

Avoiding a tired and stale pedagogy: activating on-line learning

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ABSTRACT

This article will stress that the mere dumping of materials on-line is contrary to the spirit of Computer Mediated Communication (CMC) and the World Wide Web (WWW). Texts generated for correspondence education and lectures prepared for face-to-face teaching may not be effective on-line. These materials will have to be reworked and activated in order to assure some level of effective use of the technology to enhance learning. Collaboration tools will be discussed and activities suggested to activate learning. The changing role of the teacher will also be highlighted.

INTRODUCTION

Kearsley (2000:2) quotes Hauben and Hauben to give us a picture of the networked society we currently live in:

Welcome to the 21st century. You are a Netizen (a Net citizen), and you exist as a citizen of the world thanks to the global connectivity that the Net makes possible. You consider everyone as your compatriot. You physically live in one country but you are in contact with much of the world via the global computer network. Virtually, you live next door to every other single Netizen in the world. Geographical separation is replaced by existence in some virtual space. This paints a picture of a possible global community of people, interacting in a virtual environment independent of time and place. The characteristics of connectivity, community, communication and interaction are important to constructing the on-line learning experience

The assumption that we can dump material on-line, leave it to ferment and mature, and trust the technology itself to assure that students will learn, is not acceptable. In discussing the essence of computer-mediated distance learning, Paloff and Pratt (1999:163) quote the Fielding Institute's Don MacIntyre with a very powerful statement in this regard:

In talking about distance learning, I keep stressing that our focus is on the learning process not the technology. Many institutions are jumping on the technology bandwagon so as to become a part of the information super-highway. In doing so their goal is to use the technology to transmit a tired and stale pedagogy over fiber optic cable - as if fiber optic cable will somehow transform the pedagogy.

Mere content provision, without the exploitation of resource navigation, integration, communication and collaboration, will not be a very useful application of information communication technologies to enhance learning on-line.

THE ACTIVE ON-LINE LEARNING COMMUNITY

Learning communities can be defined as "small subgroups of students ... characterized by a common sense of purpose ... that can be used to build a sense of group identity, cohesiveness, and uniqueness that encourage continuity and the integration of diverse curricular and co-curricular experiences" (Kellogg 1999). An adaptation from Lin et al (1995) summarizes the nature of efficient on-line learning communities as environments which provide students with opportunities to:

- plan and execute independent research towards problem solving and identify resources
- work collaboratively and take advantage of expertise distributed by the community
- use various technologies to build their own knowledge rather than using the technologies as "knowledge tellers"
- get exposure to continuous feedback and criticism so that they can revise their own thoughts, assumptions and arguments
- improve their sense of responsibility, attitude and emotional intelligence in a group context.

Creating such a learning environment is indeed a tall order and it deserves an investigation into the different options for prospective on-line teachers and educational developers.

A COMPLEX ENVIRONMENT

Communication to enhance learning can take on several forms and can be facilitated with the help of different CMC technologies. It provides us with the opportunity to communicate across borders and create new realities for ourselves. Kearsley (2000:28) quotes Turkle in this regard:

When we read electronic mail or send postings to an electronic bulletin board or make an airline reservation over a computer network, we are in cyberspace. In cyberspace, we can talk, exchange ideas, and assume personae of our own creation. We have the opportunity to build new kinds of communities, virtual communities, in which we participate with people from all over the world, people with whom we converse daily, people with whom we may have fairly intimate relationships, but whom we may never physically meet. But it is not a simple phenomenon - it is a complex web of relationships, sharing and structures that can be constructed and mediated. Horton (2000:335) adds to this complexity when he quotes Christian Pantel: 'In a collaborative learning environment, learners are exposed to any people's opinions and interpretations of objects and events. The learner's own ideas and conceptions are valued and are debated by the learning community. Since learners' misconceptions are challenged they have occasion to modify their knowledge structures.

Assisting learning

Collaboration can energise learners, promote deeper learning, and make learners more self-reliant. Horton (2000:334) reports evidence that collaboration is a proven part of on-line learning. Adding discussion groups, chats and use of e-mail to courses motivates learners, increases participation in projects, and enlivens discussion. Learners are more willing to participate in on-line discussions and other activities than in traditional communication. With collaboration learners feel more empowered. They are daring and confrontational regarding the expression of ideas. Learners are treated equally because they are anonymous. Learners become more self-reliant - they are forced to seek out their own sources and rely more on fellow learners.

Important requirements

To make use of this complex phenomenon to assist learning, proper instructional design is a prerequisite. Without this, some learners may be disoriented and find themselves penalised. Horton (2000:335) warns that poorly designed group learning activities can stigmatise poor achievers, exacerbate status differences, and create dysfunctional interactions among learners. He goes to paint a darker picture that makes proper design and facilitation paramount: "In reality the process is often brutalising, inefficient and demoralising. Exchanges are peppered with flames, slurs and slams. Discussions can meander worse than a rudderless ship with a drunken captain on a stormy night" (Horton 2000:335). Common problems that

may arise are spamming (self-serving messages), e-mail bomb (message to disrupt the group), spoofing (pretending to be someone else in the forum), and flaming (making abusive and emotional attacks on someone else). In addition some learners may dominate the conversations and discussions to the extent that others cannot use the group to their advantage. Facilitators for on-line discussions should moderate actively and diplomatically in addition to setting realistic expectations and conveying the rules.

The facilitator's/moderator's role

The moderator may take part in discussions, but the duty of the moderator is mainly to ensure that learners have productive discussions with other learners. In essence moderators have two main duties - first they must set up the discussion groups and threads and second they must oversee the conversations that take place there. Moderators should be knowledgeable about the subject and topic, must have a caring nature, must be able to endure insults and rude behaviour, and deal with emotions in a tactful and diplomatic manner. In addition they must be superb communicators, be able to listen closely and accurately gauge intentions and emotions of participants. Previous students, instructors, teaching assistants and outside experts must be moderators.

Horton (2000:383) provides us with a few recommendations to help make the moderator's job a success:

- set up the discussion group
- welcome learners
- set up needed threads
- start a few conventional top-level threads
- provide summaries on a regular basis
- keep the conversation lively
- encourage participation (introductions)
- keep the conversation fresh and vibrant (add new threads for interesting new ideas, respond to unanswered enquiries, correct misconceptions, remind learners about the rules when necessary, wrap up tired conversations with summaries)
- perform message maintenance (reroute or reword/fix)
- challenge shallow thought
- reject inappropriate postings.

CATEGORIES OF TOOLS

The Internet for community and the WWW for resources

The Internet (network of networks) facilitating communication and connecting us to the resources of the WWW offers tremendous potential benefits to all learners. The WWW is almost an international virtual library with unlimited resources. But this vast resource network is not being sanctioned or sifted by the instructor. The visitor or explorer is supposed to be the expert and should take or discard what is presented (Harasim, Hiltz, Teles & Turoff 1995:120). The facilitator should equip the learner with the skills to navigate through relevant and important resources and rubbish alike. The Internet network provides a rapidly growing forum for informal learning activities as it hosts tens of thousands of special interest groups, mailing lists, journals, and newsletters devoted to a tremendous range of topics (Harasim et al 1995:118). Besides the course environment, the learner can obtain useful information by joining these interest groups or communities.

Communication tools

The tools we can set up to facilitate communication can be divided into two groups: those which require participants to be connected at the same time (real-time) which we call synchronous communication, and those used for asynchronous communication where participants can be in different time zones, having time to critically examine a posting and

formulate an appropriate reply. With synchronous group communication over the Internet group sizes cannot be large. Asynchronous discussions can accommodate larger groups or participants can be divided into subgroups.

Synchronous tools

Desktop video conferencing

A desktop video system is basically a chat system that uses video images instead of text messages. The video images and audio are captured by a small digital camera that is connected to the PC. But this requires rather more powerful technology and ISDN lines or wider bandwidth. Group conversations are also difficult for a larger number here and a very strong moderator is needed.

Audio conferencing

Here the Internet connection is used as a telephone line to communicate with others in real time.

Audiographics

Another possibility is audiographics which allows audio interaction and shared graphic images or applications. Participants in the conference can hear what the others are saying and see the graphic images or program screens. This is also called shared whiteboards.

Chat rooms

These tools are also called real-time conferencing or synchronous conferencing. The simplest form of real-time conference is a chat session, in which participants exchange typed messages and everyone sees the message as soon as it is sent. Each message is preceded by the name of the sender so identification is possible all the time. Because the interaction is in real time, it is spontaneous and dynamic. Discussion in a chat session is often difficult to follow because many people are attempting to contribute at the same time. Once a chat session has more than three or four participants, it is desirable to have a moderator who controls when people speak. These tools are usually left for small groups of learners to use should they prefer it to prepare for on-line presentations.

Asynchronous tools

Groupware

Kearsley (2000:35) highlights this relatively new category of software which is specifically designed to facilitate group interaction (eg Lotus Notes which requires client software for optimal functioning). The primary focus of most groupware is on problem-solving and decision-making tasks and it is more used in business and management training.

File transfers

In order to send (upload) or receive (download) large files or a group of files from one user to another or to provide them on a server for easy download, should learners have the need, FTP (file transfer protocol) software may come in handy. This is also used to upload Web documents and is more of a general purpose tool.

Simulations

Computer simulations can help learners to learn through practice. Simulations are based on a model of a specific system, for example mechanical or social. One or more learners can access this simulated environment to acquire skills.

E-mail

E-mail is the foundation for all forms of on-line learning and teaching (Kearsley 2000:28). E-mail is a very cost-effective application in terms of computing and network resources needed - it works with a minimum of equipment, software and facilities. In most cases, in a course setup the response is sent as a private message to the instructor who then provides feedback directly to the student via e-mail if a more public threaded discussion is not appropriate for the issue at hand. An e-mail distribution can be used to ensure that everyone in the course receives messages. Assignments can be e-mailed to instructors as attachments, and e-mail can also be used informally by students to interact with instructors and fellow students. But this will not be a successful communication tool if not all participants access their mail regularly - this is a fundamental condition for on-line education (Kearsley 2000:28). A reasonable expectation for turnaround is between 24 and 48 hours with the former preferred.

Newsgroups

Newsgroups can be created in on-line spaces where visitors can post messages relevant to the subject of the newsgroups. Automatic notification via e-mail is a very valuable feature of this tool.

Discussion forums

A threaded discussion is usually created in a discussion forum. This form of group communication is the second most popular form in on-line education (Kearsley 2000:30). This is also called asynchronous conferencing, or a bulletin board.

Topics and subtopics are created, and learners post messages under any topic/subtopic desired - messages include the sender's name, a subtitle for the message, and the text of the message. To read messages, one selects the topic/subtopic of interest and clicks on the messages available. In the context of a course, each topic on the discussion board corresponds to a topic in the class - the instructor posts a question, issue or problem as the discussion topic, and students post their responses as subtopics. A discussion evolves over time as participants post their comments - since everyone sees all the responses, this is a more public form of interaction than using e-mail. Participants may sometimes not be careful enough about posting their messages in the right place, so the threads may end up not making sense - the moderator's nightmare!

LECTURING ON-LINE?

Lecturing in its traditional form does not fit the requirements of the on-line learning environment. Providing endless screens of text without interruption, as often done in the lecture hall, would frustrate students. Content for stimulation should be brief and concise and should be accompanied by meaningful interruptions and activities. With challenging questions, opportunities should be provided for learners to test their own ideas and conclusions. Learners should be able to individually and collaboratively construct knowledge.

Horton (2000:135) provides a number of "lecturing" options which can be sequenced to form the core of the course.

Tutorials

The tutorial is used to teach basic knowledge and skills in a safe, reliable and exciting way. After an introduction, learners proceed through a series of pages, each teaching a more difficult concept or skill. At the end of the sequence there can be a summary or a test. Linked

to the pages teaching skills and concepts are pages providing examples and practice. The tutorial should not try to contain too much - only a limited number of skills should be facilitated with the necessary application.

Activity-centred lessons

The lesson centres on a major activity. After an introduction and preparation, the learner participates in the activity. Afterwards the learner reviews a summary of what the activity taught and takes a test to prove mastery. Activity-centred lessons are used to teach complex concepts, emotional subjects, or to convey subtle knowledge that requires rich interaction with the computer and with other learners. The quality of the activity is important. Proper instruction for preparation should be provided. The activity should form an integral part of the course.

Learner-customised tutorials

The lesson branches are based on the knowledge or choices of individual learners. After a brief introduction, the lesson branches down a specific path. The path may rejoin and branch again before the summary or test, which covers all topics, regardless of the branches taken. Learner-customised tutorials let learners customise training to their individual needs. These kinds of tutorials suit learners with widely varying needs, interests and levels of knowledge. The branching scheme has to be thoroughly explained to learners, and they need to know how the system will provide them with certain information.

Knowledge-paced tutorials

After an introduction, learners proceed through a series of tests until they reach the limits of their current knowledge. Then they are transferred into the main flow of a conventional tutorial, which ends with a summary and test. Knowledge-paced tutorials let impatient learners skip over topics on which they are already knowledgeable. Facilitators have to plan for definite progression in the levels of skill and knowledge.

Exploratory tutorials

Learners find knowledge on their own. Learners navigate an electronic document, database or website in which they accomplish specific learning goals. To aid in their task, they may use a special index and navigation mechanisms. Once learners have accomplished their goal, they view a summary and take a test. Exploratory tutorials teach learners to learn on their own by developing their skill at navigating complex electronic information resources. There should be explicit instructions on how to take the tutorial and what is expected of learners.

Generated lessons

The lesson tailors a learning sequence based on the learner's answers to questions on a test or questionnaire at the start of the lesson. After the custom sequence of topics, learners view a conventional summary and take a test. Generated lessons are used to customise learning for those who have very specific needs and not much time or patience to complete topics they have already learnt.

DESIGNING ON-LINE ACTIVITIES

Learning activities are coordinated actions that exercise basic intellectual skills, thought processes and analysis techniques - mere action is not a learning activity. People learn by considering, researching, analysing, evaluating, organising, synthesising, discussing, testing, deciding and applying ideas (Horton 2000:260). There are therefore crucial components that should be part of a learning activity. Learning activities can be used to teach, to exercise, and to test knowledge, skills and beliefs. Sometimes it is better to replace the transmission of information with activities as people learn better by discovering and doing.

Guidelines to design activities

Horton (2000:191,260) provide some help to improve on-line activities as well as provide a number activities that are appropriate for the on-line environment. It depends not so much on what kinds of activities are assigned to learners as on how they are designed: how clearly they are organised, how they are presented to learners, how their actions are guided, what external resources are used, and how the instructor's workload is managed. Horton (2000:191) suggests we ask ourselves a number of questions before designing an activity:

- What is the purpose?
- What exactly are learners to learn?
- Which learners?
- All or just a specific group?
- How long will learners require to complete the activity?
- How open-ended should the response be?
- Do learners need the scaffolding of a form with specific slots and clear labels?
- Or should they be left to organise the response themselves?
- How will the submissions be evaluated?
- Will the response of one learner be available to others? Only after all are submitted? Or posted as received, awarding bonus points for early postings?

The on-line environment is a far more complex one than the face-to-face classroom or the correspondence study guide. We need to provide very clear instructions with all activities:

- Put the activity in context of the course.
- List requirements (make them visible).
- Mention sources of information (make finding resources easy).
- Tell learners what they must create.
- Tell learners how to submit work.
- Flag the due date.
- Spell out the rules.
- Specify grading criteria.
- Encourage learners to print out instructions and make downloading easy.

Types of on-line activities

Web casts

In this activity many distributed learners participate fully in a conventional training event transmitted by a network, in order to teach material best taught by traditional classroom activities. Examples are a demonstration, debate, interview, Q&A, panel discussion, stump the experts, press conference, reference desk, impostor test, round-robin lecture, and an oral exam.

Presentation sequence

Learners read, listen to and watch carefully-crafted explanations in a Web browser. The presentation sequence is used to provide a consistent high-quality explanation to all learners. Examples are a slide show, videotape or a book. Learners should be able to control the presentation.

Drill and practice activities

Learners repeatedly practise applying specific knowledge or a well-defined skill. This activity has the purpose of helping learners memorise facts that they must be able to recall without hesitation. If possible design the activity in such a way that it can generate an infinite number of new problems. The level of difficulty should be increased as the learner progresses.

Scavenger hunts/Search activities

Learners are required to find reliable sources of information on the WWW. Scavenger hunts, or WWW searches, are used to make learners more self-reliant by having them locate reliable sources of information on the subject they are studying. They do not have to be complex - a simple list of questions might do. Merely answering questions is not enough - the results have to constitute reliable sources of information for the future.

Guided research

Learners gather, analyse and report on information. Guided research is used to teach learners to conduct informal research on a subject (Horton 2000:265). This activity is especially valuable for learners who will have to conduct informal research as part of their job. The importance of evaluating, selecting and organising facts should be emphasised.

Guided analysis

Learners analyse data to evaluate its validity, spot trends and infer principles. Guided analysis is used to teach a formal analysis technique or to guide learners to discover trends and principles for themselves (Horton 2000:265). Examples are to ask learners to summarise, compare and contrast, plot data, classify or outline items. The on-line facilitator should explain the technique thoroughly with each step - the aim should be to keep the analysis as simple as possible.

Team/Collaborative work

Learners work as coordinated teams to produce a single design or to solve a complex problem. Collaborative work is used to teach basic teamwork skills. The goal of the activity must be appropriately challenging. The grading criteria have to be made clear and a time line is to be provided. If the learners are not used to working as teams, they will need about twice as much time.

Brainstorming

Distributed learners work together to generate creative solutions to a problem or to accomplish some other goal. Brainstorming is used to teach brainstorming in its own right or as part of a course involving problem solving, creative thinking or team design (Horton 2000:265). The basic rule of brainstorming is important - there are no bad ideas.

Case studies

Learners study a meaningful, detailed example of a real-world event, process or system to abstract useful concepts and principles. Case studies are used to teach complex knowledge that cannot be reduced to a simple formula. The facilitator has to ask questions to force learners to search for the principles in operation in the case. They can test their ideas with classmates.

Role-playing scenarios

Learners adopt assigned roles in simulations involving complex interpersonal interaction. Role-playing scenarios are used to teach subtle interpersonal skills and to reveal the complexity of many human endeavours (Horton 2000:265). The scenario has to be introduced in depth with the necessary detail. Roles have to be assigned carefully with the emphasis on positive creative roles rather than negative ones.

Virtual laboratories/Simulations

In these activities learners conduct experiments with simulated laboratory equipment. Virtual laboratories prepare learners to operate real laboratory equipment, or to guide them to discover principles and trends on their own.

Group critiques

Learners receive and react to criticisms from their peers as they are required to submit work that others in the class have to criticise. Group critiques are used to teach learners how to use critical comments of others to improve their own work and how to offer helpful criticism on the work of others. The facilitator has to make sure that criteria for critique are specified in advance. Critical comments have to be monitored carefully and moderated; otherwise the environment may become a battlefield.

Learning games

Learning games are computer simulations that let learners practise a highly interactive task (Horton 2000:265). Such games are used to give learners experience performing a task without the risk or cost of the real activity. The game should be explained clearly, learners should be challenged and competitiveness managed.

CONCLUSION

Harasim et al (1995:29) perceive active learning as a major outcome of learning networks. "Attendance" in a learning network activity both requires and enables active input. In the on-line learning community, active learning is more than pressing keys. It is a social and cognitive engagement with participation based on making input, responding to peers and sharing ideas. The asynchronous (allowing time for reflection and input) classroom is always open and it encourages reflection and interaction about ideas towards knowledge building. Paloff and Pratt (1999:5) cite a recent study which labels the majority of students as concrete-active learners, with the result that many instructors, in order to improve learning outcomes and their practice, incorporated active learning techniques. These may include working collaboratively on assignments, participating in small-group discussions and projects, reading and responding to case studies, role playing, interviews, and using simulations.

In building an on-line learning community we may be moving from the traditional classroom or correspondence into cyberspace. In this environment the tasks of the teacher become far more complex as they relate to pedagogical, social, managerial and technical sides of the on-line role (Paloff & Pratt 1999:73). This constructs a totally different reality for the new teacher and demands some very different and additional responsibilities.

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