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The new learning environment and learner needs this century

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Abstract

The stimulating learning environment in the period when Comenius wrote his *Didactica Magna* (Great Didactic), or when Maria Montessori came up with her original pedagogical concept, greatly differed from the stimulating learning environment at the beginning of this century. In the middle of the 17th century, Comenius and learners could learn from only a few books and from the natural environment. Maria Montessori, in addition to books, decided to produce various materials and equipment which would encourage learners to learn communication skills and other important life competences. The multimedia environment of the end of the last and the beginning of this century has been significantly enhanced by new media, which are highly suitable to improve everyday communication and satisfy the needs of those who learn how to communicate, to belong, to be confident, and to build self-esteem and self-actualisation. This new stimulating educational environment meant that it was necessary to review the possibilities of meeting basic human needs, as well as the need to find new methodological and teaching scenarios and situations. If Comenius, Montessori, Dewey, Kilpatrick, Freinet and so on were alive today, they would probably have a much bolder approach to reviewing the dominant teaching scenarios and would offer more creative and flexible didactic solutions than those currently on offer to meet the needs of learners during compulsory schooling and other forms of lifelong learning. Satellite TV, the internet, and all sorts of social networks provide a much more exciting learning environment and satisfy much better the development needs of young people and adults than the media environment that existed 50 years ago.

Keywords: new learning environment, learner needs, instructional design, educational technology, mobile learning, blended learning

1. Introduction

The educational context, or the stimulating learning environment in the period when Jan Amos Comenius wrote his *Great Didactic* (1632), or when Maria Montessori came up with her original pedagogical concept (1908), greatly differed from the stimulating learning environment of the beginning of the 21st century (2011). In the mid-17th century, students and J.A. Comenius had the opportunity to learn only from a small number of printed books, or from orally delivered lectures and the natural environment. More than two centuries passed from the appearance of the first printed books to the appearance of books for students (textbooks) or to the appearance of schools where one teacher used to teach 50 or more students.

In addition to books, at the end of the 19th century daily printed newspapers also appeared, as well as the possibility to communicate by telephone. A great and visible technological revolution took place in mobility in the 19th century (the steamship, the first automobile, the railway, the first trials with aeroplanes).

Two and a half centuries after the *Great Didactic* (in Czech in 1632, or in Latin in 1657), Maria Montessori decided to produce, besides her book, varied material and equipment to encourage students to learn communication skills and other important life competences (problem-solving, research, matching, critical thinking, concentration...). Maria Montessori appeared as one of the great pedagogical reformers on the long list of educationalists linked by a

common idea known as *Reform Pedagogy movements and trends* (the “*arbeitsschule*” or work school, the active-learning school...). Other prominent educationalists on this list were John Dewey, William Heard Kilpatrick, Rudolf Steiner, Celestin Freinet, and others.

In the second half of the 20th century, a large technological and information revolution took place. Most of the population on Earth had access to the radio, television, the possibility of travelling by rail, road, modern ships, and modern and fast aeroplanes. In order to understand and consider the learning and schooling process, it is important to critically evaluate the appearance and opportunities brought about at the end of the 20th century by new information media (the internet, satellite TV, mobile phone...). These media have allowed for and provided the conditions and opportunities for new instructional design (Baran & Keles, 2011; Elias, 2011; Smith, 2005; Zumbach, 2010).

2. Students' development needs and multiple intelligences

Traditional didactics (didactic theories) focuses on the work of the teacher, or on teaching. These theories explained the teaching of a classroom teacher where a large group of students (usually some 30) sit, listen to and watch what the teacher is doing and how he or she is doing it. In spite of the strong reform pedagogy movement at the beginning of the 20th century, this model persisted throughout the 20th century. Despite numerous published texts, which brought into question the purposefulness of such a didactic paradigm (teacher-focused teaching: Joldersma, 2011; Kotzee, 2010; Reich, 2006), and knowledge about the nature and ways of meeting the students' development needs, no radical changes in teaching methods and methodological scenarios were observed in state schools.

Gardner's multiple intelligence theory states that a human being relies on several different ways of learning and processing information (Armstrong, 2009; Gardner, 2006). Let us recall his list of various types of human intelligence: spatial-visual, verbal-linguistic, logical-mathematical, bodily-kinaesthetic, musical, interpersonal, intrapersonal, naturalist and existential intelligence. It is difficult to find serious and reputable papers presenting the results of research dealing with the importance and link between the above listed types of intelligence and the new media environment in which young people today learn and grow up. This therefore presents an opportunity and an obligation for experts who study and work on improving the learning and teaching processes during compulsory education and lifelong learning. With regard to verbal-linguistic and logical-mathematical intelligences, the constructivist learning and teaching theory has come the closest to explanations which might meet the expectations of today's school and generations of young people who study there (Reich 2006).

Let us recall here the most frequently quoted list of basic human needs by American psychologist Abraham H. Maslow (1908 – 1970): physiological needs, the need for safety, the need to belong and be accepted by others (friendship, love), esteem (self-esteem, achievement), and the need for self-actualisation (to realise one's personal capacities to an optimum extent). This list, along with the new media environment and Gardner's theory of multiple intelligences, imposes on schools and teachers the obligation to create new methodological scenarios, significantly different from what was available in schools in the previous decades. Namely, new aspects which put students' safety at risk have emerged (bullying, cyberbullying through Facebook or text messages). The media offer new and varied opportunities for young people to prove themselves, achieve self-affirmation and foster friendship and love, which bring about wholly new lifestyles and ways of growing up.

Experts in school issues still have the obligation to conduct research and study what it means today to belong, to love, to be safe, to have a chance for self-actualisation, and also to examine how learning should be carried out today, and which competences should be developed to benefit young people in the future. Various methodological scenarios and projects which take into consideration the new media educational environment, and which try to overcome the shortcomings observed long ago of a rigid class-subject-lesson system, have a greater chance of gaining useful understandings that might facilitate the work of teachers and students, or the organisation of the teaching and learning process than traditional frontal subject-lesson teaching, which still dominates in the compulsory education system.

3. The new learning environment

Children in Croatia, and in many other European countries, grow up and go to school in an extremely varied and rich multimedia learning environment. At the end of their compulsory education, children in Croatia come from homes which in 93% of cases have a PC, 83% have internet access from home, all have a TV set, and 73% have satellite or cable TV. A similar situation can be seen in other countries of Central and Southeast Europe (Matijević & Radovanović 2008).

The new stimulating learning environment demands a new perspective on the possibility of meeting basic development needs, and imposes the need to come up with new methodological and teaching scenarios and situations at school. In the area of primary and secondary education, but also in all forms of education which appear as aspects of meeting lifelong learning needs, learners seek and need new scenarios and a newly designed education process. If Comenius, Montessori, Dewey, Kilpatrick, Freinet... were alive today, they would probably have a much more courageous approach in reviewing the dominant teaching arrangements, and offer more creative and flexible didactic solutions than those that are offered to meet the needs of students during compulsory education and other aspects of lifelong learning.

Satellite TV, the internet, and all forms of social networks (e-mail, Facebook, Twitter, forums, etc.) allow for an enhanced and stimulating learning environment, which meets the development needs of young people and adults better than the media environment of 50 or 100 years ago. Education experts have difficulties in freeing themselves from the didactic framework defined a long time ago by Comenius and Herbart, but the times in which young people and adults live today increasingly require changes in instructional design and didactic situations in which development needs and lifelong learning needs are met. Scientific journals and books offer many attempts to research and explain the efficiency of the new media within the subject-class didactic model which appeared three centuries ago, at a time when the media opportunities were very scarce (only books!). The internet, multimedia, mobile phones, and satellite TV as communication solutions and accompanying possibilities reach far beyond the framework offered by the subject-class didactic model. The attempts of educationalists to make what is happening in classrooms more attractive by using an LCD projector, PowerPoint presentations and smart boards are also still enslaved by the traditional didactic paradigm: frontal teaching, teacher-focused teaching, a 45-minute lesson, subject teaching. Even with all these ICT solutions, students still remain too passive. Such educational technology is only there to facilitate the work of the teacher and make presentations more attractive for students. Teachers who are trained and prepared for traditional frontal teaching have difficulties in dealing with and designing student-centred teaching scenarios. The smart board and other devices which allow for the use of PowerPoint presentations all serve the function of designing teacher-centred classes, and thus modernised classes are still far from a constructivist teaching paradigm (Reich, 2006).

In addition to the possibilities of the mentioned media, in order to enhance the didactic scenarios in schools, today's students learn and acquire a great amount of knowledge by travelling. Preschool children and children during their compulsory education learn more about the world's natural and technical phenomena by travelling than their parents and grandparents did during their entire lives.

The multimedia supply in homes and the attractiveness of the contents that students learn outside schools strongly compete with the events offered by the school and traditional classes, so that students at school are often bored and look for opportunities to express their needs for more attractive events, and for more participation in attractive scenarios. Unfortunately, sometimes this wish for creative self-actualisation spills out of the framework of possible pedagogical control (bullying, cyberbullying, frequent absenteeism, especially of students in secondary education, and the destruction of school and other property).

4. Instructional design and the new media

It is difficult to explain why even at the beginning of the 21st century teachers' lectures or the presentation of attractive contents on smart boards or using various types of LCD projectors still dominate in schools. Comenius, as far back as 350 years ago, warned about the danger of asking students to learn about nature solely from books,

instead of by observing nature and having an active relationship with it. A solid systematisation of criteria for the selection of media, didactic strategies and places to conduct teaching activities was published by Edgar Dale (1946) over 60 years ago (Dale's Cone of Experience), but many schools still fail to apply the logic of these understandings and criteria. It would be useful to more often examine and study the logic offered by Edgar Dale in his famous Cone of Experience, as suggested also by Subramony (2003).

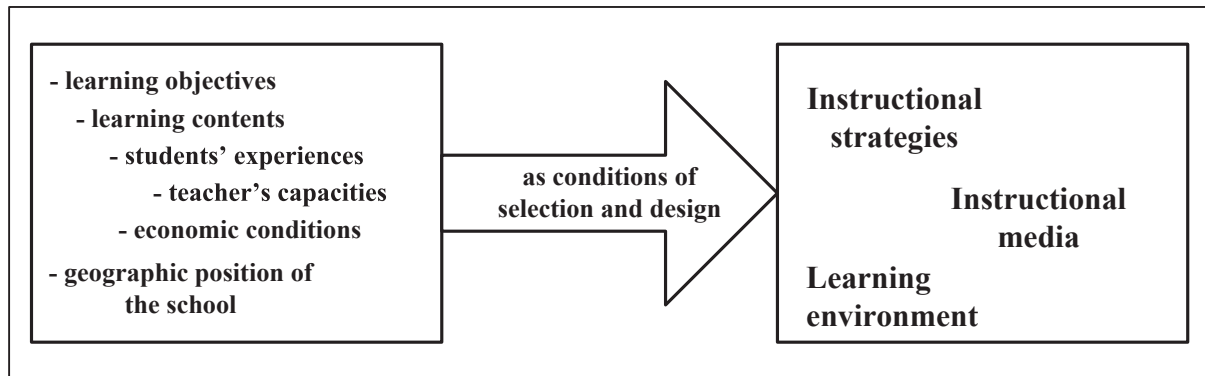


Figure 1. The interconnection of media selection and design, teaching strategies and the learning environment

E. Dale (1946) in the above-mentioned and frequently quoted Cone of Experience recommends more learning from reality, or from credible simulations, or various types of active and experiential learning than through passively sitting, listening, watching and reading. The list of competences recommended today for all schools by the most significant European experts and the European Parliament can hardly be achieved with such a didactic paradigm and the predominance of such didactic strategies. The current age offers much better media to keep and process information than the student's head. It is much more important to learn how to find information, select appropriate information, use the retrieved information to resolve problems, and to evaluate and critically review this information. Learning declarative knowledge (information, etc.) is not the most important competence and task of schoolchildren. This list is much more lengthy and complex in the teaching syllabi.

Here is a list of didactic strategies which, by following E. Dale's logic and that of many other modern experts, would much more effectively allow for the acquisition of competences recommended by the European Parliament and the Council (18 December 2006) by designing contemporary teaching and through more appropriate methodological scenarios: learning by discovery, learning by research, learning by doing (Clark, 2005; Riley & Moltzen 2011), learning by solving problems (Tennyson & Sisk, 2011), learning by playing, and many other types of experiential learning. To achieve objectives important for life at school it is important to prepare for the swift and numerous changes that will take place in the coming years, and for learning to learn throughout one's life. All this requires a significantly modified learning environment, and a significantly different approach to the new media than we have been seeing and observing in recent years (frontal teaching enhanced by a smart board and PP presentations through an LCD projector, as well as the prohibition to use powerful and attractive tools such as the mobile phone at school).

Besides Edgar Dale, many other experts have dealt with the issue of the selection criteria of media and instructional strategies, which will assist the learning and teaching process (Kemp, 1971; Kemp, 1985). The number of papers and experts covering these issues has been growing from year to year (Gagne & Briggs, 1979; Arnold & Lermen, 2006).

Everyone is familiar with the meaning of the three letters accompanying every internet address (www), but March (2006) offers a different interpretation of the www abbreviation: Whatever, Whenever, Wherever. Teachers must free themselves of the current stress of conveyor-belt teaching and leave learning to the students themselves. Students learn whatever, whenever, wherever! March considers that every teacher who is connected to the web can enable their students to do this.

5. Conclusion

In the new professional literature dealing with teaching and educational theories, we now encounter concepts that did not exist 50 or more years ago. Many of these concepts arose with the appearance of the new ICT media. Only to mention some concepts on this list: e-learning (Rosenberg, 2006), eLearning – Didaktik (Arnold & Lermen, 2006), Multimedia Didactics (Issing, 1994; Matijević, 2008), Mobile Learning (Elias, 2011), Blended Learning, Constructivism (Ger. Konstruktivistische Didaktik; Reich, 2006). However, we must keep in mind that the mentioned concept and related theories do not comprehensively explain the learning and growing-up process of today's generations of children and young people. Sometimes, the reason for this lies in a lack of scientific answers to many questions that accompany the process of learning and growing up, and sometimes keeping with exaggerated steadfastness within the confines of traditional instructional theories, which appeared at a time when this wealth of media that surrounds people today did not exist.

Experts who plan controlled and systematic pedagogical scenarios, in which children and pupils will participate during their compulsory education and growing up, must count on what happens all year round (365 days) and not only on what happens in school (180 days).

Informal learning competes strongly as an alternative to formal learning at school, thanks to the place and role that the new media take and play in the lives of children and adults (Matijević, 2011).

The existing scientific understandings of the criteria to select teaching media and instructional strategies, and to design the teaching process, need to be reviewed and supplemented according to the understandings of the educational opportunities offered by the new media (see: Figure 1).

An erroneous attempt has been made to place and study the efficiency of the new media operating solely within the frame of the class-subject-lesson system, established a long time ago, before the appearance of today's media, especially the internet, mobile phones, satellite TV...

The development and life needs of young people and adults today can be satisfied in a more attractive and richer media environment than the one which was in place some 30 or 50 or more years ago.

References

- Armstrong, T. (2009). *Multiple Intelligences in the Classroom*. Alexandria, Va.: Association for Supervision and Curriculum Development.
- Arnold; R. & Lermen, M. (2006). *eLearning–Didaktik*. Baltmannsweiler: Schneider Verlag Hohengehren.
- Baran, B. & Keles, E. (2011). Case Study Discussion Experiences of Computer Education and Instructional Technologies Students about Instructional Design on an Asynchronous Environment. *Turkish Online Journal of Educational Technology - TOJET*, v10 n1 p58-70.
- Clark, A. (2005). *Learning by Doing. A Comprehensive Guide to Simulations. Computer Games, and Pedagogy in e-Learning and Other Educational Experiences*. San Francisco: Pfeiffer
- Dale, E. (1946). *Audio-visual Methods in Teaching*. New York: Dryden Press.
- Elias, T. (2011). Universal Instructional Design Principles for Mobile Learning. *International Review of Research in Open and Distance Learning*, v12 n2 p143-156.
- Gagne, R. M., and Briggs, L.J. (1979). *Principles of Instructional Design*. New York: Holt, Rinhart, and Winston.
- Gardner, H. (2006). *Multiple intelligences: new horizons*. New York: BasicBooks.
- Issing, L. J. (1994). From Instructional Technology to Multimedia Didactics. *Educational Media International*, v31 n3 p171-82.
- Joldersma, C. W. (2011). Ernst von Glasersfeld's Radical Constructivism and Truth as Disclosure. *Educational Theory*, v61 n3 p275-293.
- Kemp, J. E. (1971). Which Medium? *Audiovisual Instruction*, v16 n10, 32-36.
- Kemp, J. E. (1985). *The Instructional Design Process*. New York: Harper & Row.
- Kotzee, B. (2010). Seven Posers in the Constructivist Classroom. *London Review of Education*, v8 n2 p177-187.
- Lermen, M. (2008). *Digitale Medien in der Lehrerbildung*. Baltmannsweiler: Schneider Verlag Hohengehren.
- March, T. (2006). The New www: Whatever, Whenever, Wherever. *Educational Leadership*. v63, No 4, pp. 14-19.
- Matijević, M. (2011). The New Media and Informal Learning. Online Submission, *Digital Technologies and New Forms of Learning*, p271-278.
- Matijević, M. (2008). *Multimedia Didactics for a Knowledge Society*. Paper presented at the Annual International Pedagogy and the Knowledge Society Conference (2nd, Zadar, Croatia, 13-15 November, 2008), p231-240.
- Matijević, M. & Radovanovic, D. (2008). *Communication Technologies and the Classroom Teaching Environment*. Paper presented at the Special Focus Symposium on the Pedagogy in the Context of a Knowledge Society (1st, Zadar, Croatia, Oct 25-26, 2007), p45-49.
- Reich, K. (2006). *Konstruktivistische Didaktik*. Weinheim und Basel: Beltz Verlag.
- Riley, T. & Moltzen, R. (2011). Learning by Doing: Action Research to Evaluate Provisions for Gifted and Talented Students. *Kairaranga*, v12 n1 p23-31.

- Rosenberg, M. J. (2006). *Beyond E-Learning*. San Francisco: Pfeiffer
- Smith, P. L. (2005), *Instructional Design*. Hoboken, N.J. : J. Wiley & Sons. 383 p
- Subramony, D. P. (2003). Dale's Cone Revisited: Critically Examining Misapplication of a Nebulous Theory to Guide Practice. *Educational Technology*, v43, n4, p25-30.
- Tennyson, R. D.; Sisk, M. F. (2011). A Problem-Solving Approach to Management of Instructional Systems Design. *Behaviour & Information Technology*, v30 n1 p3-12.
- Zumbach, J. (2010). *Lernen mit neuen Medien. Instruktionspsychologische Grundlagen*. Stuttgart: Kohlhammer.