



THE INFLUENCES VARIOUS TYPES OF LEARNING AND TECHNOLOGY BEAR UPON MODERN EDUCATION MECHANISMS – SOME CONSIDERATIONS

Dragoş BĂRBIERU, PhD*

Abstract: *Set along classical training forms and methods, eLearning can trigger new procedures to solve labour related problems, irrespective of the activity-driven work load. This modern form allows accomplishing tasks remotely, minimizing the needs for actual move and sudden breaks from current activities. When best tailored for teaching activities, eLearning raises a series of pedagogically, technologically and eventually pragmatically driven challenges. Yet, when facing new challenges, new requirements and educational necessity, we need more than technology and pedagogy can offer; we need new energies and new aspirations.*

Keywords: *Pedagogical approach; eLearning; education.*

Without requesting exclusivity, eLearning provides new educational and training opportunities since it is popular today in all universities, being a side component of the traditional learning, based on hardware and software technologies brought up by the evolution in society. This form of information dissemination can be extremely effective if the military personnel who needs training is scattered on a large geographical area, within various operations theatre. ELearning as a concept and as a means to disseminate knowledge is part of the Advanced Distributed Learning concept¹.

"Carol I" National Defence University currently unfolds military courses via the Advanced Distributed Learning Department and provides an accomplishment certificate, supporting teaching activities for the master and doctorate programs. The success of this training is revealed by the high number of trainees; thus, for Introduction to NATO there have already been 23 series, for the Conflict Management and Negotiations course there have been 15 series, for Law and Armed Conflict there have been 12 series, for Common Security and Defence Policy there have been 10 series, altogether giving way to an average of 8000 student accounts on the department's learning management system (LMS).

¹ The e-learning program (TADLP- Army Distributed Learning Program) was first opened in 1998 and it is part of the US military training and development system.

Beside the achievement of resource savings, the student has his own learning pace, no time restrictions, while he is off duty, without putting aside his work assignments. He can do this in the environment he chooses, with his family and friends alongside. To reduce confusion and alienation while learning, various forms of communication offered by the eLearning platform can be used, to turn learning into a more social activity. Technology does not offer solutions to identify the test taker in an evaluation process and neither does it cover the reliability of the fact that the test taker simultaneously refers to references while being evaluated. However, we believe that multiple choice tests administered in the secondary and tertiary education is a good thing; the drawback is that these tests do not scaffold logical thinking, synthesis and analysis, and even more, they limit imagination. An essay, a synthesis, a composition, the logical and coherent solution found to a math problem will always be thresholds for the learner whose knowledge is built on multiple choice types of tests. Needless to say that more hilarious are the situations when a faulty rationale can lead to a right answer; such situations can be possible. Leaving aside the wrong answers and choosing the most possibly correct answer in a multiple choice item is another aspect that is detrimental to learning. It goes without saying that the multiple choice test is output oriented and it does not matter how one gets to it. Introducing multiple choice tests in the development stage as a form of evaluation and checking for the secondary school

*"Carol I" National Defence University
dragos.barbieru@adlunap.ro



represents a limitation as the latter ones are not after the judgemental skills, after the synthesis and information analysis and transfer. This is the context where one can meet students that cannot be rational and deductive, cannot develop ideas or analyze a given text. It is even worse sometimes when the student can know the answers for some series of sets of tests within an exam, being motivated towards memorizing instead of focusing on correlations between the acquired pieces of information.

In educating and shaping adults into acquiring certain terminologies, concepts, information where one needs to know and memorize without performing complex analysis, the multiple choice test is a facile solution. To this end, in order to encourage the students attending online courses within Advanced Distributed Learning Department, the multiple choice final test can be performed twice. The final test does not contain a fixed set of questions, as they are generated randomly from a huge pool with inordinate other similar questions. This way, each student has a personally tailored quiz at the end of the course, with various sets of questions displayed each time the test taker tries to finalize the course. This method is used at the European Security and Defence College², where the students have endless trials to be able to finalize the course by the trial and error system. The final goal is not to differentiate, rank or eliminate but to get each learner achieve the desired set of knowledge in a given timeframe. The meaning of the word *test*³ most frequently met is about connotations which identify themselves with the results of the participants to give way to a ranking both in people and results and get classifications for the people admitted to attend a certain course, while the test itself is a mere check of the starting level knowledge, as the tested people were not competing against any challenging position.

The same vision is followed in the German army where in training and education programs the instructor plays a crucial role and this attribute is not simply to provide knowledge and skills

² The European Security and Defence College LMS is hosted by Romania at the Carol I National Defence University, accessible at <https://esdc.adlunap.ro>

³ Test (acc to DEX) is a stage when perceptive skills are examined, be them kinetic or mental, intellectual development, aptitudes, etc. Also, a test is a written or oral form of knowledge examination. An exam is a way to test and appreciate the knowledge a student or a candidate gets in order to finish a course or get a position.

training, but extends to new responsibility's such as: ensuring quality educational program and training when activities in online program are connected to real-world applications, ensure that the remote program schedule is respected and providing support for students in case of questions and technical problems.

Developing new technology, lowering the price for the current ones, diversifying the teaching methods lead to research into the educational performance but these are not enough criteria to guarantee a learner's preparation. The learner-related education is an intimate⁴ process that is connected to a series of attitude generating factors which we will try to highlight based on the impact they have. These are not independent one to another, so classifying them based on importance is a matter of personal choice. The main actor is the environment where the individual spends most of his time – that is his family. The family is the one that can design requirements and criteria, the one that can promote values and establish goals. The individual is the actor, represented by the personal effort and individual work, the interest manifested in gathering and managing new pieces of information. The existence of educational objectives and of an individual career plan, doubled by curiosity, is the stage for such an actor. The innate intellectual gift can enhance the personal effort and it is the element that develops the range of individual choices. In the current socio-economical context, where, touching upon competences one lays prints on the pragmatic side to answer an ever changing society, the learning required level to successfully integrate an individual in a society does not require labour to surpass the capabilities of a common individual. The only requirement is that the individual should get the required information within the needed moments by triggering the factors that enhance the desire to learn and know and make everything achievable. To this end, the debates between the approaches on the developments offered by the psychologist Jean Piaget⁵ and the mental universal representations that support their innate character raise a series of questions in Noam

⁴ The Romanian pedagogy researcher Constantin Narly considers that education is "both a social and an individual act, simultaneously".

⁵ The youth are not miniature adults, ignoring the own ways of representing lives.



Chomsky's⁶ view about the teacher's role : "the environment does not introduce more complexity inside someone's brain than in other organs"⁷. There have been different trends of thought in the history of education, theories about the ontogenetic process and the influences of various endogen and exogenous factors. The heredity⁸ theory focuses on the important role of the genetic factors and it is sceptical about the teacher's environment and role. There have resulted various theories out of the previously mentioned one, some of them being criticized and others either/or denied, as such: the innest theory, the organicist, the sceptical, the racist theory, similar to Cesare Lombroso's⁹ theory of the innate criminal. In chapter 8 of *The Theory of language. Theory of learning*, the biologist Jean-Pierre Changeaux¹⁰ states that:" the extreme structural complexity of the central nervous system is in contrast to the weak genetic information quantity available". Radu Gologan, the leader of the Mathematic Olympics team and the President of the Mathematics Sciences makes the following comments in an article:¹¹"...there has not been any child from the rural area to come to the national mathematics contest. Should we look at the range between grades 5 to 12 where there are 700 children from across the country, we must say there was no child from the rural area" This way the focus is laid on the environment where the upbringing takes place, and , more than that, the role the school has. Yet, we cannot draw conclusions as in this situation the rationale should work based on exceptions from the general rule. To support this, the book *Bell Curve* written by Richard Herrnstein and Charles Murray is a trial to demonstrate that intelligence is the most dominant factor within an individual's line of life and it is based on a series of statistics about the socio-economic status and the trends towards some individuals' criminal behaviour. These have generated a large series of debates and have been acutely

⁶ Noam Chomsky considers that language is a cognitive specialized system with psychological and neurological representations.

⁷ Noam Chomsky, Jean Piaget, *Theories of language, theories of learning*, Political Publishing House, 1988, p. 335.

⁸ http://en.wikipedia.org/wiki/Jean-Pierre_Changeaux

⁹ http://en.wikipedia.org/wiki/Cesare_Lombroso

¹⁰ http://en.wikipedia.org/wiki/Jean-Pierre_Changeaux

¹¹ <http://www.hotnews.ro/stiri-esential-15644874-problemele-esentiale-din-educatie-vazute-ong-uri-gradinita-obligatorie-calitatea-profesorilor-plu-ultimii-2-ani-olimpiada-nationala-matematica-nu-ajuns-niciun-copil-scoala-sateasca.htm>

criticized for supporting the racist ideology. This subject will always be controversial, in the author's opinion, and we should state that environment is a catalyst factor in an individual's shaping.

As a reaction to the hereditarian theory, the ambientalist theory lays accent on the socio-cultural environment and on the importance of the exogenous factors. JB Watson stated that he can transform any child in any type of adult, provided one has the needed tools: time, patience and the sum of rewards and punishments given. Behaviourist theories have not yet vanished from education, they are met even today within the "red dots" when national standardized tests are administered. The curiosity children manifested or their endless energy are often prohibited by such methods. Along the human species evolution, curiosity was the mechanism by which human tried to meet the world and which helped him synthesize and approach things in an abstract way, to deal with concepts, to approximate in order to anticipate dangers and new situations. When they are at the beginning of the road, children use this resource fully, in order to build themselves a personal perspective over reality. We believe that this functionality diminishes and eventually fades away when we speak about an adult that has an already built perspective over the world, as the adult can approach things in an abstract way, he can anticipate, and this issue can question the lifelong learning concept. We should not yet mistake a repetitive activity that renders pleasure, satisfactions and rewards for the curiosity that surpasses the area of a single field or activity. We believe that the promoters of the behaviourist theory have very well understood that pain and sorrow join people together, as people are equal when facing it, while happiness seen as accomplishment is a state that is different from one person to another.

The theory of double determination brings conciliation between the different perspectives of the two theories already mentioned and also introduces education as a main factor. Lev Vygotsky's social constructivism states that the learning process can be achieved through models, in a social context: "We know ourselves as we are aware of the others and we are aware of the others as our own awareness about our self comes from the awareness the others have about us"¹² This theory had a special influence and the concept web 2.0 supports this, that is why web 2.0 is not a really new technology, it is more

¹² Emilia Albu, 2007, *The Psychology of Ages*, Univ. Petru Maior, Tg. Mureş.



of a mentality.

The characteristics of the web 2.0 are embedded in the social and interactive aspect. The models can trace the way, while by means of interaction and limitation we can reach our goals. The value of this theory can be seen in informal education. The multitude of the media channels, the blogs and forums, virtual conferences, social media, Massive Open Online Courses¹³ confirm the individuals desire to learn, to communicate, to be connected and participate. In formal education, most of the eLearning platforms have software eLearning tools to communicate and bring interaction among students. A necessity for students is the presence of the tutor, of various means to communicate, of an access to various educational resources using the mobile devices. We thus state that social interaction and the social aspect of learning can lead to conformism and uniformization. Moreover, these call for authority, over-evaluating teacher's role, which can limit the critical spirit and curiosity, the student having some patterns and predefined recipes. It is hard to believe that the tutor/teacher can satisfy the educational needs for a large group of students on his own, and that is why the student centred learning process, targeted on the student's needs tries to involve the other students in the class in a real exchange of ideas and knowledge. The birth of this theory gets intersected with the Russian revolution, Vygotsky being influenced by Marxism, so we can anticipate the birth of the "new man", the educated one, the one influenced by society, while there is no accent on the unique and particular nature of the human. Today, the media of communication and information can exploit human's social nature via different means, which probably are responsible for Vygotsky's success. Competency-based education is a challenge for teachers as well, as they have to adapt to the labour market requirements, therefore their competency area must permanently be updated. Should I anticipate, we believe that the development of the artificial intelligence along with progress in the fields like nanotechnology and neuroscience will change both the teacher and the school? The first one could be replaced by software intelligent program that addresses each individual separately based on own needs and they will not depend on a lot of other factors like emotions, fatigue, time etc. The history of education, we believe has kept school connected to the real keepers and

¹³http://en.wikipedia.org/wiki/Massive_open_online_course.

knowledge generators. At the beginning, education addressed the elite, school being active alongside temples, churches and monasteries. Both the Enlightenment and the industrial revolution have been factors that took education to the public level and it has become a necessity for the modernization of society. The public mandatory education becomes a state attribute. Even since the first Romanian school in Brasov¹⁴ that activated near St Nicolas church to the first modern law of the Romanian education¹⁵ when Cuza ruled, education passed through various stages and the results were not sudden. To this end, school went from church administration to the various court administrations and it was much later when the public mandatory education was introduced. We need to call this history upfront in order to explain what led to competency based education. Gradually, various specialization programmes were introduced in schools, based on various technologies¹⁶, this making possible for students to enter the labour market without further much ado. Excluding the states national educational projects and also some disciplines that fit in the services field as occupational areas, a synchronization between school and the educational environment was needed. It is thus possible that the state would not be the main actor in the future and might lose the role it had in the 20th century, that is to educate large scale people. The economical system shows that among the knowledge generator vectors are the companies and the large corporations. The European research projects represent, we believe, an essay to save the traditional school by bringing and orienting the academic community towards new technologies, interests, directions and societal challenges. The economical model is the one generating these changes and for sure significant alterations will occur in the future. It is believed that by introducing competences, social cohesion level will increase, enhancing the graduates' possibility to find and fill in a work position, knowing that youth unemployment for people between the age of 18 and 24¹⁷ is high in Europe currently. We believe that only by introducing competences filling in new positions will not be enhanced, as the main factor is a lack of

¹⁴ The first Romanian school is from Brasov, at St Nicholas church in Cheile Brasovului neighbourhood The first classes were in 1583.

¹⁵ School law in 1864.

¹⁶ Cisco program can be an example.

¹⁷ http://ec.europa.eu/eurostat/statistics-explained/index.php/file:employment_rates_by_age_group, 2013



jobs and not the quality of education, knowing that many companies provide various internships and training to their newly hired.

A huge advantage for the military personnel is the introduction in the Romanian Army of qualification courses that are certified by ANC (National Qualifications Authority). These courses are carried out with the support and online technology through online e-learning platform of the National Defence University Carol I. These courses like health and safety at work, environmental manager, PSI technical personnel offer new qualifications and skills useful for army personnel and are recognized both in military and civilian life.

Contemporary learning theories establish four learning types¹⁸. **Cumulative learning** is characterized by acknowledging new patterns of thoughts, where the information is new and has no connection to what we have previously learned. This type of learning best fits to the multiple-choice tests, where the main focus falls on memorizing. Using the eLearning LMS and the software tools offered by this, the cumulative learning would help considerably. We can thus imagine several situations, such as: new terminology learning (NATO terminology or a new program running rules, a game – Virtual Battlespace 3, etc).

Assimilation learning represents the type of learning where the individual connects between what he is currently learning and previously inherited patterns. Although the topics within the subject matter follow a logical line from simple to complex and enhance assimilation learning, we still believe that the Romanian school does not lay accent on the pluridisciplinarity and multidisciplinary, interdisciplinarity and transdisciplinarity. Currently, school does not promote interdisciplinary and transdisciplinary aspects, such as the link between the numerical system and geometry, the correlation between Kirchhoff's laws and geophysics, similarities and differences between the birds and human species' migration. The existence of higher mathematics within some disciplines make the understanding of some phenomena impossible, while the lack or the insufficient attention paid to logics changes the student's perception in a negative way. The skill of correct thinking is one of the most essential elements that will positively mark individuals' lives as this is a necessary but

not sufficient condition to make the best decisions. We believe that any exam should include a test to check the logical process of thinking. This model is used in Romania for the judicial system entrance examination¹⁹ but similar tests exist (for example the GMAT test) in other countries to allow access to a master program. This test focuses on²⁰: critical reasoning, analytical writing assessment, quantitative, sentence correction, reading comprehension, integrated reasoning. Also, we believe that extending the curricula on a longer period of time would be counter-productive. A connection between the cumulative and assimilation one is offered by Tony Buzan²¹ and the methods he proposes for rapid learning.

Learning by accommodation or transcendent learning means breaking some patterns of thought and inheriting some new ones to correspond to new learning contexts. The individual must accept something different and this fact is more complicated than adding new information to an already existent pattern. In a society where information is accessible by various sources, where the rhythm of scientific discoveries is alert, while an inflexible thinking is an obstacle into adapting an individual to the environment. It is by experience that we have reached a new perspective which is the probability based thinking, where one can associate probability factors to events and information. Placing new knowledge into a cognitive flux and into a specific context can offer a larger perspective over the world. This pattern of thought should build the pattern that is closest to the contingent reality. The cognitive flux is based on the logical argumentation and its placement into a context refers to experience and imagination. A software tool that is very useful in this case is Mind Mapping, useful for creating representations of mental maps. We have to say that learning is not a singular act, it implies feeling as well, that is why an inflexible mind can generate negative and frustrating attitudes. Generally, individuals notice what they like or what they understand, that is why breaking the patterns of thought, represented by this type of learning is energy-consuming, yet there is the bonus of "...this type of learning that is

¹⁸ Contemporary learning theories, Knud Illeris, Ed. Trei, „An exhaustive understanding of human learning”, p. 31.

¹⁹ *Guide to solving the logical thinking evaluation, issued under the project*” technical support to provide critical thinking tests” financed by the World Bank program for the judicial reform [http:// www.uvt.ro/files](http://www.uvt.ro/files).

²⁰ [http:// www.edventure.ro/engleza/gmat](http://www.edventure.ro/engleza/gmat).

²¹ [http:// en.wikipedia.org/wiki/Tony_Buzan](http://en.wikipedia.org/wiki/Tony_Buzan).



characterized by the possibility of being reactivated and applied in many different relevant contexts"²²

The main threshold for this type of learning is conformism, because once a pattern of thought is created, this will generate comfort for all our actions and we will try to eliminate any new idea that changes the current state. Were we to consider the book *Thinking, fast and slow* written by the psychologist Daniel Kahneman²³ it should be stated that here we meet the pleasure of cognitive ease." The link between the positive emotion and cognitive ease of System 1²⁴ has a long evolutive history"

Another learning type that is deep and vast is the **transformational learning**. This can bring changes of personality and results in a crisis situation. Professor Jack Mezirow launched this concept in 1978 in an article published in the US journal *Adult Education Quarterly*. The author considers that "the two major elements of transformational learning are, firstly the critical reflection or self-reflection over any assumption - critical evaluation of the sources, nature and consequences of our mental habitudes-secondly, our free and full participation in a dialectical discourse to validate the best reflexive argumentation" The need to build a new inner vision of the world, in a world where the valid information is not always easily accessible, the critical spirit and sceptical nature turn the individuals that hint for this kind of education into rejected or unreliable individuals. To us, the final target of this endeavour should be a higher level of understanding, but it could be possible that negative/ positive feelings accompany us on the way. Were we to take a short imagination test, where a third party told us that all we know, all we learned or were told by others is false, we could assume it to be a traumatizing experience. Transformational learning can be the ultimate level in the process of becoming a mature adult. Should we parallel the transformational learning stages to intelligence development stages belonging to Jean Piaget and Chomsky's innest perspective we could state that it is only at certain stages of life that we can access

²² *A comprehensive understanding of human learning*, Knud Illeris, p. 32.

²³ http://ro.wikipedia.org/wiki/Daniel_Kahneman.

²⁴ Psychologist Daniel Kahneman, Nobel Laureate, considers that human thought is controlled by two systems, system 1 that he calls *thinking fast*, which is intuitive, unconscious and does not need voluntary effort or control, while system 2, called *thinking slow* is conscious, it uses deductive rationals and it needs a lot of effort.

the transformational learning and that it is a certain genetic determinism for that. Simultaneously, not all individuals feel the need to know, and those who do not have such curiosity have other types of needs that could change their way of living, their habits, their values. Critical thinking is not easily accepted by the individuals, groups, ideologies, and that is why the critical thinking father's end, Socrate's, a spring of endless thoughts for humanity, to the benefit of the state came the way it did. The method he used, maieutics, targeted reaching truth via dialogue and debates, where the principle of ignorance and doubt in his discourse has a deeply critical character.

Stephen Brookfield²⁵ is a contestant of the transformational learning and his arguments are based on ideological criteria. He sees critical reflection as a criticism for an ideology, stating: "...it focuses on people's adjustment to become aware of the way capitalism moulds systems of beliefs and assumptions (ideologies) that justify and maintain social and economical inequities"²⁶. We believe that critical thinking should be no one's enemy, as this is meant not to bring one injustice but, on the contrary, to connect one to a brighter light, to a contingent reality, in order to rebuild and progress. The main target for this type of learning is not related to ideologies. From a constructivist perspective one believes that personal evolution means going through certain stages that all lead to maturity. Maria Carmen Matei (Stefanescu)²⁷ arguably considers that "a transdisciplinary perspective like the one advanced by critical thinking, can ensure a better awareness of the dysfunctional phenomena (disinformation, diversion, discrimination, manipulation, etc) and yet a better defensive strategy against these, keeping control of the detrimental effect of the quality of life as much as possible."

Society and family with the help of the values they forward, school and its contribution via the quality of educational performance, are actors that work together and should not be taken separately in the act of human shaping. Research in the field considers heredity to be an important actor as well, yet, without degrading it, we believe that Roma-

²⁵ http://www.stephenbrookfield.com/Dr_Stephen_D._Brookfield?Home.html

²⁶ *A general approach over transformational learning*, Jack Mezirow, p. 177.

²⁷ PhD thesis "Rationalizing in the context of critical thinking", Bucharest University, faculty of Philosophy, retrieved from <http://www.unibuc.ro/studies/Doctorate2014iulie/MATEI>



nian educational system should address the many common ones and not the few chosen. Currently, the undergraduate educational system abounds in series of negative aspects by family relationship degradation due to the fact that parents no longer spend time with their children, being either very busy or abroad, to work. Also, teachers are no longer involved in the teaching process and they grade students based on unreal criteria.

The need for critical thinking, we believe, came as a current of thought against the abundance of information overlapped with the individual's confusing attitude towards society. Should we look at the abstract of the PhD thesis "...social decision from a critical thinking perspective"²⁸ the idea of introducing critical thinking in schools and university's curricula is highlighted, arguing that: "students can be taught minimal critical thinking terms in any field. There is basically no reason why students should not use the basics of critical thinking they learned in a subject and then to extend this information (with limitations, of course) to other subjects and fields they study"

The community can substantially contribute to individuals' informal education and a new actor emerges on the stage, where the technological support can make possible a large array of courses that are open, libraries, forums, blogs, Wikipedia, communication/information platforms and open educational resources²⁹. This is a concept firstly defined in 2002, within UNESCO meeting in Paris, aiming at integrating software technologies and educational resources along with promoting scientific research, to offer free access to all this for the teachers, students but also to those that are not necessarily and formally enrolled into a form of the educational process.

Education must address everybody, it must keep standards for evaluation and examination by putting an end to the multiple-choice test run within entrance examination, selection process, ordinary exams, and national exams; thus, prosperity and security will be accomplished. Developing capabili-

ties to adapt and think can replace lack of experience for the young graduates. Introducing informal logic and critical thinking in schools would be a huge advantage. Supporting disadvantaged children, integrating the Romany people, stimulating the educational staff into performance, programs and frequent contacts between school and family can be clear courses of action.

Using open resources requires well protected security information's systems. In this regard, all educational materials that can be accessed on the Internet regardless of the chosen security solution must be unclassified.

Through using the e-learning system, the military personnel will gain access to a modern and high quality educational system, designed for the specific needs of the area that is available anytime and anywhere with minimal costs. Moreover, an integrating educational perspective will ensure consistency and will open the way to achieve our aim, namely to provide learning activities and quality instruction to as many students as possible.

It is difficult to anticipate the future for all educational programs and therefore personal involvement is needed and the way for success.

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²⁸ *Social decision from a critical thinking perspective*", Bucharest University, Philosophy faculty, author Ionescu Florian Mircea.

²⁹ Open educational resources are educational and research materials accessible in any environment, in the public domain or under creative common law, that is they can be used freely, adapted, distributed and redistributed by others without restrictions or under limited restrictions (source: O. Voicu - Open Educational Resources for Romania)



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