

Computer–Mediated Communication in Virtual Learning Communities

Lisa Link

Flensburg University of Applied Sciences, Germany

Daniela Wagner

University of Hildesheim, Germany

THE MEANING OF CMC

Computer-mediated communication (CMC) can be simply defined as “communication that takes place between human beings via the instrumentality of computers” (Herring, 1996, p. 1) and the technology used in CMC as “media that facilitate the exchange of semantic content, transmitted through telecommunication networks, processed through one or more computers, between individuals and among groups” (Rice, 1984, p. 438). As a concomitant result of the widespread use of computers and the Internet in the curriculum of higher education as well as the inclusion of various forms of online learning, CMC has become a common communication modality in teaching and learning contexts. Although all forms of CMC can be meaningfully integrated into learning contexts, the majority of CMC at present is nevertheless text based and hence the focus of this contribution.

CMC plays a pivotal role in the context of e-learning models in higher education that offer students new forms of learning that would not be possible in a traditional classroom environment. Cooperative and collaborative learning, problem-oriented and project-based learning, as well as authentic learning in which real-world scenarios are simulated, are some examples. In the context of these types of e-learning models, virtual learning communities as well as smaller virtual teams are often an essential component. The learning objectives of these models are manifold, but they generally include offering students the opportunity to acquire, practice and enhance important key competencies required in their future professional work. Hence, communication and media skills as well as the ability to work cooperatively in a virtual team are just as important as the actual subject matter of the course itself.

CHARACTERISTICS OF CMC

CMC can be classified into two major groups: asynchronous and synchronous CMC. The main difference be-

tween these two types is temporal: asynchronous CMC is time independent, that is, it does not require that the communication partners be simultaneously online, whereas synchronous CMC takes place in real time or quasi real time, requiring the telepresence of the communication partners. E-mail, mailing lists, and discussion forums are examples of asynchronous forms. Chat rooms and shared whiteboards represent synchronous forms of CMC.

A further classification of CMC is whether it represents a one-to-one (1:1), one-to-many (1:n) or many-to-many (n:n) communication form. Depending on their use, the different types of CMC can fall into more than one category, for example, e-mail and chat can represent both 1:1 and n:n communication. A topic of interest in this context is the double function CMC can have: It can be used for individual communication, but also for mass communication. This goes along with a double function that is very interesting in a learning setting, for example, in higher education. E-mail messages and discussion forum postings can simultaneously fulfill two successive functions: (1) interpersonal communication between two or more participants and subsequently (2) serve as an information pool for other participants. Chats that have a protocol option can also be used as an information pool for passive students. Fritsch (1998) coined the term *witness learning* to describe the indirect learning possibilities of learners who do not actively take part in interactions, but learn from witnessing the interactions of others. In virtual learning environments, participants have ranked “witnessing” (i.e., reading) the interactions of others high among the things they have learned from (Fritsch, 1998; Link, 2002).

As text-based CMC is not realized face-to-face but mediated via computers, the communication partners cannot directly experience nonverbal signals (e.g., facial expressions or gestures) or paraverbal signals (e.g., voice volume and tone). In practice, nonverbal and paraverbal signals are often compensated for by emoticons, inflectives, and other expressions created by entering characters on the keyboard.

Many studies, particularly those from a linguistic perspective, have investigated the style participants use in communicating. The most often noted phenomenon is no doubt the use of colloquial language in chat, e-mail, and even in discussion forums. This phenomenon is often accompanied by unconventional orthography, spelling and grammar errors, as well as slang expressions. Furthermore, the communication is influenced by a register embracing word creations taken from the language of computer hackers. If the model of Koch and Österreicher (1994) is applied to CMC, it becomes apparent that the linguistic characteristics of this type of written communication cannot simply be classified as totally oral or totally written: Here it is helpful to differentiate between the concept and medium of spoken and written language. Considering the communication style of CMC, it must be regarded as a hybrid language variety, displaying characteristics of both spoken and written language. As its usage norms are becoming conventionalised, some authors venture to propose that this communication style represents a new type of language which they refer to as netspeak or cybertalk, which cannot be compared to conventional communication (e.g., Crystal, 2001).

Studies with a focus on work-flow analysis often examine CMC as to its impact on the effectiveness of communication in professional contexts as well as on the dependency between communication style and the roles of the communication partners (e.g., communication between team colleagues vs. communication between employee and employer).

With regard to the literature and research reports published in the last 10 years, CMC plays an important role in nearly every community phenomenon. In social contexts, the style people use to communicate influences to a high degree the social relations and team dynamics.

CMC THEORIES

For the effective use of CMC in educational contexts, a variety of computer-mediated communication theories can provide insights into selecting appropriate CMC tools as well as understanding their limitations. Prevalent theories can be categorized into three large groups (Döring, 2003, p. 128):

1. Media choice (e.g., media richness theory: Daft & Lengel, 1984, 1986; Rice, 1992; social presence: Short, Williams, & Christie, 1976; Rice, 1993)
2. Media characteristics (e.g., cues-filtered-out model: Culnan & Markus, 1987; reduced social cues: Sproull & Kiesler, 1988)

3. Mediated communication behaviour (e.g., social information processing: Walther, 1992; Fulk, Schmitz, & Steinfeld, 1990).

Media choice theories focus on cognisant decision making about which medium to use for specific communicative tasks. The media richness theory (Daft & Lengel, 1984, 1986; Rice, 1992) is by far the most predominant theory of media choice. This theory defines a medium's richness in terms of its capacity to carry information, feedback, channel, source, and language. Placing face-to-face communication at the richest end of the spectrum and numerical computer documents at the leanest, various communication media are then placed along this scale. In the media richness model of Reichwald, Möslein, Sachenbacher, & Englberger (2000, p. 57), which includes most forms of CMC, the spectrum from rich to lean media range from (1) face-to-face dialog, (2) video conference, (3) telephone/telephone conference, (4) voice mail, (5) computer conference, (6) telefax, (7) e-mail, (8) letter post and documentation. This theory contends that in organisations information is processed in order to reduce uncertainty or equivocality. Reducing uncertainty (e.g., communicating the postponement of a scheduled meeting) can be carried out best with lean media whereas reducing equivocality (e.g., a team meeting about a new project) requires a rich medium. Thus, the primary assertion of this theory is that the information richness of the task should correspond to the media richness of the medium. To date, empirical studies have not been able to validate this theory.

Media characteristic theories examine the impact that media characteristics of CMC have on the communication process. The starting point is that CMC is typically text based. Accordingly, this results in reducing communication channels to text only, which in turn filters out physical and social cues. The cues-filtered-out approach (Culnan & Markus, 1987) propounds that since text-based CMC cannot communicate nonverbal or paraverbal information, very little social and sociodemographic information about the communication participants is transmitted. Additional research has found that the lack of social cues can be liberating, for example, in decreasing inhibition (Kiesler, Siegal, & McGuire, 1984).

Mediated communication behaviour theories focus on how participants behave during CMC, whether they exchange social information, form relational bonds, or use special Internet language. Social information processing (Walther, 1992) maintains that with time, CMC participants will develop communication skills to compensate for limitations of the medium. In contrast to the other CMC theories, social information processing views the Internet

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