

# Dancing with meta-communication for distance education: functions and role of meta-communication concept for knowledge-building process in distance education

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**ABSTRACT.** Today, we are living in the knowledge society. The rapid technological changes and developments in science obligate us to update nearly all knowledge, even if it was achieved just yesterday. This obligation is strongly emphasized itself, especially in educational environments, for delivering our educational materials to the learners. Communication is not a new concept in our daily lives, but it is an effective issue, and a concept used for designing our messages and up-to-date knowledge. As Robert S. McLean stated: "Knowledge building is a theory of learning, which emphasizes the collaborative construction of knowledge by a group of learners and teachers. Students [improve] their understanding through sustained inquiry that pursues collective goals of understanding; it is driven by student [and teacher] questions and explanations, in self-directed small groups" (McLean, 1999, p. 383). This paper suggests and defends the idea that the meta-communication concept could help the teachers and course developers better redesign and reconstruct knowledge for building educational materials, especially in the distance education field and its applications, according to daily developments in science and technology. The major objective of this paper is to discuss the structure of knowledge building, according to knowledge-building theory criteria and principles, and its relationship with communication concept, which surrounds its development. Graphical symbols that enable interaction between the user and computer (scroll bar, button, etc.), signs, symbols or small computer programs that define the action of graphical symbols, designed according to knowledge-building principles, may help facilitate and articulate meta-communication, and the components of knowledge building. This is particularly true in distance learning, where the communication usually cannot occur outside the system, as it could in a face-to-face environment.

**KEYWORDS:** *Communication, Design of messages, Educational environment, Knowledge building, Knowledge-building theory, Meta-communication, Reconstruction of educational materials*

## Meta-communication concept

The prefix can have various meanings but as used in communication, philosophy, and psychology its meaning is best recognized as *about*. Thus, *meta-communication* is communication about communication; *meta-language* is language about language; meta-message is a message about a message. Take it this way: you can communicate about the world - about the desk you're sitting at, the computer you are using, or the passage you're reading right now. We refer to this as *object communication*, because you are talking about objects. The language you are using is called an *object language*, but notice that you are not limited to talking about objects: you can also talk about your talk, you can communicate about your communication. And this is referred to as meta-communication. In the same way, you can use language (that is, meta-language) to talk about language (that is, object language). And you can talk about your messages with meta-messages.

The distinction between object communication and meta-communication is not merely academic: it's extremely practical, and it is recognized that the difference between these two forms of communication is essential in untangling lots of conflicts, and understanding a wide variety of interpersonal communication interactions. Actually, you use this distinction every day, perhaps without realizing it. For example, when you send someone an e-mail with a seemingly sarcastic comment, and then put a smiley at the end, the smiley communicates about your communication: it says something like "this message is not to be taken literally, I'm trying to be humorous". The smiley is a meta-message: it's a message about a message. When you say, as a preface to some comment, "I'm not sure about this, but...", you're communicating a message about a message; you're commenting on the message, and asking that it be understood with the qualification that you may be wrong. When you conclude a comment with "I'm only kidding", you're meta-communicating: you're communicating about the communication.

In relationship communication, you often talk in meta-language, and say things like "we really need to talk about the way we communicate when we're out with company" or "you're too critical" or "I love it when you tell me how much you love me". In fact, it might be argued that relationship or couples therapy is largely (though not entirely) a process of exploring your communication patterns

through communication, through talking about the way you talk to, and about, each other. And, of course, you can use non-verbal messages to meta-communicate. You can wink at someone to indicate that you're only kidding, look longingly into another's eyes when you say "I love you" to show that you really mean it, or sneer after saying "Yeah, that was great", with the sneer contradicting the literal meaning of the verbal message.

All non-verbal elements of communication are sometimes called *meta-communication*, from the Greek word meta meaning beyond or in addition to. *Meta-communication* is therefore something *in addition to the communication*, and we must always be aware of its existence. It is essential to remember that the meta-communication which accompanies any message is very powerful. The receivers will use these clues to help them interpret what you mean, but more importantly they will often take the meaning from the meta-communication rather than from the words themselves, particularly when what you are saying conflicts with what you are doing. If, for example, you are angry but trying to hide your anger, you must be aware of your body posture, the way you use your eyes, gestures and facial expressions, and the tone of your voice, which may well give you away. Similarly, in writing, *the tone of your voice* may show. The verbalization of attributions between partners could lead into the process of *intentional meta-communication* as described by Perlmutter and Hatfield. These authors claim that, while meta-communication accompanies all messages and is often unconscious, intentional meta-communication occurs when people talk consciously about the relational context of their messages (Perlmutter, Hatfield, 1980).

The possibilities for actual change in the relationship begin at the level of intentional meta-communication. Newman claims: "to what extent intentional meta-communication actually occurs, and actually facilitates relational change, is a subject in need of further investigation" (Newman, 1981, p. 129).

### **Knowledge building and the communication**

Of course, communication skills are important for developing professional and personal relationships. Relationships begin and grow through communication, and the quality of communication influences the quality of the relationships. Effective communication

skills are essential. Without them, one's effectiveness in all roles in life - professional, leader, manager, parent, friend, etc. - is limited. Coalitions have been defined as "individuals or organizations working together in a common effort ... for a common purpose to provide better services at lower cost". Good communication is required for individuals or individual organizations to establish coalitions, cooperate with one another, determine a common purpose, and coordinate efforts. The first step in developing these skills is to understand what communication is, the ways we communicate, and the methods of communication. This is particularly important when working with groups (Beckham, King, 2008).

A true knowledge-building environment facilitates learning - learning that is centred around ideas, and deeper levels of understanding, rather than the completion of often unrelated activities. The process of "knowledge building" defines problems and hypotheses, researches and collects information, analyzes and collaborates. A team of researchers, teachers, administrators, and computer scientists has collaborated over the past decade to create the research basis, and subsequent designs for Knowledge Forum. Based on the original knowledge-building program named CSILE (Computer-Supported Integrated Learning Environment, which is given in detail below), this *second-generation* CSILE product incorporates advanced features and technology for fostering knowledge building outside and in the classroom. In their research, the team considered learning in both private and public sectors. Comparisons of the organizations of traditional schools, university-level research institutes, and highly successful commercial corporations clearly point to the common link in these successful organizations - the production of knowledge. Researchers have concluded that maximizing this production requires structures that define everyone as contributors. Unfortunately, most classrooms are not organized this way. Knowledge Forum was developed to change this. In Knowledge Forum, students are expected to pose questions, define their own learning goals, acquire and build a knowledge base, and collaborate with one another. Built-in scaffolds cue students to the thinking strategies that characterize *expert learners*, while the structure of the database with its communal views necessitates sharing of information via computer in distance education. Students contribute public notes, *build on* to others' ideas, and *reference* the work of peers. The ongoing practice of

these advanced operations, combined with teacher support and coaching, helps students acquire the sorts of learning strategies that characterize expert learners (Knowledge Forum, 2008).

To understand knowledge building it is essential to distinguish learning, the process through which the cultural capital of a society is made available to successive generations from *knowledge building*, the deliberate effort to increase the cultural capital. This, in turn, requires distinguishing knowledge building from a broad range of activities that share its constructivist underpinnings, but not its focus on the creation of new knowledge. These include collaborative learning, guided discovery, project-based learning, communities of learners, communities of practice, anchored instruction, and distance learning.

Knowledge building teaches students how to develop a repertoire of skills that allow them to become experts in the art of learning, a skill that, once developed, can be used across their academic and working lives. In a knowledge-building environment, structured assignments, rather than teachers, can assist students in their learning, and students are invested with the individual and collective responsibility to identify holes in their knowledge, develop plans to close them, and assess progress in attaining their goals. Learning needs, discovered through structured assignments, determine the activities students perform in order to master a specific subject. Knowledge building may bridge the chasm between the classroom and the corporation, because it allows students to develop the skills involved in learning, thinking critically, and working cooperatively with others (Lessons in Learning, 2008).

In education, however, it seems more difficult for students to take on higher levels of cognitive responsibility, as is evident in the literature related to Project-Based Learning (PBL). In light of the findings of this research, the limitations of the technology tools in supporting the socio-cognitive dynamics of knowledge-building discourses and activities need to be overcome by promoting a knowledge-building culture that encourages every participant to take responsibility for the overall advancement of community knowledge. The social and emotional aspects of a knowledge-building culture can be a powerful motivator to engage participants in higher-level knowledge work. Approaches to encourage a knowledge-building culture include structuring a task-specific knowledge-building activity, and creating conditions that compel collaborative knowledge building (Chen, Chen, 2007, p. 12).

## **Dynamics of knowledge building and meta-communication**

Knowledge building is work on the creation and improvement of ideas. The dynamic is social, resulting in the creation of public knowledge. In contrast to knowledge situated within the individual mind (the traditional concern of education), and knowledge situated in the practice of groups (the concern of situated cognition and communities of practice), public knowledge has an out-in-the-world character. Public knowledge can itself become an object of inquiry, and the basis for further knowledge building. Thus, there is the possibility of a knowledge-building dynamic that drives the continual creation and advancement of new knowledge. What makes knowledge building a realistic approach to education is the discovery that children, as early as grade one, can engage in it. Thus, there is a clear developmental link, running from childhood education on into advanced education and adult knowledge work, in which the same process is carried out at increasingly high levels (IKIT, 2008).

The idea of knowledge as a product, enjoying an existence independent of individual knowers, presents epistemological difficulties that educators are not accustomed to contend with. More familiarly, the problems of objectified knowledge are being wrestled with, in such contexts as technology transfer, institutional memory, and intellectual property law. In science, it is clear that when we talk about Newton's theory we are not talking merely about something once encoded in Newton's brain, but about something that even today is discussed, tested, taught, applied, evaluated, and credited with causal force. When we speak of schools as knowledge-building communities, we mean schools in which people are engaged in producing knowledge objects that, though much more modest than Newton's theory, also lend themselves to being discussed, tested, and so forth, without particular reference to the mental states of those involved, and in which the students see their main job as producing and improving such objects. Restructuring schools as knowledge-building communities means, to our minds, getting the community's efforts directed toward social processes aimed at improving these objects, with technology providing a particularly facilitative infrastructure (Scardamalia, Bereiter, 1994).

Newman wrote an article linking attribution-making with meta-

communication in ongoing, intimate relationships. Newman states that meta-communication can be “a message which signals how a person intends a message, how a person wants the message to be answered, how a person is attempting to define the relationship, etc.” (Newman, 1981, p. 124). Newman also points out that one person’s interpretation of meta-communication may be distinct from another person’s intended meta-communication. Newman suggests: “Knowledge of implicit attribution-making, or interpreted meta-communications, might aid in the prediction of subsequent interpersonal responses” (Newman, 1981, p. 125). Attributions constitute the cognitive counterparts to actual messages of meta-communication.

Attribution-making could either accompany a person’s experience of a particular interpersonal event or could follow that experience over various stages of time; it could be invoked with varying degrees of conscious thought, and it could serve to explain either one’s own communicative responses or the responses of a partner. For instance, when you consider the qualities that a theory must have (say, that it must have clearly defined terms, and be capable of being disproved), these are meta-theoretical statements; they are statements about theories, and not about the way communication works, or about first encounters, or about persuasion: they are about theories as theories.

Like all your communication, your meta-communication may be used both effectively and ineffectively. Generally, it’s helpful to analyze your talking patterns, and the ways in which you and your partner, or management and workers, say, relate to each other. This is good; this is the effective use of meta-communication, and can often lead to significant improvements in your own relationships. But, when you substitute talking about your communication for talking about a problem, you’re likely to create more problems than you had originally. For example, let’s say you’re part of a couple discussing your child’s getting into trouble with the police. As long as the conversation is focused on the child and the trouble with the police, it seems you’re addressing the problem at hand. But, there is also a tendency to substitute talk about the talk for talk about the problem. Let’s say one person says: “You’re just an uncaring parent”. Then the other person focuses on being called *uncaring*, and the conversation now veers off into whether *uncaring* is justified, and may entail a list of all the actions that demonstrated a great deal of caring.

The conversation (and soon-to-be argument) is now between the parents and their view of each other. When this type of talk becomes the sole or main topic of conversation, you're into what is called a *meta-communication spiral*, with your talk focusing more and more on the ways you talk, and less and less on the problem of the child. So, the lessons to be learned from meta-communication are two-fold: (1) use meta-communication to improve your interpersonal and relationship communication - to preface important messages or to analyze and ultimately improve relationship communication, for example; (2) avoid meta-communication when it substitutes for addressing an immediate problem (Communication Blog, 2007; Demiray, 1995, p. 12). In communication, information is transmitted between sender and receiver. Both interpret the information they receive, and control the information they give. Much information in communication is implicit, and not expressed in words. It is "embedded" in the situation, in which the communication takes place ("Put that there!" may be a perfectly intelligible statement in a face-to-face meeting, though to an outsider it is completely indefinite). In communication, it is therefore important to make it clear at all times "what kind of situation" (what kind of context) one is in. If we say (first) "this is play", we can (afterwards) allow ourselves to do and say things that might otherwise be offensive (Bateson, 1955, 1972). Such communication about the situation in which interaction takes place, is called meta-communication.

DeVito suggests that for a message to have meaning, both elements, verbal and non-verbal, need to be present. He defines non-verbal communication as communicating without words, by stating that "you communicate non-verbally when you gesture, smile or frown, widen your eyes, move your chair closer to someone, wear jewelry, touch someone, raise your vocal volume, or even when you say nothing" (DeVito, 2000, p. 130).

According to DeVito, meta-communication is "communication that refers to other communications" (DeVito, 2001, p.136). In other words, meta-communication is talking about talk or communication. For example, if two married people sit down to talk about an argument they just had, they are meta-communicating, because they are talking about the communication that happened in the argument. Meta-communication can be communication about both verbal and non-verbal communication. If a girlfriend is talking to her boyfriend, and she complains that her boyfriend does not seem to be listening to

her, judging from his lack of eye contact (non-verbal communication), then the girlfriend is meta-communicating, because she is talking about her boyfriend's non-verbal communication (Mann, 2003). Research on meta-communication is not abundant; however, some studies do exist. Patch and colleagues studied the use of meta-communication in compliance-gaining strategies, and they found that a person who is asked to comment explicitly on the appropriateness of a single request may find it less distressing to comply with the request than to engage in a meta-communicative confrontation with the requester. This study was tested among strangers, and not in a romantic relationship context, however (Patch et al., 1997).

Another study done by Patch found that the use of meta-communication led to higher ratings of power and tension. Patch's study discovered that meta-communication is more stressful when a friend is involved than when a stranger or a casual acquaintance is involved, because meta-communication seems to generate more feelings of rudeness and tension between friends than between strangers or acquaintances.

Another finding was that meta-communication was considered to be less acceptable among friends than among strangers. Patch's data came from scenario judgment studies that tested meta-communication in the contexts of friends and strangers. Patch stated, at the end of his research, that the significance of meta-communication should be explored in future research across a broader spectrum of relationship contexts (Patch, 1995).

The use of meta-communication in families has been a lightly touched-on area of research. One study, by Ely and colleagues, discussed the types of reported talk, and the differences between mothers' and fathers' usage of meta-communication. This study found that mothers used reported speech, or reports of one's own or someone else's past speech, far more frequently than did fathers or children. Again, this study was not completed within the context of a romantic relationship (Ely et. al., 1995).

Dainton's study found that the more an individual perceives his or her partner as using maintenance behaviours relative to his/her own expectation, the more satisfied the individual is with the relationship. Another finding of Dainton's research was the evidence that actual behaviours are relatively more important in predicting satisfaction than are discrepancies between actual and expected behaviours (Dainton, 2000).

Dindia and Baxter found no relationship between maintenance/repair strategies and marital satisfaction. Dindia and Baxter assert that “the absence of a significant relationship between strategy choice and satisfaction suggests that belief in communication and togetherness may be a cultural folk myth, not actuality” (Dindia, Baxter, 1987, p. 155).

A statement such as this deserves and requires further inquiry. Newman’s article states that both verbalized and un verbalized interpersonal attributions might reflect those interpersonal and intrapersonal perceptions, which sustain particular patterns of relating, and contribute to relationship satisfaction or dissatisfaction. So, relationship satisfaction has been researched when linked to a number of concepts studied in the communication field; however, the relationship satisfaction’s link to meta-communication has not been studied and, therefore, may be a copious relationship to research. Research on meta-communication is limited, especially in the context of romantic relationships, and how meta-communication relates to relationship satisfaction. Research on meta-communication and relationship satisfaction exists, but the two concepts are rarely related to one another. When considering reality, logic leads one to think that communication about communication would lead to greater levels of relationship satisfaction (Newman, 1981).

In light of this limitation of past research, and the need to establish the existence of a relationship between meta-communication and relationship satisfaction, before inquiring further about the nature of their relationship, as an exploratory investigation of these hypotheses, as well as to explore the feasibility of instructional meta-communication, instructors in a team-taught graduate course in self-directed learning had students develop behavioural objectives for improved interpersonal communication, and elicited feedback about the effectiveness of their communication behaviour after lecture-discussions. Student meta-communicative feedback was less threatening and more useful than anticipated. Seminars or workshops designed to provide experience and training for teachers in instructional meta-communication are suggested (Alexander, 1972).

In their article *Deaf children in regular classrooms: a sociocultural approach to a Brazilian experience*, Celeste Kelman and Angela Branco write that “inclusion of deaf children in regular classrooms is often described as unsuccessful”. But their article shows how

communicative and meta-communicative strategies used in teacher(s)-deaf student(s) interactions may facilitate inclusion. A fourth-grade classroom was investigated, where a co-teaching approach (a master teacher working with a teacher trained in BSL-Brazilian Sign Language) was used. The class, 7 deaf and 19 hearing students, was selected because of the teacher dyad's effectiveness with these students. The teachers' interactive styles and strategies are highlighted, along with communicative and meta-communicative processes, that occurred between them and the deaf students. The authors show that meanings are co-constructed not only through words or BSL but through non-verbal actions. Relational meta-communicative strategies make integration more effective, and learning easier and more pleasant; therefore, dialogue with deaf children entails more than the mere use of words, either vocally or with signs (Kelman, Branco, 2004).

In her article *Helping kids with learning disabilities understand the language of friendship*, Janet Giler mentioned that, while children with learning disabilities may know how to initiate friendships, many of their relationships fail, because they don't know how to sustain them, and they often end friendships because they have been unable to work out conflicts. While they may hear their friend's words, they often don't take the communication (for example, joking and teasing) the way it was intended, often attributing negative intentions when they were not present. Because of their difficulty processing language, many children with learning disabilities are poor listeners. Whether it is because of their problems comprehending verbal and non-verbal communication, or because of their desire to make the information easier to grasp, they often put information into simple, *black and white* categories (for example, good or bad). Instead of understanding manners, building rapport by checking (asking questions), or understanding that the person may have said something without really thinking of its impact, and was unintentionally hurtful, unresolved misunderstandings can escalate into conflicts that can end friendships abruptly (Giler, 2002).

Dowd and Laws concern that other recent reports have noted that educational institutions, to survive, must change the way they do business. A report from the Pew Higher Education Roundtable stated that "more than ever, colleges and universities are being regarded - by students, legislators, and the public generally - as educational suppliers that should be willing to change in response

to consumer demand. Those who approach Higher Education institutions as *purchasers of a service* now want a larger say in when, how, and where they get their education". Institutions must provide education in a framework that meets students' needs in terms of space and time. DL-Distance Learning is the means by which this goal will be achieved. The Internet may be accessed in a number of ways. So-called *freenets* offer access for free. Many academicians have access to a net through their institutions. If they work from home, they may prefer to use commercial services such as America Online, Prodigy, CompuServe, e-World (Apple) or GENie. Starting with a commercial service may help reduce the learning curve associated with using the Internet. Online services are gateways to the Internet, not part of the Internet itself. To use an online service, you must have a modem and you must subscribe. Most online services have their own educational services available only to subscribers (Dowd, Laws, 2008).

Whereas in a traditional university classroom, important features of interpersonal relationships are most readily communicated by body language or tone of voice, in electronically-mediated teaching environments, absent such real-time cues, even subtle meta-communications may take on added importance and power. Although a growing number of studies have examined explicit online communication, there is sparse literature relating to online meta-communication, and its potential effect on the learning process. In the online environment, meta-communications may be conveyed by a correspondent's choice of words, response time, choice of font size, use of computer icons, and, at a less conscious level, a variety of parapraxes. To date, measures used to analyze electronically-mediated communications have been largely quantitative, such as tracking duration of communications, and number of messages transmitted. The processes which are involved in using content analysis to identify and understand meta-communications are being explored. Several hundred e-mail correspondences, and a number of online graduate seminars were examined to exemplify the identification and analysis of meta-communicative processes. It is recommended that teachers and students reflect upon their meta-communications, so as to understand some of the subtle processes that can serve to maximize the quality of education in electronically-mediated environments (Hatcher, 2003).

Focusing on educational ideas and enabling technology for knowledge-building discourse is very important. The conceptual bases of Computer-Supported Intentional Learning Environments or CSILE come from research on intentional learning, process aspects of expertise, and discourse in knowledge-building communities. These bases combine to support the following propositions: schools need to be restructured as communities in which the construction of knowledge is supported as a collective goal, and the role of educational technology should be to replace classroom discourse patterns with those having more immediate and natural extensions to knowledge-building communities outside school walls. CSILE is described as a means for reframing classroom discourse to support knowledge building in ways extensible to out-of-school knowledge-advancing enterprises. Some of the most fundamental problems are logistic, and it is in solving these logistic problems that we see the greatest potential for educational technology. With new technologies, student-generated collages and reproductions appear more inventive and sophisticated - with impressive displays of sound, video, and typography - but from a cognitive perspective, it is not clear what and if any knowledge content has been processed by the students.

The knowledge-building discourse is at the heart of that superior education that we have in mind, arguing that the learning environment needs to foster transformational thought, on the part of both students and teachers, and that the best way to do this is to replace classroom discourse patterns with those having more immediate and natural extensions to the real world, patterns whereby ideas are conceived, responded to, reframed, and set in historical context.

The goal is to create communication systems in which the relations between what is said and what is written, between immediate and broader audiences, and between what is created in the here and now and archived are intimately related and natural extensions of school-based activities, much as these processes are intertwined and natural extensions of activities conducted in scholarly disciplines. The efforts to create an enabling technology have led to the CSILE project by Scardamalia and Bereiter focusing on the educational ideas for knowledge-building discourse, with some discussion on the technology (Scardamalia, Bereiter 1991; 1992). The ideas represented in

CSILE come from three lines of research and thought:

- Intentional learning
- The process of expertise
- Schools are knowledge-sharing entities that need to be restructured as knowledge-building communities

The process of expertise is effortful and typically requires social support. By implication, the same is true of intentional learning. Most social environments do not provide such support. Adaptation to the environment involves learning, but the learning is asymptotic. In second-order environments, learning is not asymptotic, because what one person does in adapting changes the environment, so that others must readapt. More relevant examples in education are the sciences and other learned disciplines, in which adaptation involves making contributions to collective knowledge. Because this very activity increases the collective knowledge, continued adaptation requires contributions beyond what is already known, thus producing non-asymptotic learning.

The idea of schools as knowledge-building communities is the idea of making them into second-order environments on this model. How does one characterize the knowledge-building discourse, and then recreate classroom activity to support it? We could imitate at the surface level - for instance, by having classes produce scholarly journals with peer review. In fact, the CSILE implementation we describe later has provisions for doing that, but it is not likely that imitation of surface forms can produce the radical restructuring necessary to turn schools into real knowledge-building communities. The whole journal process could easily be degraded into just another form of schoolwork. That would happen if the essential point were lost, that publications should embody contributions to collective knowledge (Scardamalia, Bereiter, 1994).

## Elements of course development strategy

Important elements of a course development strategy are student characteristics, the knowledge topic and objectives, the content, the teaching and learning activities, and the course assessment. Clearly, knowledge building and development for distance learning is a complex and challenging task. For each element, some guideline questions are required (Yousuf et al., 2008).

### *Student characteristics*

The knowledge builder must have the information about student characteristics in respect of the target audience/population:

- Basic data: rural/urban division, sex, age, group employed or unemployed, their level of literacy.
- Life style: student's housing conditions, their working hours, financial position, mode of traveling, attitudes, and their aspirations.

In the first phase, the following guideline questions about the target students are required such as:

- What is the students' knowledge of the subject?
- Are the knowledge requirements clearly specified?
- Are the learning results defined?
- Does the knowledge match the requirements identified in the needs assessment?
- Do students have the necessary IT skills?
- Is regional and societal adaptation of the knowledge necessary and possible?

The educational backgrounds of students, and their skills, will vary from country to country, and from society to society. The course developer will know very little about the subject-specific knowledge of the students, their skills in using technology, or their practical experience in the field of study. For example, some students will be familiar with using computers and the Internet, while others might not have used these technologies before. The knowledge builder should expect learners to have some basic knowledge of the subject, and some technology skills, because they are enrolled

in a master's program. However, the students' skills in using the Internet or material on CD-ROM might be very limited, so support and help (for example, how to install a plug-in, how to check a connection, and so on) will be necessary. Cultural background, which affects how students think, learn, and work, is another critical student characteristic.

### ***Course topic and objectives***

Before knowledge builders or writers convert course material into a format being appropriate for distance learning, they must reflect on the course topic and objectives. Why? The topic of an existing training course might be relevant for a group of professionals in a single developing country, but not for a broad range of students in different countries. The topic and the contents must be general enough to enable adaptation to local circumstances in different countries.

The knowledge objectives that are pursued, limited as they may be, tend to be made invisible to the students. The objectives are translated into tasks and activities. The students' attention, and often that of the teachers as well, is concentrated on the activities, and not on the objectives that gave rise to them (Scardamalia, Bereiter, 1994). Yousuf and colleagues emphasize that the objectives reflect the potential outcome of the training and will give students an idea of their learning opportunities. Following guideline questions are helpful in this regard (Yousuf et al., 2008):

- Is the knowledge topic appropriate, relevant, and adapted for students in developing countries?
- Are there any controversial ethnic, religious, or cultural topics?
- Is the topic relevant to the development aspect of the country?
- Can it be expected that local professors are familiar with the topic?

### ***Knowledge content***

Scope for the exercise of expertise - for progressive problem solving, in other words - is generally available only to the teacher, and schooling provides no mechanisms (such as those that exist in trade apprenticeships) for the teacher's expertise to be passed on

to the students (Scardamalia, Bereiter, 1994).

The knowledge builder of a distance learning course must be aware of the differences in roles and delivery modes. The following guideline questions, which are summarized by Yousuf and colleagues under this element, are targeted, and can be converted by knowledge builders (Yousuf et. al., 2008, pp. 126-129):

- What material is readily available for the various parts of the curriculum?
- What additional material is necessary for the various parts of the curriculum?
- Where can you get these materials?
- Does the course cover the right content and is the coverage extensive enough?
- Is the content up-to-date?
- Is any important content missing, which might be of importance for the target group?
- Is the structure of the content flexible? Can it be divided into logical smaller segments for conversion into digital learning material?
- Is the level of difficulty right for the learners?
- Will the content need to be adapted to local conditions?
- Will the course be required by the student?
- Will the course be accepted by students, and will they learn from it?
- How long will it take students to study the materials?

### **Teaching/learning activities and resources**

In a teaching/learning process, the importance of interaction cannot be overemphasized. According to Yousuf and colleagues, it helps achieve objectives particularly in the affective domain consisting of attitude formation, development of appreciation, and interpersonal relations. Likewise, in the cognitive domain, higher-level skills like problem solving and decision making can receive attention through interaction activities. With the help of activities, knowledge and skills that have already been learnt can be reviewed, clarified, corrected, reinforced and applied. Students can be asked through an activity to report on their projects and other experiences, which enable them to learn from each other

as well as from the tutor of the study centre. This can only be possible if the knowledge builder is able to design such activities, and insert them at the proper place of the material.

The knowledge builder must have the knowledge and experience of various forms of activities, such as: reviewing experience; attitude questions; finding things out; finding and using information; role play; preparing written information; problem solving, and planning action (Rashid, 1998). Generally, distance education course materials are made up of a number of course components or learning materials, which can include any of the following: teaching texts, study guides, course guides, readers or anthologies, assignments (with or without an accompanying tutor guide), television broadcasts or videotapes, radio broadcasts or audiotapes, software or online and electronic information and data, CD-ROMs, textbooks, and laboratory materials, as well as phone number and contact with the teacher, etc.

In addition, some learner support may be provided, either through personal communication at local universities or through online student tutors. Both the media used for distance learning and the student support arrangements affect the possible level of interaction in a distance learning course (Yousuf et al., 2008, p.127-128).

## **Writing styles**

Distance education materials not only have to convey information to the students, but also they have to structure and control the process by which this information is presented to, and assimilated by, the students. Such materials need to be designed with much more care than the texts of formal systems. There is a need to develop an effective writing style in distance education which is particularly significant. In writing styles, some factors are very important for writing the distance education material. These are given below (Yousuf et al., p. 128).

### ***Format of distance education material***

Format refers to the general appearance of the page and of the document as a whole. The placement of units on the page, such as the headings, margins and number of columns, features of type, such as double or single spacing, paragraph indentation and type style. In many cases, a good illustration can replace the text, and communicate the desired information more quickly and effectively.

Anytime, the writer can use a phone, line drawing, chart, graph, or table.

### ***Visual and learning material***

One of the main functions of any visual aid is to set in train the right kind and quantity of perceptions from which learning can take place. Nowadays visual materials are being utilized to make the teaching more effective. As a matter of fact, it now appears obvious that properly designed visual material like pictures, photographs, maps, diagrams, graphs, and symbols for distance education can be very useful for all open learners. The use of pictures, use of comics, use of pictorial charts, and diagrams in the text is very productive, and creates stimulation in the students of open learning systems (Yousuf et al., 2008, p.129).

### **Course assessment and evaluation**

Course assessment has a significant impact on learners and their progress. Assignments should be consistent with course content and objectives, and be manageable in the time allocated, with the resources and technologies available to the learner. Assignment tasks should enable learners to pursue some of their own interests or apply their learning to a practical situation or their own context. Numerous assignment types are possible but, regardless of the form of the assignment, feedback on a learner's assignment is always necessary. A simple questionnaire following each assignment provides valuable feedback to the teacher.

In response to multiple-choice questions, the feedback can be an automatic message from the learning system. For most of the other assignment forms, more specific feedback is necessary. The knowledge builder will provide guidelines, questions, and suggestions for course assignments, and the local facilitator will be responsible for course assessment and grading (Yousuf et al., 2008, p. 129).

The most effective form of planning occurs for the knowledge builders when there is meaningful dialogue among course coordinators and course writers, who meet often in the initial stages. These frequent meetings must continue throughout the course development process by providing opportunities to discuss ways of enhancing student learning, and solving problems as they arise.

In knowledge-building contexts, the focus is on problems rather than on categories of knowledge or on topics. Explaining is the

major challenge, with encouragement to produce and advance theories through using them to explain increasingly diverse and seemingly contrary ideas. Engagement is at the level of how things work, underlying causes and principles, and interrelatedness of ideas explored over lengthy periods, and returned to, in new contexts. Decentralized open knowledge presents a focus on the collective knowledge. From the perspective of social interactions, there is an expectation of constructive response to one another's work. Inquiry on all sides is driven by questions and desire for understanding. Negotiating the terrain around ideas is marked by complex interactions with others, using purposeful and constructive ways:

- to engage busy people.
- to distribute work among members.
- to sustain increasingly advanced inquiry.
- to monitor advances of distant groups working in related areas.
- to ensure the local group is indeed working at the forefront of their collective understanding.

There is also a great deal of opportunistic work, often in small groups (as opposed to legislated schoolwork of the conventional kind, in which students are working individually but all doing the same thing or are subdivided in some arbitrary fashion).

In knowledge-building discourse, more knowledgeable others do not stand outside the learning process (as teachers often do), but rather participate actively. Further, the knowledge of the most advanced participant does not circumscribe what is to be learned or investigated. There are other sources of information, and participants aim to point the way to other groups and resources that might prove helpful.

Less knowledgeable participants in the discourse play an important role, pointing out what is difficult to understand and, in turn, inadequacies in explanations. To the extent that novices can be engaged in pushing the discourse toward definition and clarification, their role is as important as that of those more knowledgeable.

In all, knowledge building begets knowledge building. Important factors include the creation of a climate, and desire to advance understanding rather than to display individual brilliance (although individual brilliance can certainly help in the collective effort), and

opportunities more plentiful than restricted communities allow (Scardamalia, Bereiter, 1994).

### **Anadolu-OEF system and course development elements**

Anadolu University is the only university in Turkey, which offers distance education programs, commonly referred to as open education. Currently, the Faculties of Economics and Business Administration, and the Open Education Faculty have more than one million students. The number of students who received BA or associate degrees from the distance education programs is over one million. In open education, the core course materials are the textbooks, that are designed according to self-study principles, as teaching and learning is from a distance. Therefore, the textbooks are prepared with the utmost care. Experts in their fields, over one thousand scholars from various universities, have authored and edited hundreds of textbooks. Approximately 5 million books are printed and distributed to students each year. TV programs are designed and prepared in parallel with the textbooks to support and reinforce students' self-study endeavors (Anadolu University, 2008). In recent years, Information Technology-based learning has gained importance in the Open Education System, as opposed to the traditional learning materials, which consisted of books, TV programs, and face-to-face tutorials. Thus, Computer Assisted Education Unit was established in 1989 to conduct research on education technology, and to produce teaching materials. E-learning practices in the Open Education System were implemented in 1993, with the production of computer-assisted teaching software. In 15 different cities around Turkey, computer laboratories, furnished with computer-assisted teaching software, were established for the open education students' use.

The advantages that the developments in technology provide in education necessitated investment on e-learning services. Thus, a number of various learning models were designed and put into practice in the Internet environment.

The Open Education Faculty has realized e-learning practices since 1999. The most important feature of Open Education multimedia CD ROM is the integration of Distance Education materials, such as books, TV programs, practice software, and practice exams, that were distributed to students, at different times and environments.

CD ROMs, into which all the teaching tools (except for face-to-face tutorials) are integrated, are considered to be effective in the learning process of students. The practice software services were first presented to students in the Open Education Computer-Assisted Learning Laboratories in the 1990s, then in multimedia CD ROM format in the 2000s.

The online courses offered to resident students utilize various learning and content management systems, such as WebCT, Moodle, and Macromedia Breeze. E-learning services that are offered to Open Education students on the Internet did not have a standard structure as each was developed independently, at a different time, within a different project. Thus, because each of the e-learning service was designed differently, when students wanted to use a number of e-learning services, they needed to open a new session for each one. To provide easier access for the student, and to enable the systems manager to observe student activity, Open Education E-learning Portal (<http://eogrenme.aof.edu.tr>) was designed and implemented. This e-learning portal enables students to access all the e-learning services through only one login process. In the student database, there are over one million student records. The e-learning services which were delivered as separate services were renamed during the process of transfer to the e-learning portal. Practice Exams became e-exams, Practice Software became e-practice, Electronic Books became e-books, and Electronic TV became e-television. As new e-learning services for open education students are developed, they are easily added to the e-learning portal. E-tutorials and e-audio books are some services that were designed after the Open Education E-learning Portal was implemented:

- **e-book:** the e-book project began in the 2003-2004 academic year, with the distribution of the textbooks on the Internet. Initially, books were converted into PDF files to be delivered on the Internet. Now, Flash Paper technology is used. With the implementation of e-book service, students are able to access the textbooks before the hardcopies are delivered.
- **e-television:** the delivering of the TV programs on the Internet, which began in the 2003-2004 academic year, is known as e-television in the Open Education E-learning Portal. The purpose of this service is to provide students with the opportunity to watch the TV programs at their

convenience by enabling students to save these TV programs on their personal computers.

- **e-practice:** Internet-based practice software, known as e-practice, has been a crucial component of Open Education E-learning Portal. The purpose of e-practice is to provide open education students with a more interactive thus productive learning environment. This practice software provides interactive multimedia presentations of the course material, which enables them to answer questions and test themselves.
- **e-exam:** in the Open Education System at Anadolu University, Internet-based services began with practice exams in the 1999-2000 academic year. As the e-learning services expanded and incorporated under Open Education E-learning Portal, Internet-based practice exams were renamed as e-exams.
- **e-facilitator:** in the Open Education System at Anadolu University, face-to-face tutorials are held with the contributions of over 600 faculty members from more than 40 universities in Turkey.
- **e-audio book:** in the Open Education System, there are a number of physically disabled students, some of whom are visually handicapped. In the case of visually handicapped students, family members need to read the textbooks to help those students study. To accommodate such students' needs, audio recorded books are being prepared. Thus, visually handicapped students will be provided with CD ROMs containing MP3 files. Not only visually handicapped students, but also other students who are interested in audio textbooks can use this service. The audio textbooks are available on the Open Education E-learning Portal (Atac, Mutlu, 2006).

## Conclusion and recommendations

In our planet, knowledge speedily gets older, because of rapidly developing science and technology, for learners' demands in a competitive education arena. Distance educators need to re-construct, and then send their educational messages, by stimulating all learning points, by using these new kinds of knowledge and communication technologies, based on the meta-communication concept, and in the knowledge-building theory context, beside

ordinary course developers. This is not new formation, but it should urgently apply to the knowledge-building process for culturally and interculturally meeting learners' demands.

As emphasized in the text, the meta-communication concept is a very important, powerful, and functional concept, during knowledge building, for preparation of the course material messaging, in the educational field. Such a concept is becoming more and more vital for distance educators in designing distance and online education applications. So, distance and online institution administrators should encourage their own course developers to focus on the meta-communication concept and its functionality, according to knowledge-building theory criteria, during the knowledge-building or course material re-messaging processes for their learners, and the target's characteristic profiles.

Finally, the conceptual bases of CSILE stem from research in social sciences, with specific emphasis on the collaborative discourse in knowledge building. The goal of CSILE is to create communication systems, which archive any contribution made in the forum, for future reference, revising, and reflection. CSILE is grounded on the evidence from the collaborative model to foster inquiry, intellectual discourse, and the social construction of knowledge. Its architecture was designed to perform powerful communal features, being capable of capturing the dynamic thought process involved in knowledge building, whereby the powerful hypermedia features enable a space for the learners to make their contributions to the pool of knowledge.

Today, Anadolu University, Turkey, mostly uses the latest technology to support its learners, at approximately 100 different graduate, associate, and certificate distance education programs. While, at the beginning, the main course material was printed textbooks, now Anadolu University has to use high developed information and communication technology, such as e-book, e-audio book, e-television, e-practice, e-exam, and e-facilitator in its running. It's for this reason that Anadolu University course developers, knowledge builders, instructors, and lecturers should be aware, and use the function and role of meta-communication during the production of their course materials, or develop themselves, or at least they should try and get support from communication scientists on this issue, in the production of their materials.

In conclusion, any distance and open learning institution must discuss their educational course materials for re-building them (at any level, such as printed, audio, visual, electronic, and verbal) from the viewpoint of the meta-communication function and the knowledge-building theory, according to today's developments and learners' needs.

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## Sintesi

La meta comunicazione si definisce come comunicazione di secondo livello avente per oggetto le modalità della comunicazione stessa e la loro efficacia ai fini della costruzione di una relazione comunicativa soddisfacente. Si tratta di un livello di comunicazione che non deve essere confuso con quello oggettuale e informativo, in cui si mira alla trasmissione di un contenuto dall'emittente al ricevente. La confusione tra livello comunicativo e meta-comunicativo pregiudica l'efficacia della comunicazione e la soddisfazione degli attori. La comunicazione è stata spesso studiata in relazione allo sviluppo della conoscenza e al tema costruttivista del Knowledge building. La costruzione di conoscenza fa riferimento in particolare a quelle attività collaborative che richiedono un forte grado di partecipazione comune all'interno di un gruppo e che mirano non solo alla trasmissione ma alla creazione di nuovi contenuti e alla definizione di nuove connessioni tra conoscenze già disponibili. Nella attuale Società della conoscenza, in cui il valore aggiunto sociale ed economico è la conoscenza stessa, favorire il Knowledge building diventa una priorità per tutte le istituzioni che si occupano di educazione ma anche per il mondo economico. Se il nesso

comunicazione/costruzione della conoscenza è stato, tuttavia, ampiamente studiato, al ruolo della meta comunicazione è stato dedicato minore spazio e la letteratura in questo settore, non molto ampia, apre al ricercatore un vasto campo di indagine ancora parzialmente esplorato.

Nella formazione a distanza, la carenza di comunicazione non verbale, come le espressioni del viso e la gestualità nel suo complesso, può costituire un ostacolo alla comprensione e la meta comunicazione può costituire una risorsa per potenziare la formazione di gruppi orientati alla costruzione di nuove conoscenze.

L'utilizzo intenzionale di elementi strutturali e grafici, come simboli, pulsanti, messaggi di servizio; la scelta delle parole, dei tempi e l'uso di font e icone appositamente progettati per facilitare la chiarezza metacomunicativa possono sostenere la motivazione degli studenti e la creatività delle attività didattiche.

A livello internazionale alcune sperimentazioni si stanno muovendo in questa direzione, tra le quali il CSILE (Computer-Supported Intentional Learning Environment), un ambiente di apprendimento di ultima generazione, un Knowledge Forum in cui ogni partecipante riveste un ruolo di pari grado nelle attività comuni, studiato per supportare la costruzione di conoscenza. Il progetto CISLE mira a favorire la trasformazione delle scuole da comunità di scambio a comunità di costruzione di conoscenza, passaggio in cui l'elemento telematico può giocare un ruolo importante in quanto favorisce il confronto tra pari.

In questo contesto, elementi chiave per la costruzione di una corretta strategia didattica includono la conoscenza del target degli studenti e del loro livello di alfabetizzazione informatica; la creazione di corsi personalizzabili dal punto di vista degli obiettivi e degli argomenti e la disponibilità di contenuti aggiornati, completi, flessibili, frazionabili e adeguati al livello di conoscenze degli studenti. Le attività di peer review e l'intervento di tutor di sostegno devono inoltre essere potenziati per favorire la partecipazione. Sul piano della presentazione dei contenuti, in particolare nella formazione a distanza, massima attenzione deve essere dedicata all'elaborazione dei format per la presentazione dei materiali sia scritti che audio e video, mentre un ruolo fondamentale è svolto dalla valutazione che deve monitorare l'omogeneità dei progressi del gruppo in modo da mantenere possibile lo scambio delle conoscenze.

In questa ottica l'Open Education Faculty della Anadolu University sta adeguando progressivamente le proprie strategie didattiche per l'e-learning in vista della costruzione di conoscenza, attraverso l'implementazione di un portale di formazione telematica per la fruizione di materiali multipli, dagli e-book agli e-audio book, per studenti ipovedenti, a servizi di e-tutorials e di web-tv, con la possibilità, inoltre, di sostenere gli esami in modalità telematica.