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NEW FORMS OF COMMUNICATION AS CONSTITUENTS OF LITERACY: IMPLICATIONS FOR EDUCATION

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Abstract

New technologies, combining aspects of communication through mass media and direct "face to face" interaction, have brought new challenges to the theory of communication (and to human existence in general). The attempts to synthesize and classify visions of many theorists according to the dominant principles of their paradigms result in two respectable groups of claims, which could also be expressed by the two perspectives: utopian and dystopic. One of the most relevant

issues in the discourse of these perspectives and different scientific disciplines is how the potential of new technologies is used for the development of abilities, knowledge and skills necessary for full participation in contemporary society. Following this question, the paper first analyzes the impact of developments in technology and communication on the transformation of social practices, which, in addition to undoubted high advantages, has its weaknesses. In the second part of the paper, the implications of new information and communication practices for the existing education concept are derived. As literacy is one of the key outcomes of the educational process and as it can be defined as generic communicative competence, the need to expand the concept of literacy in a time of expansion of ICT is understandable. The authors conclude that, for a successful and quality life in today's global and digital society, we need a wide range of skills - the new forms of literacy that enable effective communication and participation in the new e-culture.

Keywords
Communication, New Forms of Literacy, Education

1. Introduction

It is needless to emphasize the obvious triumph and omnipresence of technology today. The world, as a global society, strives toward learning and knowledge, and technology permeates all aspects of human existence. The beginning of the 21st Millennium has been marked by innovations in two systems: cybernetics and media. Both are associated with information, whether they transmit, code, discover or use them, and both are oriented towards education and learning per se. As the potential of new technologies is used in the development of skills, knowledge and abilities necessary for full participation in contemporary society, it is one of the most current issues which, in discourse of several scientific disciplines, directs the attention to studying and conceptualizing new forms of literacy.

2. Transformation of Communication and Social Practice through Technological-Informational (R) Evolution

In comparison with other technological fields, Information Technology develops most rapidly. The development of microelectronics is particularly fast, enabling the development of

computer and telecommunication equipment and its integration into the planetary system. With the development of telecommunication systems, we simultaneously develop global information systems – databases for general and special purposes, which have accelerated the access to information in all the fields of human activity and creativity. The possibility to apply electronic processing of information is most noted in the field of communication. Today, there are different media for transferring sounds, text, images and data: video, telecommunication and computer media, including the people themselves as well: creating, selecting, changing, interpreting and presenting the information. With communication expansion, the world becomes more dependent, and "e-connection" and "e-inclusion" have become the imperatives for everyday life and life in general. New forms of communication and cooperation are developed, such as: "e-news", "e-know", "e-learning", "e-mail", "e-dialog", "e-health", "e-government" etc. (Hutinski & Aurer, 2009). Benefits of the application of technological discoveries and all the advantages they offer, however, should not be an obstacle for noticing the weak sides of the informatization of society. Not a small number of authors therefore remind that "together with technophobia, there is also technophilia, and both can equally compromise technological development" (Djermanov et al., 1998). The concept of information society and its basic characteristics include: a) information and knowledge are resources and the driving force of socio-economic, scientific and technical development; b) market of knowledge and information is being formed; c) rapid development of special knowledge of processing and expressing using information; d) development of information infrastructure improves regional and competitive abilities; e) development and use of new ICTs in all spheres of activity, influences the change of existing models of learning and education, work and social life (Marković, 2007).

These issues have become the subject of critical observations of a growing number of philosophers and scientists (Horckheimer et al). Among numerous other weaknesses, the authors mention that, for instance, electronic processing of information essentially reduces the possibility of communication between experts and users/mass media and audience because the users have no opportunity to estimate their credibility and choose between the options available. This is a paradox, which under the guise of increased availability of information, reduces the possibilities to make the right choices, by which the basic condition for cognition and practical actions is obstructed. In addition to epistemological, this opens a whole series of other issues which point

to ethical problems of technological mediation of information. In relation to older, static and non-flexible, new media have obtained "life-movement" and more opportunities for transformation, for construction and manipulation of the content, which has compromised the previously dominant conviction about "objective" interpretation of reality and prevent the distinction between "reality and spectacle"… The world defined by media (television), Baudrillard called the "age of simulacra and simulation", pointing out that "we live in a world where there is more and more information, and less and less meaning" (1991, p. 83). An individual is negatively affected by the influence of media, technological experience and hyper reality. Based on the above mentioned, we can notice that in "informational oversaturation" to which every individual is exposed to, the essential qualities are: authenticity, validity, reliability, comprehensiveness and diversity of information, as well as the issues of approaching the information, its distribution and use. On the other hand, advocates of technological development accept the issues of technological impact on transformational processes of society as necessary and include them in the subject of technological determinism (Chandler, 1996). They persuasively defend the thesis that social existence is always "technologically mediated".

In this light, a severe criticism of modern technology, which in the case of majority of representatives of critical theory of society (Heidegger et al.) is followed by implicit technophobia, represents a kind of encouragementto advocates of technological development to express their own attitude towards technology, as a fact of modern times. Thus, Manuel Castells (2000), one of the most significant theoreticians of "networked society", instead of lamenting over past times, reminds that reality has always been virtual, and that we have always observed it through signs and symbols. What is characteristic for today's world and distinguishes it from previous ones, according to Castells, "is that media do not produce a virtual world, but the world of real vitality"... "reality itself (that is, people's material/symbolic existence) is entirely captured, fully immersed in a virtual image setting, in the world of make believe, in which appearances are not just on the screen through which experience is communicated, but they become the experience..." (p. 404).

In the processes of forming attitudes towards real/virtual world, the central role belongs to the Internet as a medium. Authors perceive its development in two ways: ones consider it to be a consequence of previous development (social, economic and technological), which points to

continuity and mutual dependence between development of society and technology, while others point out an obvious, epochal discontinuity. Proponents of paradigm of discontinuity believe that the Internet differs from all previous media by the fact that it is not limited by sensory modalities, which were characteristic for all previous generations of media (Mayer-Schönberger & Hurley, 2000). In other words, digitalization is an inherent characteristic of the Internet by which it is different in its essence from the previous revolutions in communication. It provides rapid, simultaneous means of communication for a great number of people, in new ways, independently from the space or physical distance between them. Metaphors that represent it best in the context of communication are "electronic agora" (Rheingold, 2000) or "final technology of freedom" (Negropont, 1995).

3. Traditional and New (Technologically Mediated) Forms of Communication in Educational Context

Communication is an act of human behaviour, based on which the phenomena of sociability, language and all forms of cooperation among people are developed. Emerged from people's need to exchange experiences, communication is the field where one is born as a personality. (Kujundžić, according to Djermanov et al., 1998). That is true because personality grows from wide communication weft based on conscious relationships towards oneself and other people. Communication is basis of human life, society, and social institutions (Watzlawick et al., 1967). In other words, "social systems exist only through communication" (Luhmann 2000, p. 62).

Although the significance of communication was perceived a long time ago, and the phenomenon itself is as old, even today we cannot say that its full sense has been discovered – that we have mastered it completely. Main reason is that for communication about communication, for met communication, there is no specific symbol system. "We are, therefore, immersed in communication and yet we are – or precisely because of it – almost unable to communicate about communication" (Watzlawick et al., 1967, p.54). Watzlawick explains this phenomenon by the fact that mastery of language and knowledge about the language are two completely different forms of knowledge. It is certain that communication has been one of the dominant preoccupations of a man for a long time and that it will attract the attention of

researchers in the future. The very fact that forms, processes and acts of communication are studied in a series of scientific disciplines, illustrates its complexity and relevance for a modern man (Tomić, 2003).Communication processes are studied from various aspects in a number of humanistic sciences (sociology, social psychology, cultural anthropology, pedagogy and politico logy, while in communication, cybernetics, informatics, system theory, semantics, semiology, etc.). Every science uses the concept of communication within its own context, which is integrated in its explicit theoretical structures, so it is necessary to define how communication is conceptualized within reference framework of pedagogy – our central perception of communication in this paper. In pedagogy, communication is considered to be an important aspect of educational process and its essential characteristic, since education is a special form of communication. The success of the process itself, among other things, is conditioned by the quality of achieved communication. Therefore, education as a phenomenon and teaching as its most organized and sophisticated form, represent social interaction in which, through signs (contents, information, words), meanings are created and exchanged between participants in interaction. Communication aspect of teaching process arises from the need for the content – generalized knowledge, experience and values – to be transferred to new generations, for the continuity to be ensured (transmission paradigm) and for the creation of the new knowledge that supports desirable changes in the society (productive and constructivist paradigm). In today's researches in pedagogy, the phenomenon of communication is structured as a special interdisciplinary research area of pedagogical communicology, although some aspects of communication are studied in the series of pedagogical disciplines. In that way, for example, in didactics and school pedagogy, in which teaching is perceived as a two-dimensional process, the attention is focused, in addition to content dimension, to the dimension of social relations – communicative aspect of teaching. In school pedagogy, communication is studied in several areas: pedeutology (studies about the teacher) hidden curriculum and teaching style of the teacher. In recent years, the studies in the mentioned areas, which explain the teaching profession from the aspect of interpersonal relationships, under the influence of critical analysis of power phenomenon (Foucault, 1998) are increasingly aimed at conditions and limitations (normative, affective and symbolic), which come from the nature of human interaction, and at analysis of power, control and authority. Basic communication structure of educational process consists of

the teacher – the person who sends the message, i.e. information, and the pupil – the person who receives that information or message. If the transfer of the message goes in one direction, this process is called informing (in terms of traditional didactics it is the teaching activity of studying). If, however, message flows in both directions, this process is called communication. In pedagogical communication, there are two lines of communication – line of source information and line of feedback, and information is transferred by signs (through media – speech, image, mimics, gesture, etc.). From the viewpoint of the intensity of the interaction in the educational process, interpersonal (dyadic) communication is considered the most significant. Its advantages are that it is not technically mediated and what is based on spontaneous, natural behaviour, in a familiar environment for the participants. With the development of media, primarily textual, then audiovisual and nowadays digital, there is a growing presence of indirect, impersonal ways of communication in pedagogical interaction. They appear in the teaching process in two ways: firstly, as the effect of introducing modern technique and technology in teaching (in traditional classroom we use different media to supplement the communication "face to face") and others, through special forms of teaching (different forms of distance learning) which are entirely based on interaction with the assistance of technology – in a virtual classroom.

Impact and effects of direct communication on learning in real and virtual classroom are related to a series of factors such as: level of participants' experience in interaction through media, characteristics of media (possibilities of sending the message in the form of text, sound, static or dynamic image, volume and speed of messages, availability of media themselves, etc.) and the way in which media are used in educational situation within the chosen educational concept (teacher or student oriented). Having in mind the factors that condition it in a specific context, direct communication in teaching can have minimal presentational effects (improvement of structure and organization of content of studying – textual power point presentations), as well as pedagogically far more significant – to initiate students' learning at more complex levels of thought, their emotional and aesthetic sensibilities. Communication processes in teaching models that entirely rely on using ICT (e-learning) differ from traditional classroom communication in a number of characteristics. In them, the communication is mainly impersonal, asynchronous, of low intensity, one-way and limited to one or two communication channels (text and graphic illustrations). Feedback is conditioned by communication channels, and technical mediation of

educational process through the use of computers and computer networks (network protocols) requires a minimum of skills and knowledge for using the system of electronic communication (computer mediated communication, e-mail, forums, group discussions). For the purpose of complete audio-visual communication, we use different audio and video channels in a synchronous and asynchronous manner. It is necessary to say that e-learning is not a new form of learning, but an innovated system of distance education, which appeared near the end of the 19th century. In the beginning, it was implemented as distance education, by sending textbooks and other learning materials using the post office services (Canada, Australia). With development of ICT technologies, this education system has evolved continuously because new technologies successively found their application. Owing precisely to the latest technological discoveries in the field of ICT (World Wide Web, Internet and specially designed educational software-courseware), today in universities throughout the world many e-learning programs are available, from individual courses from different fields and mastering levels, to entire graduate and undergraduate studies. In their implementation, we usually use one of the two modern modalities of distance learning: online learning (pure e-learning, fully online) and an independent form and hybrid model (mix-mode, blended learning, hybrid learning) which represents a combination of traditional teaching and technology based on the Internet.

Hybrid model has been increasingly affirmed lately for several reasons: *a)* prevailing problem of limited social interaction between teachers and students, which is a serious drawback of independent e-learning; *b)* contemporary ICT technology is increasingly being introduced into classic teaching, and the original meaning of hybrid model – studying with the assistance of a computer with elements of e-coaching – is expanded to "each successful combining of different teaching activities and appropriate media" (Akkoyunlu & Yilmaz Soylu, 2006, p.43). Thus, interaction that is achieved through complementary forms of direct and indirect communication finds its expression and full pedagogical justification in new dialogical form of teaching – interactive, collaborative learning supported by technological environment. In creating a favourable environment for learning, it is important to find the most suitable media, having in mind the goals of studies, type of educational content, chosen pedagogical model and needs of students, and when it comes to online education, adequate balance between indirect human interaction and direct technological communication (Osguthorpe & Graham, 2003; Waddoups et

al., 2003, according to Akkoyunlu & Yilmaz Soylu, 2006).

Based on what was said above, we can conclude that the main principles of efficient teaching in technologically supported learning are similar to the principles of successful teaching in general. Primarily these are: quality of the teacher, then quality, i.e. performances of computers and quality of educational software. In that sense, as the contribution to the quality of teaching, potential of new media is in expansion: modes and quality of communication and interaction; dynamics, proactive and responsible approaches; availability of information source; possibilities of differentiation and individualization of learning adapted to the needs, pace and cognitive styles of students developed within content-flexible and didactically modelled, led context. Hypermedia and multimedia technologies offer the teacher various possibilities of visualization in creation of teaching content, from simple displays, animation and simulation to video recordings. They should be used skilfully, in the function of understanding and facilitating the learning processes, so that they wouldn't become their own purpose.

4. Implications of New Knowledge and Communication Practice for the Existing Concept of Education

Studies of the impact of educational technique and technology on organization, progression and effects of the process of learning and teaching are traditionally the subject of researches in didactics. In recent years, with the development of new media, especially the Internet, some of these issues have become the focus of interest of educational policy (local and international). Key question among them, which includes all significant professional questions, from goals to outcomes of the educational process, is: are the possibilities and transformative potential of new technologies adequately used in educational context? In an effort to accomplish a realistic evaluation of the effects of introducing ICT in educational systems, numerous studies were carried out all over the world during the past decade (UNESCO, 2005). Their results revealed that politically-proclaimed-popular technological optimism and technological infrastructure are not sufficient for didactic modelling and creation of educational process (reproductive/transmission, in contrast to productive/creative function), stressing the issue of motivation and literacy of teachers and students (information, media and computer). It was shown, namely, that technologically rich environment represents a desirable, but not sufficient

condition for the implementation of desired outcomes (Lawless & Pellegrino, 2007). Teachers need support, not just in learning to use new technologies but also in developing the skills to design and apply high-quality, culturally relevant, student-centered instructions (Mishra & Koehler, 2006). For teachers to master and understand the advantages of computer technologies, they need time, support, and belief that their efforts and dedication are worthwhile (Eryaman, 2007, p. 38).Many scholars point to the fact that the potential of ICT and multimedia is insufficiently known and used, stressing thus numerous possibilities of innovative application in educational work. Without aspirations to present all possible domains of application of contemporary communication technologies for improvement of the process of learning and teaching, we will illustrate two potential implications of new possibilities of communication and interaction for the pedagogical theory. In this sense we have selected the impact of ICT on: *a)* holistic learning i.e. connecting the different domains (cognitive, affective, kinaesthetic and experiential learning) in the context of development of multiple intelligence (Gardner, 1999) and *b)* integrating formal, non-formal and informal learning in the context of paradigm of lifelong learning. E. Daley (2003) stresses the affective dimension of new media by saying that the language of multimedia is closer to affective and subjective language of art than to rational and linear language of science. Multimedia, as well as textual materials, encourages the development of conceptual thinking (abstraction, comparison, metaphors), while at the same time it engages students' emotionality and aesthetic sensibility.

In contemporary pedagogical literature, based on new studies, encouraging creativity and innovativeness through simultaneous activation of different senses is also emphasized as the significance of multimedia visualization. Therefore, the didactic-methodical possibilities are broad, from differentiation of teaching and encouragement of personalized forms of learning with the support of ICT environment, reflection and interaction with students, to combining formal, non-formal and informal activities in learning (Ala-Mutka, Punie & Redecker, 2008).Researches in pedagogy and communicology point to the connection between communication techniques and creativity. Communicologists argue that mediators used in communication effect the message through a certain form of expression. This specifically means that the same information will be differently expressed through printed media of communication and differently in the form of film, radio or television messages. In other words, it is necessary

for teachers to know that the same content, transmitted by different media and communication channels, will be cognitively and emotionally experienced in another way (Radojković & Djordjević, 2005). Contemporary studies of neuro-sciences have validated and extended some of earlier pedagogical knowledge, or discovered the need for its re-conceptualization. They have contributed to understanding the possibilities and values of different forms of communication in the educational process. In that way, concerning verbal communication, it is known that people's speech, supplemented by repertoire of non-verbal behaviour, is a universal means of communication. However, during the last decade, researches in the field of neuron-sciences discovered that full contact with the environment is achieved through the engagement of all senses and mental processes in information exchange. The more sensory channels are activated through teaching (for instance, during multimedia teaching), the more thoroughly the knowledge is "stored" in memory; thus both the knowledge and understanding are more diversely "anchored"; and more students understand and remember the contents (Vester, according to Vinci ova 2002, p. 39).

In this way, well-known pedagogical principle: principle of obviousness and diversity (J. A. Comenius), is reaffirmed through the studies in other scientific fields, but on the other hand, the new knowledge about functional lateralization of brain, human consciousness and intelligence, questions the validity of the existing concept of (school) education, based on linear, epistemological model – oral and written communication. Linear model, from the aspect of technological development of communication media, coincides with Gutenberg's discovery and the appearance of printing in the 15th century and in formal education it has been present since 16thcentury, from founding the first schools for mass education, until today. In the linear (rationalistic-epistemological) model, educational process develops mainly on relying on the left hemisphere of brain (formal aspects of language: morphology, syntax, logics, grammar, analysis, numerical abilities).Today, however, according to rather consistent discoveries of neuro-sciences based on respectable number of studies, rational analytic abilities, although significant, are not sufficient for facing increasingly complex problems of life and world. Emotional and rational learning are directly related to decision-making, social functioning and judging, moral behaviour and human ethics (Frith & Frith, 2007; Immordino-Yang & Damasio, 2007; Mitchell, 2008, according to Immordino-Yang, 2011). Emotions, as explained by these authors, play a significant

role in all phases of problem-solving, helping the students to evaluate, whether consciously or unconsciously, what knowledge and skills are relevant and will lead to appropriate solution, based on their previous learning.

New knowledge challenges teaching and moves the focus of pedagogical theory from left to right brain hemisphere (content, imagination, creativity, intuition, emotions, music, synthesis), which results in development of new pedagogical paradigms and models by which emotional, social and experiential learning is affirmed. New technologies, new ways of communication, organization of our experience and ourselves, change the traditional communicational and epistemological – conceptual pattern in teaching. Change consists of promoting the concept of open system, open curriculum, interactivity, inclusiveness, selectivity, experiential and cooperative learning. It can be argued that new ways of e-communication - open, personalized, flexible, organic, associative, summarizing, decentralized, tactile, emotional and affective - can lead to faster integration of research findings about the connections between emotions and knowledge in the practice of education. In that way, through the active practice of learning and studying, we create assumptions for understanding the necessary change – reconstruction of dominant linear concept of education to new, multimodal and inclusive model.

One of the constitutive elements of the multimodal concept of education is the new concept of literacy that is simultaneously developed. Literacy is one of the key outcomes of educational process and basic human right derived from the right on education. Since it can be determined as generic communicative competence, it becomes understandable why the necessity for expanding previous concept of literacy is considered precisely during the expansion of ICT (Kellner, 2003, p.12). As a competence, it is recognized in the ability to successfully reply to complex requirements in a particular context through mobilization of psychosocial preconditions, including both cognitive and non-cognitive aspects (Rychen & Salganik, 2003).

5. Conclusions

Today, in the world of highly developed technology, under the impact of many simultaneous processes, i.e. growing complexities of life in the global world, new findings about learning, knowledge, multiple human potentials influence the very phenomenon of literacy, previous primary competence (alphabetic-linguistic and mathematical orientation – linear

epistemological paradigm), in a way it necessarily grows into a set of functional and transferable knowledge, skills and strategies that one acquires during their entire life. In other words, for a successful and high quality life in today's global and digital society, we need a wide range of competences – new forms of literacy (media, digital, informatics, informational, environmental, economic, health, civil, etc.) which enable efficient communication and participation in new e-culture. The base for their development is the progress in the understanding of the conceptual changes in education. It is not enough to create and understand changes at the theoretical level. It is necessary for the teachers to be adequately prepared and sensitized for their use.

Initiation of any changes in the education system is a complex task that restructures the relationship of basic elements in the system (teacher, student, content) with implications to the curriculum, professional roles, functions and competencies of teachers. When planning changes, however, is not uncommon to find that in educational policies, the other, often more difficult, side of the change is forgotten. This side is primarily concerned with perceptions and awareness of the need for this change in those who will apply it. Therefore, opinions, attitudes and competencies of teachers, about the importance, possibilities and limitations of the meaningful use of new media in teaching and learning, are of crucial importance for their heuristic and innovative use in the educational context. Unquestionably, in this case, the final outcome, i.e. the implementation of the new element in practice (its acceptance, sustainability and concrete results) is dependent on the teacher. Without the motivated and competent teachers, "literate" in every domain of their work, education cannot fulfil its mission: that it enables a person to achieve all the competences necessary for full participation in modern society where, due to rapid changes and general uncertainty, it is important not only to become, but also to remain literate (lifelong learning paradigm).

Education, communication and literacy for a contemporary individual and the society have universal value contained in the thought:"Reading the world always precedes reading the word, and reading the word implies continually reading the world… this dynamic movement is central to the literacy process" (Freire & Mecedo, 1987, p.35).

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