This article has an objective to bring into attention interactivity and communication in elearning. The Internet has become an essential communications platform and has new capabilities that can be utilized for distance learning. Various new models of education are described and discussed in this paper. This paper has presented various learning technologies used in the new concepts of computer mediated communications and distance learning. Our web-based instructional methodology focuses on interactivity and guided didactic communication in elearning. These learning environments will improve student performance in engineering courses offered at Technical “Gh. Asachi” University Iași, and University „Petre Andrei” Iași, Romania.

I. Didactic communication in elearning

Communication is at the heart of language teaching and learning. Contact with speakers of the target language has always been encouraged, but has not always been easy to achieve, particularly in recent years when letter writing has been in decline. Because e-mail is a less formal medium than paper-based letters, students are much more likely to want to be prepared to correspond with native speakers of the target language. The fact that messages can be drafted and edited, that they can be received almost instantly by the recipients and that they can be sent to more than one addressee without re-typing, make this an attractive proposition for tutors and students alike. Incoming messages can be recycled as model texts in activities based on word processing or in the kind of authoring packages referred to above.

Computer Mediated Communication (CMC) refers to any form of interpersonal communication that uses some form of computer technology to transmit, store, annotate, or present information that has been created by one or more participants. CMC tools include e-mail, conferencing, groupware, chat rooms, desktop videoconferencing, and Internet-based audio applications. Audio conferencing and Videoconferencing involve the use of audio and visual communication, via phone lines or the Internet. These can be used with applications, such as Microsoft Net Meeting, which allow simultaneous...
conferencing, editing of documents, communication via chat, or via a shared whiteboard.

II. Theory of Interaction and Communication—Börje Holmberg

Holmberg’s theory of distance education, what he calls guided didactic conversation, falls into the general category of communication theory. Holmberg noted that his theory had explanatory value in relating teaching effectiveness to the impact of feelings of belonging and cooperation as well as to the actual exchange of questions, answers, and arguments in mediated communication.

Holmberg offers seven background assumptions for his theory:

1. The core of teaching is interaction between the teaching and learning parties; it is assumed that simulated interaction through subject matter presentation in preproduced courses can take over part of the interaction by causing students to consider different views, approaches, and solutions and generally interact with a course.
2. Emotional involvement in the study and feelings of personal relation between the teaching and learning parties are likely to contribute to learning pleasure.
3. Learning pleasure supports student motivation.
4. Participation in decision-making concerning the study is favorable to student motivation.
5. Strong student motivation facilitates learning.
6. A friendly, personal tone and easy access to the subject matter contribute to learning pleasure, support student motivation, and thus facilitate learning from the presentations of preproduced courses, i.e., from teaching in the form of one-way traffic simulating interaction, as well as from didactic communication in the form of two-way traffic between the teaching and learning parties.
7. The effectiveness of teaching is demonstrated by students’ learning of what has been taught.
These assumptions, Holmberg believes, are the basis of the essential teaching principles of distance education. From these assumptions he formed his theory:

Distance teaching will support student motivation, promote learning pleasure and make the study relevant to the individual learner and his/her needs, creating feelings of rapport between the learner and the distance-education institution (its tutors, counsellors, etc.), facilitating access to course content, engaging the learner in activities, discussions and decisions and generally catering for helpful real and simulated communication to and from the learner.

Holmberg himself notes that this is admittedly a leaky theory. However, he adds, it is not devoid of explanatory power: it does, in fact, indicate essential characteristics of effective distance education. In 1995 Holmberg significantly broadened his theory of distance education. His new comprehensive theory of distance education is divided into eight parts. This expanded theory encompasses the theory just stated above, and stated that: Distance education serves individual learners who cannot or do not want to make use of face-to-face teaching. These learners are very heterogeneous. Distance education means learners no longer have to be bound by decisions made by others about place of study, division of the year into study terms and vacations, timetables, and entry requirements.

Distance education thus promotes students’ freedom of choice and independence. Society benefits from distance education, on the one hand, from

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### Teaching methods and techniques for computer-mediated communication

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<table>
<thead>
<tr>
<th>Methods:</th>
<th>one-alone</th>
<th>one-to-one</th>
<th>one-to-many</th>
<th>many-to-many</th>
</tr>
</thead>
<tbody>
<tr>
<td>Techniques:</td>
<td>Online databases, Online journals, Online applications, Software libraries, Online interest groups, Interviews</td>
<td>Learning contracts, Apprenticeships, Internships, Correspondence studies</td>
<td>Lectures, Symposia, Skits</td>
<td>Debates, Simulations or games, Role Plays, Case studies, Discussion groups, Transcript based assignments, Brainstorming, Delphi Techniques, Nominal group techniques, Forums, Project groups</td>
</tr>
<tr>
<td>Devices:</td>
<td>Online resources</td>
<td>e-mail</td>
<td>bulletin board</td>
<td>computer conferencing</td>
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</tbody>
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Figure 3. Methods, techniques, and devices that could be applied in a CMC-based teaching system.
the liberal study opportunities it affords individual learners, and, on the other hand, from the professional/occupational training it provides. Distance education is an instrument for recurrent and lifelong learning and for free access to learning opportunities and equity. All learning concerned with the acquisition of cognitive knowledge and cognitive skills as well as affective learning and some psychomotor learning are effectively provided for by distance education. Distance education may inspire metacognitive approaches. Distance education is based on deep learning as an individual activity. Learning is guided and supported by non-contiguous means.

Teaching and learning rely on mediated communication, usually based on preproduced courses. Distance education is open to behaviourist, cognitive, constructivist, and other modes of learning. It has an element of industrialization with division of labour, use of mechanical devices, electronic data processing, and mass communication, usually based on preproduced courses. Personal relations, study pleasure, and empathy between students and those supporting them (tutors, counsellors, etc.) are central to learning in distance education. Feelings of empathy and belonging promote students’ motivation to learn and influence the learning favourably. Such feelings are conveyed by students being engaged in decision making; by lucid, problem-oriented conversation-like presentations of learning matter that may be anchored in existing knowledge; by friendly, noncontiguous interaction between students and tutors, counsellors, and others supporting them; and by liberal organizational-administrative structures and processes.

While it is an effective mode of training, distance education runs the risk of leading to mere fact learning and reproduction of accepted “truths.” However, it can be organized and carried out in such a way that students are encouraged to search, criticize, and identify positions of their own. It thus serves conceptual learning, problem learning, and genuinely academic ends. In sum, the above represents, on the one hand, a description of distance education and, on the other hand, a theory from which hypotheses are generated and which has explanatory power in that it identifies a general approach favourable to learning and to the teaching efforts conducive to learning.

### III. Discussions, Group activities, and Project work

Online discussions can be an effective teaching strategy—the difficulty is to motivate the discussion from a distance.

- **Start a general discussion immediately.** Establish an atmosphere of online participation by encouraging individuals.
- **Require learners to introduce themselves** in a separate more informal area of discussion.
Provide learners with a private, secure discussion area for them to use. Online learning is very isolated and many avenues to peer communication should be provided.

Consider a marking scheme for participation in formal discussions. This enticement might motivate participation.

Small group discussions can be implemented assigning one member of each to summarise the discussion and present to the wider group.

E-Learning can offer several distinct benefits for small group work. Factors such as geography, gender, or disabilities do not disadvantage group members. The instructor is able to respond to questions from particular groups, and peer tutoring is beneficial helping both the learner and facilitator.

In small groups learners can participate in:

- Collaborative learning—getting learners to work together towards one goal e.g. literature review, case studies, etc.
- Discussions—focussing on researched topic, requiring all members to contribute.
- Guided work—following lecture notes, the process and investigations, together.
- Role-playing—to promote a better understanding of different points of view, as well as assigning roles for procedures and solving problems.
Online projects give learners an opportunity to pursue their own special interests and can be achieved individually, or as part of a group activity. Project work also provides learners with practical experience. Projects can be posted for others to review, analyse, or discuss, providing needed feedback for learners.

IV. Computer Mediated Communication

CMC can include any means by which individuals and groups use the Internet to 'talk' to each other. CMC can either be synchronous (exchanges take place in 'real time') or asynchronous (messages are posted up at any time, and read and responded to by other users also at times which suit them; in other words, users do not have to be online at the same time, as they do with synchronous exchanges). Email, mailing lists, Usenet and computer conferencing are all asynchronous, while IRC, Internet telephony and videoconferencing all take place synchronously. All of these types of CMC are now available through the Web i.e. through a standard Web browser. Which type of CMC you use will depend on what kind of discussion you want to take place? Each has their strengths and weaknesses both in terms of technical constraints and the type of interaction that they encourage.

The main technologies include:

**Email** - the most popular Internet tool, used to exchange messages between individuals

**Mailing lists** - which use email to enable communication among groups of people. Individuals send emails to the list email address and receive a copy of all emails sent to that address

**Usenet newsgroup** - a separate Internet system which allows users to read and contribute to global special-interest 'newsgroups'; the number of newsgroup topics is vast, and subjects range from the very dry to the totally bizarre

**Computer conferencing** - (sometimes also known as 'discussion boards' or more accurately 'threaded discussion lists') which enables groups of people to hold discussions by reading and posting text messages on a computer system. The advantages over mailing lists are that the messages are archived and the structure of the discussion is also recorded. Computer conferencing is widely used to support learning, and within the educational context is generally what people mean when they talk about 'CMC'.

**Internet Relay Chat (IRC)** - an Internet system which allows users to chat 'live' (in real time) using text or audio Internet telephony, a way of using the Internet as an alternative to the main telephone network; currently in its teething phase, though exciting in that it has the potential to reduce the cost of calling long-distance to that of a local call.
**Videoconferencing** - a means by which small groups of geographically distant people can hold discussions in real time, during which they are able to hear and see each other and share various other types of data.

**Hybrid systems** - systems such as WebBoard combine threaded discussion lists, IRC and email lists allowing users to switch easily between the two depending on the nature of the discussion. See also Yahoo Groups which is a free online service allowing you to set up a Web based email discussion list with optional forwarding to and replies from your normal email account. It also offers a facility to share documents and images.

The proposed list of practical tips for the effective use of educational technology in collaborative learning situations:

- Use an open-ended task in which information can be discussed from multiple perspectives and problems can be solves in many different ways;
- Use task structures that regulate organisational and planning issues, particularly when such issues are not related to task- and learning goals;
- Arrange heterogeneous group compositions and, if possible, provide students with different discussion roles;
- Check students' assumptions and expectations. Provide guidelines about participation, collaboration and communication;
- Choose for transparent and user-friendly CMC systems. Provide students, tutors and moderators with sufficient time and exercises to get used to the system;
- Organise clear discussion threads. Separate discussion themes, technical issues, planning aspects and social issues. Support the use of clear titles when sending contributions;
- Give preference to asynchronous CMC systems, especially considering larger groups of students;
- Use synchronous CMC systems only for small groups (dyads, triples), especially when interaction is not structured.

**E-moderating**

*How to moderate a virtual discussion or conference*

- the importance of dialogue and argumentation
- social mechanisms are restricted
- importance of scheduling, tempo
- building of the discussion community
- supporting and encouraging the participants
- access and motivation → socialization → information exchange → knowledge construction → analysis, synthesis and development
Traditional models of teaching (one-to-many communication supported with one-to-few encounters) do not sustain the quality of learning and teaching. e-Learning used creatively and effectively can offer support, maintain and enhance student learning.

The **teacher’s role** in a networked learning environment changes:
- From lecturer to consultant, guide, and resource provider
- Teachers become expert questioners, rather than providers of answers
- Teachers become designers of student learning experiences rather than just providers of content
- Teachers provide only the initial structure to student work, encouraging increasing self-direction
- Teachers present multiple perspectives on topics, emphasizing the salient points
- From a solitary teacher to a member of a learning team (reduces isolation sometimes experienced by teachers)
- From teachers having total autonomy to activities that can be broadly assessed
- From total control of the teaching environment to sharing with the student as fellow learner
- More emphasis on sensitivity to student learning styles

The **student’s role** in a networked learning environment changes:
- From passive receptacles for hand-me-down knowledge to constructors of their own knowledge
- Students become complex problem-solvers rather than just memorizing facts
- Students see topics from multiple perspectives
- Students refine their own questions and search for their own answers
- Students work as group members on more collaborative/cooperative assignments;
  - group interaction significantly increased
- Increased multi-cultural awareness
- Students work toward fluency with the same tools as professionals in their field
- More emphasis on students as autonomous, independent, self-motivated managers of their own time and learning process
- Discussion of students’ own work in the classroom
- Emphasis on knowledge use rather than only observation of the teacher’s expert performance or just learning to “pass the test”
- Emphasis on acquiring learning strategies (both individually and collaboratively)
- Access to resources is significantly expanded
VI. Using CMC in learning and teaching

There are many forms of computer-mediated communication. CMC can include anything that is text-based, uses ICT as a technological base and can be used for two-way transmission of ideas. Examples of CMC can include: emails; mailbases; shared network group folders; annotatable webpages and databases; discussion boards (or fora/forums); frequently updated hyperlinked webpages. These are all forms of asynchronous CMC.

Synchronous CMC includes: chat, instant messaging.

Another tool that falls into this category, although technically not computer-mediated communication is telephone text messaging.

CMC is used for the following reasons in the elearning university environments:
- To support a videoconference
- To provide further contact with a guest lecturer after their lecture
- To enable students to meet when a face-to-face session is difficult to organise
- To provide additional opportunity for students to exchange ideas for subject areas that are more discursive

In our experience, CMC has only been used in conjunction with other forms of communication, either videoconferences or face-to-face interactions, never in isolation.

VII. Conclusions

The global marketplace and new technologies are contributing to the rapid globalization of higher education. Today's business environment draws its professional work force from all corners of the globe. This paper has presented various learning technologies used in the new concepts of computer mediated communications and distance learning.

The new learning solutions are presented, especially ones using Internet as primary medium. The barriers to accessing learning opportunities are falling dramatically because of improved learning technologies. The number of providers of and approaches to education and training will continue to grow.
dramatically as access improves and as demand for lifelong learning increases globally.

Universities of all types will increasingly focus on responsiveness to learner needs and desires such as convenience, timing, engagement, application of knowledge to the workplace, and learning by doing. The role of the teacher will be changed, giving him a different, much more responsible role. The teacher-student relationship will be changed from teacher oriented to student oriented. Students and teachers have to interact in new and crucial ways to facilitate learning.

Bibliography


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