-learners stand to benefit from the sociocultural approach, because it is through interaction with peers or teachers that they can develop understanding. Researchers have found that online discussions provide the conditions for students to practice their literacy skills in a non-threatening environment (Colomb & Simutis, 1996).

Nonlinearity

Technology-enhanced environments based on the constructivist models are amenable to a student-centred approach, mainly with the development of hypertext[3] and hypermedia[4], creating a non-linear mode of instruction. Therefore, such environments provide should permit learners with opportunities to create their own learning (Mergel, 1998).

As opposed to traditional text, information within a hypertext may be retrieved in a sequence specified by each user. Shapiro and Niederhauser (2003:605) state that there is a greater degree of learner control when engaged in hypertext-assisted learning (HAL).

Collaborative Learning

A successful online learning experience is also promoted when it is student-centred and focuses on collaborative work by fostering a sense of community and collaboration in the classroom (KAHMI-STEIN, 2000; PLASS & CHUN, 1996). Learning at a pace that meets the needs of the learner enables them to become more active in their learning. Jonassen, Carr, and Yueh (1998:13) regard learners as actively engaged in interpreting the external world and reflecting on their interpretations in the sense that they must participate and interact with the surrounding environment in order to create their own view of the subject.

According to Larsen-Freeman (2000:164), cooperative or collaborative learning essentially involves students learning from each other in groups. But it is not the group configuration that makes cooperative learning distinctive; it is the way that students and teachers work together that is important.

In collaborative learning environments, students have the chance to learn cooperatively, which allows the members of a community of learners to be able to teach each other something in a learner-centred fashion. Effective learning experiences are created when each group member is encouraged to feel responsible for participating and for learning. Learners' level of motivation is high and leadership is distributed, as they share experiences and solve problems.

Autonomy

Given the fact that constructive online environments enhance learning, in the sense that learners play an active part in their own learning, being able to make appropriate decisions, they start to gain higher degrees of autonomy.

Freire (1997) understands autonomy as the learner's capacity and freedom to construct and reconstruct the taught knowledge.

From the moment students have achieved autonomous learning, they are able to decide which learning objects will facilitate learning and attend to their needs. By using online search engines such as *Google*, they can choose from a wide range of learning objects available.

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[3] Hypertext is text which contains links to other texts.
[4] Hypermedia is hypertext which can include graphics, video and sound.

Conclusion

The main concern must be not to simply reproduce traditional methods in an online learning environment. In doing so, one may run the risk of restricting the number of learners whose learning styles will be taken into account. Kaminski (2002:7) reiterates this idea in:

"Specific attention must be given to online student learning styles. The opportunities extended by distance education cannot be taken advantage of if, during implementation, they replicate the problems found in traditional classrooms".

Technology-enhanced learning environments will only realize their potential if they provide learners with the necessary tools to become responsible for their own learning. In the long run, if due consideration is given to employing a flexible, adaptive, student-centred, non-linear, personalised, interactive and collaborative web-based learning system, the learning experience will be more likely to result in successful learning outcomes.

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Using Adobe Acrobat Connect to promote online community

Introduction

Online learning offers many challenges yet many opportunities. One of the challenges is creating an environment where students feel less isolated and more a part of a community of learners. Emergent communication technologies have increased the ability to more closely mimic a face-to-face environment in online courses. This paper presents the experience of adopting a new technology to support an online learning environment.

Adobe Acrobat Connect

Faculty members and staff in the Department of Educational Technology (EDTECH) at Boise State University recently sought to enhance their capability to deliver engaging, flexible online learning environments, to enhance the learning experience. Adobe Acrobat Connect (Connect) is one of the technologies the EDTECH department selected for this purpose. While not without its technical difficulties, Connect has become an essential component in the endeavors to create an online community of learners and to design and deploy effective and efficient alternatives for learning online. Not only do students experience engaging, convenient instruction through on-demand multimedia presentations and synchronous interactions, but they also use these tools for their own communication needs and demonstration of learning. Thus, students become more engaged, proactive learners in an environment that encourages creativity and independence.

EDTECH faculty use Acrobat Connect Meeting and Presenter in ways that enhance their particular courses. Instructors host meetings for various purposes, such as an enhanced lecture with accompanying PowerPoint presentations, polling for feedback, and files for sharing and downloading by students. The use of webcams make the experience as close to real as possible, reducing the sense of distance commonly experienced by online students. Participants view other students' work using the screen sharing application. Instructors meet one-on-one with students as they progress through a project, or use Acrobat Connect Meeting for virtual office hours, being available in the room and notified by either a student's voice or text upon student entry into the room. Posted virtual meeting days and times provide students with the convenience of knowing when an instructor will be available for online contact. And provide asynchronous opportunities for participation by recording live sessions.

Connect presentations are used by the EDTECH department to introduce course syllabi, to enhance course content, to further explain difficult concepts, to discuss a course module or lesson, to deliver a quiz, to customize a lesson for an individual student, to prepare a student slideshow as a course introduction, or to simply provide information in a more interactive, informative environment. See figure 1.

Figure 1. Presentation in Adobe Acrobat Connect

Students also create Acrobat Connect presentations as assignments, projects, or as an alternative method of presenting content in many EDTECH classes. Once they are trained in how to produce Acrobat Connect Presentations, they seem to enjoy creating and viewing them. In many online courses, students have options to produce multimedia projects or other ways of expressing a concept or problem. Creating and publishing an Connect presentation offers them a challenging, creative, and aesthetically pleasing way to complete these assignments. Since students also can publish directly to the Connect server from their PowerPoint program, the step of transferring the files to a server is eliminated, with the link automatically being provided, saving them time in the process.

Conclusion

While Acrobat Connect has certainly simplified many processes and enabled both faculty and students to contribute to and design powerful learning enhancements, it has also created more work, for network administration, faculty, and students. Therefore, in order to use Acrobat Connect to its full potential, an organization must be committed to the criteria that will ensure success in an online program.

From our experience, perhaps the most critical prerequisite in the successful development of online learning community is an environment of respect, where experimentation and failure go hand-in-hand. Not all software tools will work as envisioned and not all courses will benefit from the use of certain tools. Experimentation has continued to play an important role in the use and development of Adobe Acrobat Connect, by both faculty and students in the EDTECH department. Problems are something to expect and work through. And while it is essential to experiment with technology, we should examine our purposes in using the technology if it does not work as expected or promised. It is imperative that we keep striving to improve each student's learning experience, while maintaining an equilibrium that will promote the use and exploration of technology with the right to not use it at times.

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Creating learning paths in Blackboard Leaning System

Introduction

Today Course Support Environments or Course Management Systems (CMSs) are frequently employed in order to supplement conventional face to face courses or to support a distance learning program (Collis, 1999; Veglis, 2005;Veglis, 2002;Copinga et al. 2000). Since the beginning of 1998, the Media Informatics Laboratory of the Department of Journalism & Mass Communication (J&MC), at the Aristotle University of Thessaloniki (AUTh), Greece, started to develop and publish material on the Web for its courses (Veglis, 2000). Five years ago the Aristotle University of Thessaloniki has purchased and installed the commercially software tool: Blackboard Learning System (http://www.blackborad.com). Last summer Aristotle University of Thessaloniki has migrated to Blackboard 7.1 thus offering more facilities to the educators.

Course structure

Creating an online course where users spend their time engaged in learning and interaction relies on establishing a course structure where content is easy to identify, navigation is intuitive, and tool placement fits in logically with the course design. But organizing all the elements in such an online course depends on the resources that are offered by the CMS.

The previous version of Blackboard allowed the educator to create a lesson or a series of courses that students can access sequentially (based on chronological order) or directly (a student may be interested only for a particular course) (Veglis, 2006). In each course the educator was able to organize his material in folders in the same way as in the local disk. The problem is that we were not able to insert hyperlinks from one file to another. Thus the students can access the content only by following the organization of the site, based on the navigational structure that the CMS offers.

New features

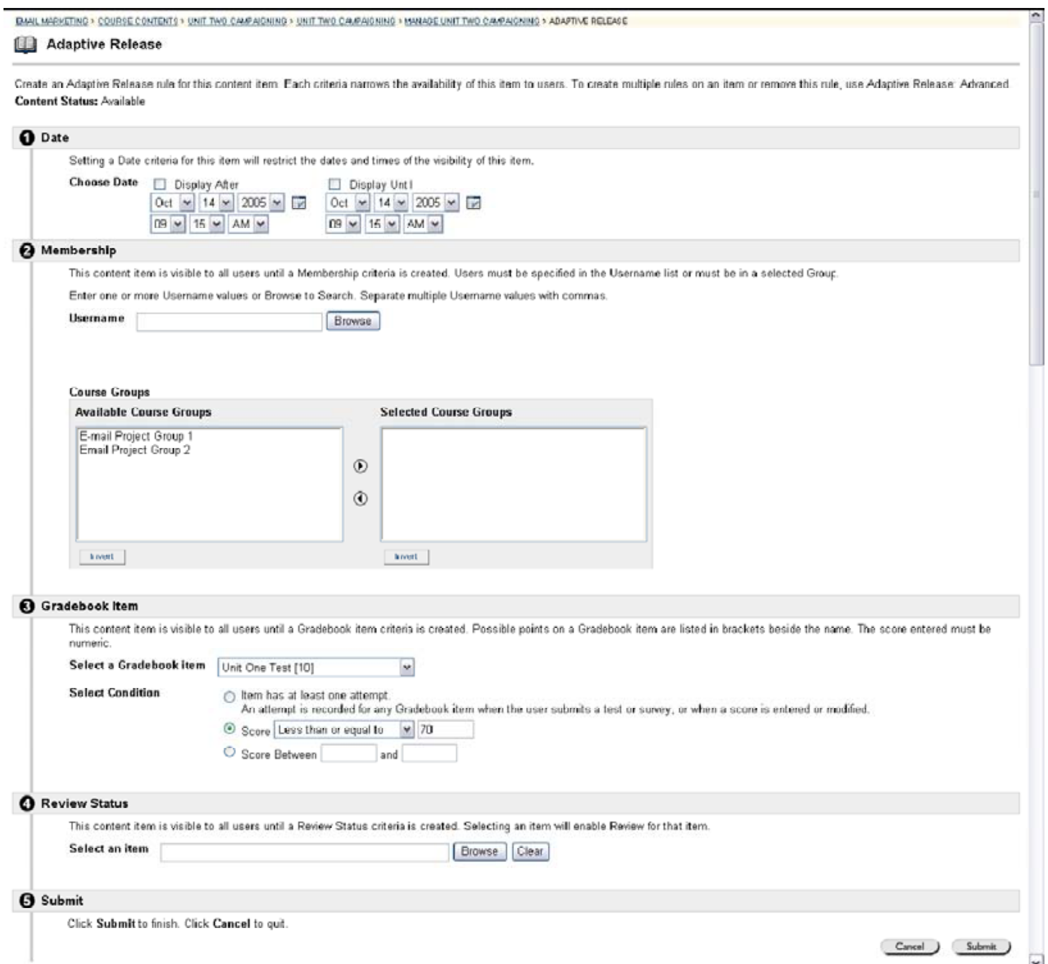
The ways that course content is presented to students reflects the teaching style of the educator, the organization of the material to be covered in the class and the objectives for mastery of that material. Blackboard 7.1 allows educators to choose a method of organization that best fits the goals of the course, while keeping in mind the ways that students will navigate through the course to find content and how they will utilize materials and tools. The new version of blackboard includes many ways to present content to students in a course. Presentation of content can be linear, it can be interconnected like the Web, or reflect a combination of formats. There are three tools that allow the educator to organize the course content:

Learning Units
Adaptive Release
Course links

The above tools aide in controlling the flow of material to students and provide a customized learning environment based on the organization of the course, the assessment of student skills, participation, and achievement.

Learning Units

Learning Units, which were also available in the previews version of the platform, are employed in order to present multiple content items in a single package of information. The difference between a *Learning Unit* and a *Folder,* from the student perspective, is that each item in a *Learning Unit* is displayed on its own page with navigation to the other items, whereas items in a *Folder* are all displayed vertically on one page. The *Learning Unit* may be set to enforce a sequential view of the content for guiding learning, or allow users to explore the unit freely using the table of contents that is automatically generated when the *learning unit* is created. Students enter courses with different sets of skills, learning styles and experiences that impact their ability to achieve mastery of course objectives (Blackboard official site http://www.blackboard.com).



Customizing Adaptive Release of Content

Adaptive Release of Content

Custom learning paths through course content and activities can be created using *Adaptive Release of Content*. Content items, discussions, assessments, assignments, or other activities can be released to students based on a set of criteria including:

- date/time,
- username,
- group membership,
- grade or attempt on a particular Gradebook item,
- review of another content item.

For example, tests in a classroom situation are typically used as means of controlling the release of content. New material is not presented to students until they have been assessed on their mastery of the preceding material. *Adaptive Release* can be used in on online course to require that students meet an assessment goal before they are allowed to move on to the next unit. Another example of *Adaptive Release* is setting the criteria based on the Review Status tool. Students must mark as reviewed a document listing a set of rules for using the Discussion Board before a link to the Discussion Board is released to them and they are allowed to post (Blackboard official site http://www.blackboard.com).

Course links

Content items can be joined together using internal links to reinforce concepts stimulate communication and connect assessments with other course tools, material, and achievements. Placing *Course Links* on content pages can help direct students to other relevant course materials and streamline course navigation. Inserting *Tool Links* within content paths encourages participation at relevant points in the course. Used in conjunction with *Learning Units* and *Adaptive Release*, strategically placed links to other content items, gives the educator control over how students experience the course and guides them through material so that they can build knowledge and skills in logical pathways to achieve course objectives and master the offered material (Blackboard official site http://www.blackboard.com).

Conclusions

The combination of the previews mentioned tools gives the educator the ability to easily construct or alter learning paths. Future extension of this work will include evaluation of these tools from the students' point of view.

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