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School on the Cloud: A Needed New Paradigm in Open Classroom

Kostis C. Koutsopoulos, Chryssanthe T. Sotiriou

Abstract **– This paper presents the basic concepts and the conditions required to adapt teaching and learning in the Open classroom educational approach in order to respond to present day educational needs. More specifically, it presents the paradigm shifts that have taken place in terms of the way Open classroom education is regarded (from the pre, to main and finally to post open classroom periods)and the methods used in teaching and learning within the Open classroom approach. That is, this paper declares that nowadays at the centre of the pedagogic approach towards teaching and learning should be the concept of *integration*, without which Open classroom cannot operate anymore. This leads to the position that not only the traditional *Teacher Centered Instructing* educational paradigm, which Open classroom proponents and practitioners have long discarded, but also the much herald and widely used *Constructivism* approaches known as the *Student Centered Learning* paradigm, are now absolute and Open classroom education has entered the period of the *Network Centered Knowing* paradigm which is based on Cloud Computing. To put it in a more succinct way: Open classroom has to be in the cloud based education business or no business at all.**

Keywords **– Cloud Computing, Open Classroom, Paradigm changes, Z Generation.**

I. INTRODUCTION

The aim of a successful education is to prepare students for the future and therefore we cannot continue educating them in ways that address education needs of the past (Fullan and Langworthy, 2013). The world has been changing in ways that are not always easy to predict, presenting the challenge of preparing the children of today for: a world that has yet to be created; jobs yet to be invented; and technologies yet undreamed (Wellman, 2015). However, we mustprepare ourstudents for these changes and needs. Thus, a new educational approach is required to educate students for the complex and challenging future (Gialamas et.al, 2013, Koutsopoulos, 2014). This implies *radical* changes in the ways of teaching, learning, managing and leading in education.

For many educators and specialists the way to respond to these challenges has been the open education, also known as the Open classroom type of educational reform. It is an informal system whose basic tenet is that children desire and even enjoy learning, if left to their own initiative, andthey will do so naturally. As a result,Open classroom is focusing on abandoning the formalized roles of the main educational stakeholders (students and teachers). Many of its ideas were based in the progressive education movement, which is still operating in the education scene.

Yet the implementation of the Open classroom, whichhas constantly been promoted, practically since WW2, unfortunately has achieved mixed reviews and results (Cuban, 2004). The main reasons for such a performance has been given by Charles Silberman who in his book *The Open Classroom Reader*(1973) warned enthusiastic teachers and parents that "...by itself, dividing a classroom into interest areas does not constitute open education; creating large open spaces does not constitute open education; individualizing instruction does not constitute open education... For the open classroom... is not a model or set of techniques, it is an approach to teaching and learning" and we may add that it is an approach as to how education is regarded and applied.

The above addition to Siberman's warning is based on the fact that in epistemology in the last few years important differentiations have occurred related to the way we view education as well as its applications. These changes in perception are of particular importance, because they clearly show the need for a new approach to Education in general and to Open classroom in particular. More specifically, there is a need to clarify the fundamental principles that determine nowadays the way education is regarded and the methods used in teaching and learning.

Towards that goal, this paper unambiguously declares that nowadays at the centre of the pedagogic approach towards teaching and learning should be the concept of *integration*,without which open classroom cannot operate anymore. This leads to the position that not only the traditional *Teacher Centered Instructing* educational paradigm, which the educational community, including Open classroom proponents, have discarded, but also the much herald by present mainstream approaches to education as well asOpen classroom practitioners and known as the *Student Centered Learning* paradigm, are now absolute and education has entered the period of the *Network Centered Knowing* paradigm which is based on Cloud Computing.

This position although is simple and straightforward, when it is considered within the framework of beliefs and practices that are in use nowadays inOpen classroom, might be thought of as radical. To displace such a notion, let us consider the bare basic open classroom capabilities required by its major educational stakeholders (Graham, 2014).

These are:

1) ***Students*** the ability of working and communicating without taking into account space and time. That is, freedom of movement from area to area and even from room to roomas well as in unstructured periods of study.

2) **T*eachers*** the mechanisms to receive unlimited support in preparing their teaching portfolio that should be focused on both group and individual student activities.

3) ***Administrators*** the capability to cater to students' and teachers' needs indecentralized learning areas, and mainly

to design, build, test and execute their programs.

It is evident, therefore, that when the Open classroom concept is applied it requires the combined and simultaneous capabilities of all stakeholders involved, which however cannot be dealt with, unless we accept the fact that they represent different manifestations of "a whole", which is the dialectic entity of education in the form of Open classroom.

As a result, it is proposed that by necessity an integrated approach towards teaching and learning in open classroom is required, an approach that is not possible without the educational abilities provided to all stakeholders by Cloud Computing, the pillar and main tool of the new proposed paradigm. In order to understand this position as it relates to Open classroom, an examination of the nature and the evolution of teaching and learning (their paradigm shifts, according to Khun, 1962) is required. But these in turn determine how we perceive education as well as how we practice it, and are presented next.

II. Considering Education in Open Classroom

In the last century, several changes have taken place related to the value given by society to education, which in turn directly or indirectly determines its standing in society. Following is a brief presentation of these changes and the resultant responses, which determine the way education was considered every time period.

A. Monodisciplinary Approachor pre-open classroom period

Approximately for the first three quarters of the 20th century, which they can be considered as the pre-open classroom period, education was considered as just a tool in attaining other pressing societal objectives, having no real value by itself. In addition, during the same period education was operating as inefficient as the rest of the disciplines, in that it was exclusively the only one concerned with its own subject area. As a result, education was approached in a single or *monodisciplinary*manner. That is, all matters of teaching and learning were the exclusive realm of educators, who were the only ones *that* could offer the means to handle education.

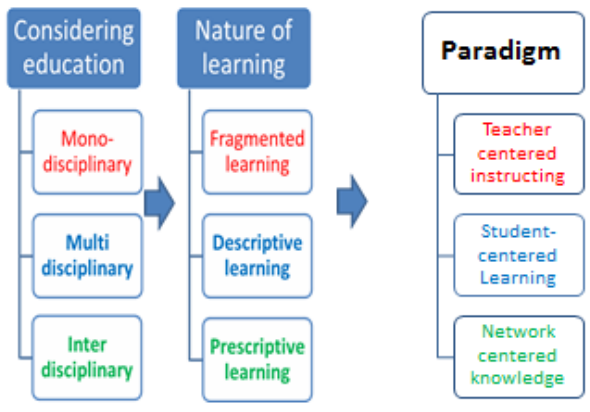

Fig.1. Paradigm Changes in Considering Education

In addition, education practitioners through the application of their "exclusive" paradigm have been creating a *"fragmented"* approach to education, resulting in a fragmented and mainly a descriptive learning process (the way students need to learn). Therefore, it is of no surprise that educators in the pre-open classroom period followed the well-known and long lasting, but fortunately discarded, *Teacher Centred Instructing* paradigm, whose fundamental teaching tool has been exclusively the teacher's instruction (Fig. 1, First row-red letters).

B. Multidisciplinary Approachor main Open classroom period

After WW2 and mainly in the 1970's, which can be considered asthe main Open classroom period, education regained its significance and teaching and learning acquired a place at the centre of societal goals and interests. In addition, the scientific community reacting first to environmental issues and later to all societal concerns, strongly questioned all monodisciplinary practices, including those in education. This led into approaching educational needs and practices in an alternative way. Morespecifically, from various perspectives and concerns, which in turn, led to a *multidisciplinary* approach towards teaching and learning, an approach followed by Open classroom. As a result, given that human knowledge necessitates "abstractions" of all aspects of reality, Open classroomlearning was formulated and provided as a set of separate relations, interdependences and interactions. That is, teaching and learning in Open classroom were treated as if they consisted of the sum of all the distinct parts of a multidimensional cultural, political, social, environmental and economicreality. Under this perspective, Open classroom has been and still isproviding a descriptive learning education. But this notion of a descriptive – multidimensionalOpen classroom required a Constructivism approach, which in turn formed the basis of the education paradigm presently in use in open classroom and is defined as *Student Centered Learning* (Fig. 1, Second row-blue letters).

C. Interdisciplinary Approach or meta-open classroom period

The premise of this paper is that nowadays, which is considered as the meta-open classroom period, this multidisciplinary approach cannot be accepted anymore. Actually major challenges to *Teacher Centered Instruction* were mounted even at the beginning of the 20th century by "pedagogical progressives," to use Lawrence Cremin's apt phrase. That is, it is suggested that in Open classroom an integrated approach is necessary in order for its teaching and learning approach tobe simultaneously cultural, pedagogical, technical/technological, administrative, social and political. But moreimportantly to be in dialectic harmony and respecting all aspects of teaching and learning as well as all the basic education stakeholders (pupils, teachers and school administrators).This teaching and learning approach is holistic not only because it takes into account the multidimensional relationships and interdependencies between the various educational stakeholders, but most importantly because it considers

them as constituting the individual entities of a "whole", which is the education process in open classroom. In this way all these factors are becoming an integral part in the educational effort.

Moreover, in order to overcome the existing compartmentalization of knowledge, an *interdisciplinary* approach is required, which inevitably leads towards the integration of all possible teaching and learning actors and approaches. In addition, such a regard of teaching and learning provides a *prescriptive* learning (the way students should learn) and leads towards a new paradigm in Open classroom, named in this paper *Network Centered Knowing*. That is, it is suggested that the abandonment of the formalized roles of the educational stakeholders and the use of the "participatory" approach of the Student Centered open classroom education, has to be substituted by a holistic and prescriptive approach towards knowledge, which is the foundation of the new *Network Centered Knowing* paradigm (Fig.1, Third row-green letters) and it is proposed that Open classroom practices have to shift towards it.

III. Practicing Education in Open Classroom

Even a cursory review of the literature (Cain & Cain, 1997; Cormier, 2008; Gialamaset.al, 2013) will show that teaching methods as well as educational curricula have been constantly changing. It is suggested that these changes correspond to the changes in the way education is regarded and thus they can be categorized into three discrete approaches, which are examined next.

A. Traditional or Instruction Approach

The first approach, which lasted until a few years ago, is characterized by its simplicity, because it is based on a very basic educational process which is:the teacher transmits information to students who passively listen and acquire facts. That is, the educational practices are centered around the teacher who is the sole conduit of knowledge, which is transmitted to the pupils through instruction based curriculum. As a result, as Fowler and Mayes (2000) have pointed out, there is a "representational" view of learning associated with a "transmission of knowledge" by instruction approach, which determines the design and operation of teaching and learning. These are, of course, the characteristics and practices of the well-known, discarded and unfortunately long lasting traditional *Teacher Centered Instructing* paradigm (Fig. 2, First row).

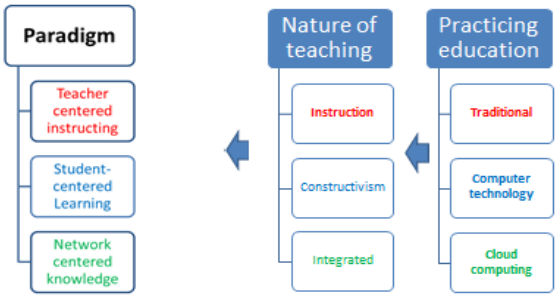

Fig.2. Paradigm Changes in Practicing Education

B. Computer Technology or Open Classroom Constructivism Approach

In the last few years, changes in the use of microprocessors have a direct impact on education, including the Open classroom approach, which in turn have resulted in changing the old traditional teaching and learning approach, by creating a new one based on *computer technology*. The rate of these changes and their growth have been exponential and is not likely to decrease. As a result, computer technology not only is widely used at all levels of education, including open classroom, but their influence in teaching and learning will increase in the near future. In fact, computer technology has become a core factor in determining the nature, the form and the structure of education in open classroom as well as in mainstream schools. That is, computer technology innovations have been changing the very way that open classroom schools can teach and students can learn, resulting in the creation of an information open classroom approach immense in a world of computers and interactive software. The use of computer technology, however, inevitably leads to the creation of engaging learning environments that provide students not only with useful learning experiences, but also support various forms of learning relationships between learners and teachers (Godwin and Kaplan, 2008). In other words this corresponds to a Student-Centered Learning open classroom which involves both learning and the learner.

But such an approach to teaching and learning basically emphasizes the individual's personal connection to the subject of learning as a way of internalizing the structures that lead to the acquisition of knowledge. In other words, it is based on *Constructivism*, which is a theory concerned with the way learners construct their own knowledge by experiencing things and reflecting on them. That is, the constructivist view of teaching and learning represents teaching practices based on participatory techniques. This approach, however supports the education paradigm presently in use in the mainstream education and defined as *Student Centred Learning* (Fig. 2, Second row),but also forms the basis for the open classroom approach, which by its nature is a student centred approach focusing on students "learning by doing".

C. The Integrated or Cloud Computing Open Classroom Approach

Very recently, the notion that the basic educational stakeholders are independent and sometimes conflicting pedagogical forces has been strongly questioned. Indeed as Koutsopoulos, (2008) has pointed out such a notion is scientifically unsubstantiated, logically unacceptable and mainly does not allow the necessary integration required in the complicated and dialectic present day educational environment. That is, although abandoning the formalized roles of the educational stakeholdersis considered imperative by open classroom proponents, itcannot be applied ignoring the other educational actors (i.e. not available infrastructure or lack of understanding from decision makers).

Therefore what this paper suggests is that all education stakeholder by been an integral part of the teaching and

learning process, are interconnected and interrelated representing different manifestations of an approach which by its nature is holistic. That is, this dialectic process, which puts emphasison a holistic view of teaching and learning, is broader than ICT (i.e. data or information); it is completely open rather than closed; it can accommodate pluralistic approaches to teaching; and it creates no restrictions on subject matter, curriculum or classroom setting.

As a result, the nature of teaching and learning is beyond a constructivist approach, in that it encompasses in addition to ICT tools and all the educational stakeholders in different ways, so that it transforms their role, approach and services. Moreover, the process represents a holistic and integrating framework within which all aspects and approaches of teaching and learningcan be practiced.The above described process represents the foundations upon which the new *Network Centered knowing* paradigm is based.

More importantly, however, the new *Network Centered Knowing* paradigm addresses more successfully Open classroom teaching and learning requirements. Because Open classroom is characterised as containing no whole-class lessons, no standardized tests, and no detailed curriculum, require an approach of integration. Moreover, Open class room requires settings where children come in contact with information and education sources provided (unfortunately up to now mostly with non-digital "play tools" and books), as well as one another at “interest centers” and learn at their own pace. As a result, the cloud based resources and tools of the Network Centered paradigmare certainly more appropriate than the pure constructivist approachhat is followed. It is of no surprise that in the last few years, discussions about "Open classroom" range between meaningless intellectual chatter and ideas that provoke substantive change. We believe the later, but we propose a different approach to avoid the former.

More specifically we propose that Cloud computing can fulfill the needs required by the new Open Classroom paradigm, because it provides, among others, multitasking, the ability to handle a large number of users and applications, the need for flexibility as well as the ability to meet changing demands. (Meier, 2012; Gaytos, 2012; Gutta, 2012; Cruz,2011).As a result, as IBM (2012) has declared "With Cloud computing in education, you get powerful software and massive computing resources where and when you need them (and we may add in any way you desire), in order to apply new educational approaches. Cloud services can be used to combine on-demand computing and storage, familiar experience with on-demand scalability and online services for anywhere, anytime access to powerful web-based tools". That is, it represents a framework which can successfully serve and support an integrated approach to the teaching and learning and which is basically what Open classroom desperately requires to move towards.

In summary, the position of this paper is that in the last years, education and open classroom teaching and learning have gone through two paradigm shifts. From the *Teacher Centered Instruction* paradigm characterized by a Monodisciplinary approach to teaching and learning, using traditional instruction methods(the teacher instructs the student), to the *Student Centered Learning* Open classroom paradigm associated with a *Multidisciplinary* approach, using constructivism teaching methods (learning by doing) and finally to the proposed Network Centred Knowing open classroom paradigm expressed by an interdisciplinary approach (holistic teaching and learning) having cloud computing as the underlined educational environment (see Fig. 3).

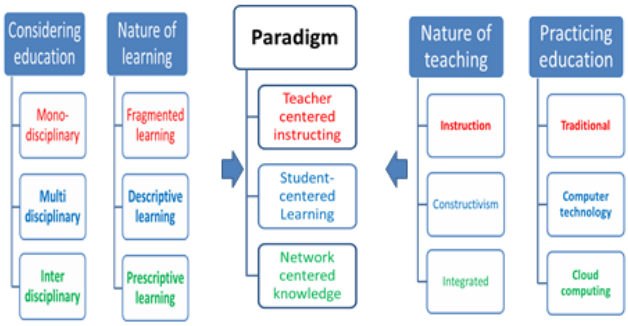

Fig.3. Paradigm changes in Education

IV. School on the Cloud

From the previous discussion it should be clear that as technology has become an agent of immense change in the way teaching and learning is considered and applied, it has forced upon education Cloud Computing. As a result, there is a need to examine and evaluate how to narrow the existing divide between education and Cloud Computing as well as explore how teaching and learning should respond to new cloud computing developments. These needs were shared by many ICT experts and educators, who formed the School on Cloud: connecting education to the Cloud for digital citizenship network (SoC Network), consisting of 57 European partners from 18 countries, distributed widely across Europe and including most types of educational stakeholder and all sectors of education. The SoC network seeks to achieve its goal and objectives by addressing the following two key questions: How should education respond to cloud-based technologies? What is the impact, now and in the future, on education stakeholders?(Donert, 2013)

Answering these questions, however practically creates the foundations upon which to base the application of the new NetworkCentred open classroom Knowing education paradigm. But more importantly, it provides the vehicle for accommodating the difficulties, trials and tribulations presented by H.R Kohl (1969) in his classical book "Open Classroom" and reestablishes its value as well as guarantees the triumph of his ideas. The reason is very simple and it is based on the fact that as learning becomes increasingly digital, cloud-computing is the necessary tool for a new integrated way to education. That is, as the initial results of SoC project indicate, open classroom which by its nature allows education to be holistic as well as bring into teaching and learning alternative dynamic,

interactive and multimedia tools, it has to follow the new educational paradigm.

A. What Cloud Computing Brings in Implementing Open Classroom

The literature (IBM 2013; Gaytos, 2012; Duggan, T., 2012) clearly indicates that Cloud Computing provides to education and therefore and to the open classroom a series of resources and capabilities, exceeding those presently in use. Because as Silberman (1973) has written in open classroom "learning and expression (should be) in a variety of media, rather than just pencil and paper and the spoken word». The most commonly referred and important as well as useful to open classroom (for a detailed description see Koutsopoulos, 2015) are:

1) **Savings**: in money, recourses and efforts
2) **Flexibility**: in time, space, equipment, programs etc.
3) **Effectiveness**: in information, tools effective learning and teaching process.
4) **Sharing**: skills, good practices, applications, teaching content and infrastructures
5) **Real time Access**: of useful and free information from anywhere.
6) **Reducing the Risk of Obsolescence**: providing insurance against technological changes.

B. What Cloud Computing Brings to Teaching and Learning in Open Classroom

Advances in ICT, in the form of cloud computing, continue unabated and there is an increasingly perceived vision that cloud based education should be the single most important way towards a successful mainstream education and mainly open classroom. In other words, it is suggested that the use of cloud computing in open classroom will have an impact on many areas of teaching and learning, which some of them are common with mainstream educational approaches and others exclusive to open classroom. The common impacts are related to the fundamental elements of education such as the subjects taught and the teaching and learning methods in attaining them, as well in the changing role of major educational stakeholders (for a detailed description see Koutsopoulos, 2015), and include:

1) **Subjects**: The use of cloud computing necessitates a 4th fundamental subject (computing) that students in open classroom should master (in addition to reading, writing and arithmetic).
2) **Learning**: Open classroom advocates insist that learning should be focused, among others, on: the needs of individuals; a holistic new vision; open, flexible and networked relationships as well as be active and connected to real life.
3) **Teaching***:* The present digital landscape environment requires from open school applications comparable (those provided by cloud computing) teaching methods.
4) **The Changing Role of Education Factors**: Cloud Computing alters the role of all stakeholders (students,teachers,school administrators, transforming of knowledge, socialmedia, openeducation resources etc.).That is, forces them to adapt their place and role in the education process in accordance with the basic principles of open classroom such as with erasing the formalized roles of student and teacher.

In addition, cloud computing provides to open classroom resources and tools in order to achieve the main objective of abandoning the formalized roles of all educational factors, whose major expressions are:

1) **Decentralized learning areas:** Open education is not only concerned with erasing the formalized roles of student and teacher, but also in the physical way of achieving it.
2) **Freedom of movement:** Transects space by requiring mobility from area to area and even from room to room.
3) **Unstructured periods of study:** Transects time by overcoming the traditional teaching time periods.
4) **Group and individual student activities:** Instruction is required to be given to no more than two or three pupils at a time.
5) **Presentation of material:** The same materials are not allowed to be presented to the class as a whole.

V. CONCLUSION

Present day students, the so called Z Generation, are growing and operating in an environment where surfing the Net is the major source of their experiences, becoming virtually their “first nature". That is, technology by becoming part of students' everyday life creates a tight relationship between technology and learning. As a result, it has forced upon the education system cloud computing and has given rise to changes in teaching and learning that have a significant effect on education practices in open classroom

Moreover, this paper suggests that Open classroom based on Cloud Computing can provide its stakeholders with the necessary tools as well as with the skills and dexterities required. Such tools, however, are not only appropriate, but desirable because they fit with the nature of open classroom, are more versatile and can adapt to new educational developments.

In conclusion, ICT in the form of Cloud Computing has to be an inseparable part of teaching and learning in open classroom schools. To put in a more comprehensive form: Open classroom has to be in the cloud based education business (or no business at all). The reason is simple but unavoidable: Cloud Computing by been the main instrument in shaping, changing and enabling new ways of accessing, understanding and creating knowledge, it has to be part of the open classroom concept, now and in the future. Because it is difficult to imagine a learning environment in open classroom without the presence of Cloud Computing at the forefront or in the background.

The final question, which is related and to the issue posed in beginning of this paper, has to be: is open classroom just another education fad or the ultimate truth? Considering open classroom merely either as a fad or an icon to bow, however, misses the deeper contribution of open classroom as the true base upon which to develop, construct and apply the new Network Centered open classroom Knowing paradigm which represents the only way towards the future and responds to Van den Brande et

al. (2011) urge to move towards a new learning paradigm in open classroom.

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REFERENCES

[1] Cormier, D., "*Rhizomatic Education: Community as Curriculum", 2008*. Retrieved 4 March 2015, Available: http://davecormier.com/edblog/

[2] Cremin, L. A. "*The Transformation of the School: Progressivism in American Education",* 1876-1957. *New York: Knoph,1961*

[3] *Cuban, L.. "The Open Classroom Educational Fad", Education Next, 2004 Vol. 4(2), 1-4*

[4] Cruz, L. *How Cloud Computing is Revolutionizing Education*,2011 Ciseco Technology News.

[5] Caine, R. N. and Caine, G., " *Understanding Why Education must Change*",New Horizon for Learning 1997, Reviewed 21/9/2015 Available: http://www.newhorizon.org/trans/cainechange.htm

[6] Donert, K. (2013). *Lifelong learning Programme Application Form, KA3_MN_EL_SoC. Brussels: European Commission.*

[7] Donert, K., Bonanou, H. (eds.), "*Education on the Cloud 2014: State of the Art.",* Retrieved 4 March 2015, Available: http://www.schoolonthecloud.eu

[8] Duggan, T., "The Digital Learning Imperative: How Technology and Teaching Meet Today's Education Challenges". Alliance for Excellent Education,2012,Retrieved 21/9/2015 Available: http://all4ed.org/reports-factsheets/the-digital-learning-imperative-how-technology-and-teaching-meet-todays-education-challenges/

[9] European Commission / NMC. "The *New Media Consortium Horizon Report Europe: 2014 Schools Edition.",2014* Retrieved 4 March 2015 Available: http://www.beyondcurrenthorizons.org.uk/scenarios

[10] Fowler, C. and Mayes, J., "Learning relationships from theory to design. In: Squires, D., Conole G. and Jacobs, G., Eds., *The Changing Face of Learning Technology"*, 2000 University of Wales Press, Cardiff, 39-50.

[11] Fullan, M. and Langworthy, M., "Towards a New End: New Pedagogies for Deep Learning",2013. Retrieved 4 March2015,Available:http://www.newpedagogies.info/wpcontent/uploads/2014/01/New_Pedagogies_for_Deep%20Learning_Whitepaper.pdf

[12] Gaytos, C. "Education: Why cloud computing? Cloudtweaks", 2012. Retrieved 4 March 2015, Available: http://www.cloudtweaks.com/2012/02/education-why-cloud-computing

[13] Graham, L., et. al.Open Learning in K-12 Online and Blended Learning. Pittsburg, PA, 2014,ETC Press

[14] Gutta, S. *Education in the Cloud: How one school is revolutionizing the classroom. Boxblog.,2012*Retrieved 4 March 2015, http://blog.box.com/2012/07/education-in-the-cloud-how-one-school-is-revolutionizing-the-classroom.

[15] Gialamas S., Pelonis P., and Medeirod, S. "Metamorphosis: a collaborative leadership model to promote educational change, *Thoughtful Mind*. Institute for Innovation and Creativity", 2013ACS, Athens. Retrieved 4 March 2015, Available:http://issuu.com/acsathens/docs/final_publicity_book_2012/23

[16] Godwin I., and Kaplan, S., "*Designing e-Learning Environments: Lessons from an online workshop*." Journal of Online Education,2013 v.4 n.4 Apr-May

[17] IBM Global Technology Services "Applying the cloud in education: An innovative approach to IT", 2013. Retrieved 4 March 2015, Available: http://www-935.ibm.com/services/be/en/cloud-computing/cloud_edu_en.pdf

[18] Kohl, H. R. .*Open Classroom.*ed. by E. B. Nyquist and G. R. Hawes,1972.The Columbia Electronic Encyclopedia, 6th ed., New York: Columbia University Press.

[19] Koutsopoulos, C. K. "What's European about European geography? The case of GeoInformatics in Europeanization. *Journal of Geography in Higher Education",2008* [Online]. 32 (1): 7-15.

[20] Koutsopoulos, C. K. and Kotsanis Y. "School on Cloud: Towards a paradigm shift. *Themes in science and technology education ",2014[Online]*. 7(1), 47-62

[21] Koutsopoulos, C. K. "*A review of cloud based futures and methodologies.* The School on Cloud: Connecting education to the Cloud for digital citizenship network (SoC)", Deliverable 5.1,2015

[22] Kuhn, S. T. "*The structure of scientific revolutions"* Chicago: University of Chicago Press,1962

[23] Microsoft, *"Get More out of your Education IT Infrastructure"*, 2012 Retrieved 4 March 2015 Available: http://wwwmicrosoft.com/education/virtualization.asp

[24] Meier, J. D. *The Gamification of Education*. J.D. Meier's blog.2011Retrieved 4 March 2015, http://blogs.msdn.com/b/jmeier/archive/2013/02/27/the-gamification-of-education.aspx

[25] Silberman, E. C., "*The open classroom Reader"*. New York: Random House,1973

[26] Van den Brande, L., Carlberg, M., & Good, D. (2009). "*Learning, Innovation and ICT: Lessons learned from the ICT Cluster, Education and Training 2009 Programme*". Brussels: European Commission.

[27] Wellman, H. M. (2015)." *Friends, friendlessness and social cognition"*. British Journal of Developmental Psychology, 33(1), 24–26.

AUTHOR'S PROFILE

Kostis C. Koutsopoulos

Professor Koutsopoulos after completing his BSc degree at the University of Athens, he got his MSc, PhD and a Postdoctoral degree from the Departments of Geography and Civil Engineering at the University of Colorado, USA. He taught at the University of Iowa until 1980, when he was elected in the Chair of Geography at the National Technical University of Athens. He has been Director of the Geography and Spatial Analysis Lab., Chairman of the Geography and Regional planning Department, Director of the Graduate Program "Environment and development" and Dean of the Rural and Surveying Engineering School. He has organized numerous congresses, meetings and seminars and he has participated as Keynote speaker, invited speaker, session chairman and conveyor in many more. He has presented 158 papers in various meetings; he has published: 53 papers in refereed Journal, 61 books and book chapters and more than 100 other publications (in Greek and English). Finally he has been an editorial board member of several Journals and currently is the chief editor of the European Journal of Geography the official journal of the European Association of Geographers.

Chryssanthe T. Sotiriou

Chryssanthe Sotiriou was born in Athens. She holds a BA in English Literature from the English Department of the National and Kapodistrian University of Athens and a postgraduate diploma in Translation with distinction from the University of Mons-Hainaut in Belgium, being a scholar of the 'Alexander Onassis' Foundation. She has been involved in the Leonardo da Vinci Sectoral Programme: "Mobile and Wireless Technologies for Technology-Enhanced Language Learning (MW-TELL)" in "Digital School": Greek Ministry of Education and SoC. Her research interests include Project Based Learning (PBL) and the use of social media in Education. She has given lectures in seminars and conferences for teaching and the use of technology to teachers of primary and secondary education. She has more than 20 years of teaching experience, working as an EFL teacher in Doukas School Athens, Greece, holding the position of Language Coordinator in High School. She has written and presented a number of papers both in Greece and abroad, having recently published a book on Presentation Skills.