

The Impact of Modern ICT-based Teaching and Learning Methods in Social Media and Networked Environment

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Abstract

One of the typical features of our information society is the fact that more and more social processes take place in digital networks and many elements of our life can be stored and analysed in digital format. Nonformal and informal education is gaining strength and more and more people can access knowledge, voices which have not been audible until now grow louder, open discussions have been initiated in topics of connectivism, networked learning, social media involvement into teaching process. The approaches in education focusing on the students' feedback have been acknowledged for a while thus in educational institutes students evaluate their teachers, the methods applied by their teachers and the effectiveness of these methods, they tell their opinions in connection with particular subjects. Nevertheless, surveys of this kind often provide distorted or incomplete answers. We should also examine the methods which are widespread and the impacts which are dominating social media. An approach of this kind is obvious for more than one reason. A bigger and bigger part of publicity moves to the Internet. The online environment provides the most democratic space to speak ever, especially the free writable surface of Web 2.0, social media and within that a social site providing an open surface for publishing and discussion that is Facebook. The online community uses this potential: more and more students express their opinion about particular subjects, learning methods and forms or evaluate teachers, institutions on social sites, blogs, forums. In this paper we describe a pilot research, a practice of the theories regarding the use of social media through a survey based on a big (N=122) sample. The results of this research can be used for elaborating the essential elements and frameworks of a methodological culture which involves new network-based features adaptable in micro-environments and for extending these frameworks over various learning environments.

Keywords

Informal learning. Social networks. E-material. Electronic learning environment. Cloud technology.

INTRODUCTION

The main feature of information society is that it brings focus to information becoming the most important value. Its rise was brought about by the globalization of

economy and the crisis of corporate management arising from that, the main movers of it were the rapid development of information technology and telecommunication, its main stages were the spread of personal computers and the of broadband data communication networks. (Paulsen, 2002; Forgó, 2011; Molnar, 2012; Buda, 2010). The Internet and mobile phones are its technological innovations with a symbolic significance (Szűts, 2014; Castells, 2005)

This involves important social changes: the proportion of the employees in informational sector is radically increasing, telework and lifelong learning becomes possible and necessary. As a result of these the improvement of the infrastructure of informatics and propagation of digital literacy may emerge as a highlighted strategic object. At the same time people living in information society have to face many hitherto unknown problems such as evaluating, filtering and processing information which is available in unlimited volume but of varying quality or defending the privacy against political and economic power which strive to obtain and control information. These effects change the environment for the members of the society and the nature of their work that is related to the attitudes, learning processes and habits of individuals or the changing roles of teachers and students.

THE IMPACT OF NEW TECHNOLOGIES ON ELECTRONIC LEARNING ENVIRONMENTS

As a result of the influence of the above described modern, day to day changing world higher education try to adapt to the new generation attitude, habits, learning style of students and started to switch over to electronic based educational systems labelled with the term 'e-learning'. Due to the effect of this educational institutions have launched and operated electronic learning environment.

Such learning environments can be created with Moodle, Olat, Ilias, Coedu, Claroline, Coospace or Share point systems. Some of that can work in a synchronized connection with systems of administration and education – such as Neptun or ETR – used in higher education. Besides there is another tendency urging live lectures to be recorded and published in more and more institutions (Szűts, 2012a, b; Kommers, 2010).

With the help of these systems a long experience in higher education proved at a micro- and macro-level as well that while teaching activities in e-learning environments take place mainly in daytime periods, the activity of (full time) students take place mainly in late evening, night periods. The above mentioned online, internet-based learning support systems provide communication between continuous network nodes in a synchronous or asynchronous form which means communication between students and teachers.

The system of teachers-training programmes (postgraduate and postgraduate specialist training courses) of the Department of Technical Education at Budapest University of Technology and Economics have undergone a paradigm shift namely had to break away from traditional curriculum and teacher based learning theories and methods and switch over to ICT based atypical learning forms.

This change of attitudes is supported by several possibilities and toolkits such as the following: smartphones, iPads, Kinect interactive units and the games attached to them,

network based web 2.0 services (e.g. joint documents, presentation sharing sites, groups, electronic questionnaires, mobile applications, joint calendars, blogs, social sites, online tests, shared hostings [google], 3d worlds [Leonar3do], virtual environments [Second life]) are playing greater and greater role in the world of ICT based systems and the environment of digital natives (generations of present information society). For the application of these systems and mobile tools it is necessary to obtain the so called “new media competencies”.

Methodological application of cloud computing services

Cloud computing service is a generic term for such services which are provided not on a particular dedicated hardware but in a shared form on several devices of the service provider thus the high availability of divided, redundant servers is provided besides a strong defence against data loss. Cloud computing services appeared in the field of informatics in the 2010's. The number of cloud computing service providers has risen lately, especially in the USA and Western-European countries (Dukan – Kovari, 2013).

The most often mentioned advantages of cloud computing services are their reliable, cost-effective implementation and operation, the fact that 80-90 % of their capacity is utilized, the low requirements of investment and the unlimited computer resource.

The basic feature of cloud computing systems is that their appearance can be changed without any consequence, new opportunities emerge while others disappear or are replaced to provide the best experience and services for users.

Three levels can be distinguished in the field of cloud computing services:

- IaaS – Infrastructure cloud, infrastructure as a service, e.g. Amazon EC2 calculation clusters
- PaaS – Platform cloud, e.g. Google App. Engine which provides a scalable or invisible developer environment. WS-PGRADE is a service of this sort which can be run concurrently and makes possible to access various CPUs
- SaaS – Software cloud, e.g. Auto dock which makes possible importing and monitoring of workflow; WSGgrade/gUSE is known for many users worldwide

Generally speaking, these cloud computing systems strive to make interconnections between various services. This is an essential feature of the system since this way a content created in a particular service becomes available in another and it makes is unnecessary to upload all the data base and information into the new system again (Baróti - Mészáros, 2011).

The most important feature of Open Access is its free availability where application of security protocols is not a requirement. The possibility of collaborative work, continuous data synchronization and data saving, automatic updating, the possibility of sharing contents and encryption of data are mentionable advantages as well.

In the sphere of cloud computing data storage main hosting service providers have come into general use and each of them is connected to some operation platform and works in complete harmony with them. The system of google drive is probably the most often used hosting service provider worldwide in co-operation with android operation system, the second in this rank is the hosting service of Dropbox and its counterpart, the

iOS systems, also Windows phone with One Drive is listed at the third place (Benedek-Molnár, 2014).

Although it does not mean that users can use only the counterpart of the operation system they have. Trello for example is suitable for attaching files stored on Google Drive to particular tasks without the requirement of uploading the file into a cloud again.

As an example for the application of this, the personal homepage of Trello is displayed in the following screen shot.

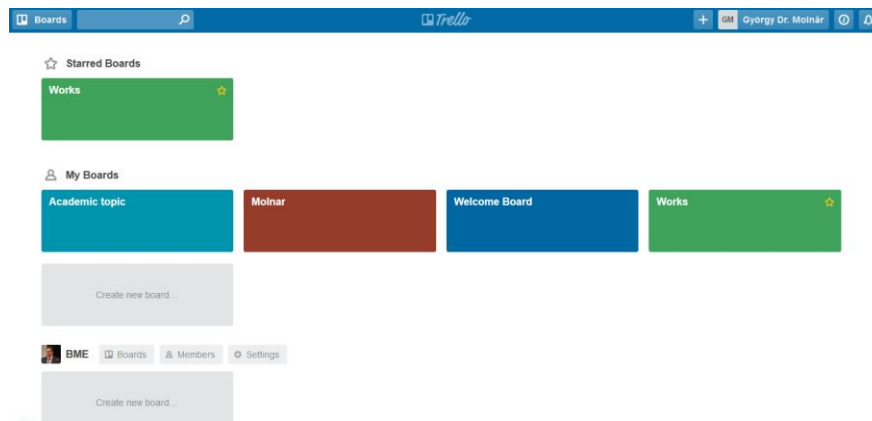


Figure 1: The homepage of Trello, source: own photo

Besides the advantages of cloud computing services there are some doubts about the accessibility and crudeness of the system despite that the growth rate of them will be 4-5 times bigger than the average increase of information technology between 2013 and 2017. The opinions have not reached the point of rest up to now in connection with this.

The most evident example of cloud computing systems is google drive, one of the One drive applications.

Cloud computing services make possible collaborative work in the form of crowdsourcing within a particular project for different users. We could initiate a project to examine this practice. Due to this work we would be able to see the processes, to examine how to make them more efficient and which cloud computing applications can help to complete the task. scratch (<https://scratch.mit.edu/>), a project-based application or learningapps (<http://learningapps.org>) service are good examples for this (Benedek, 2008; Lükő, 2009; Gocsál, 2013).

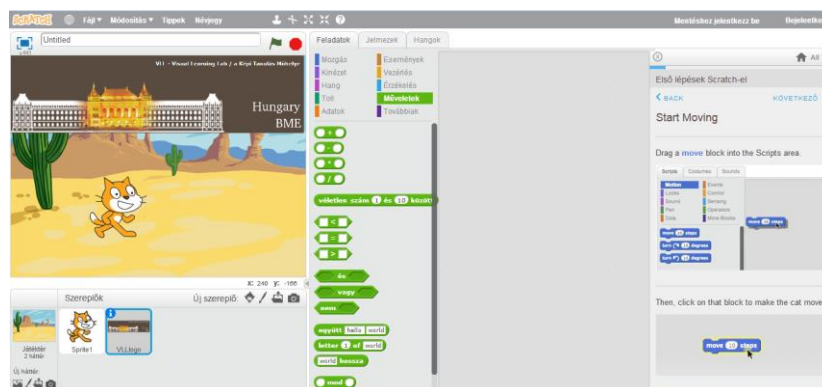


Figure 2: The main page of scratch, source: own photo

MOOC systems in education

Online teaching which is related to distant teaching and learning has been known for education theories. Nevertheless, the MOOCs (*Massive Open Online Courses*), a complex innovation which developed in the US higher education between 2012 and 2013 - is remarkable and considered as a significant strategic improvement by EUA as well. This innovation represents how the new form of learning with the most progressive „environmental” understanding ever pushes out the traditional frameworks of learning.

From a professional point of view it is especially interesting that new ways of learning have appeared in higher education which is known for its conservative teaching and learning behaviors. It is typical of the new ways of learning to announce courses online, with free (nonformal) joining, putting aside limits of participation, free access, the lack of obtaining credits (which is the most controversial nowadays). We could understand this experiment as a non-formal learning support within the framework of traditional dissemination of knowledge according to the above mentioned characteristics. The fact that the best universities of USA announced the free open courses highly raises its importance and professional value.

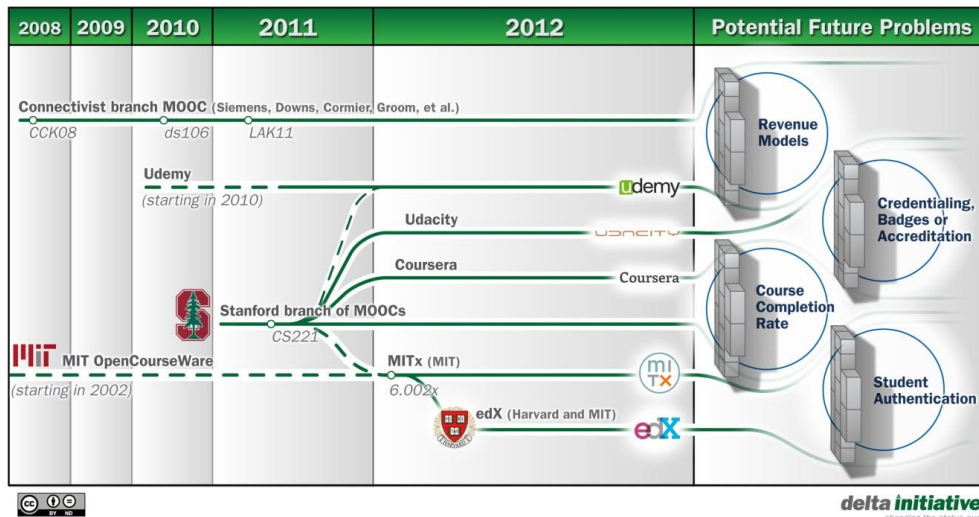


Figure 3: A MOOC timeline 2008-2012, source: Phil Hill, e-literate, 24/07/2012: Four Barriers That MOOCs Must Overcome To Build a Sustainable Model, <http://mfeldstein.com/four-barriers-that-moocs-must-overcome-to-become-sustainable-model/> (downloaded: 2013. 03. 10.)

School, as an institute and a key factor of the educational process is not in an easy situation at all. The so called 2.0 pedagogical paradigm means a new possibility for the 'Net-Generation' that is the generation which knows and uses the Internet as a matter of course in a world where a major proportion of schools and teachers organize the educational process as it was typical in the 20th Century. A lot of institutes of education move behind the fortification of conservatism or react spontaneously and struggle for being successful under new circumstances. Besides the traditional communities, new communities – which are organized very easily – such as Facebook, Twitter, Flash-mob based community activities and these are not only changing our society but means a new challenge in education (Balogh, Munik, Turcáni, 2011).

Expanded virtual reality and virtual learning environments

Besides Second Life, CloudParty, the virtual environments and learning space with a great past there are the newest technologies which want to visualize real content through special glasses called Oculus for their users. It provides real experience-like due to the 3dimension realistic visualization of contents and the realistic imaging of the movements of head and eyes. A special vizor of this kind is in the following picture.



Figure 4: Oculus, sources: own pictures

The new trends of development attempt to virtualize Facebook – it is called Facebook-Oculus. Users will need only a console, haptic gloves which simulate skin perception and a vizor (virtual reality glasses) for a realistic experience. The idea of virtuality has occurred in the field of education and registration function is accessible on Classroom developed by Google and on Classcraft which has educational functions as well. The following screen capture shows the surface of virtual classrooms.

EMPIRICAL ASSESSMENT RESEARCH OF ICT ATTITUDE AND DIGITAL COMPETENCES

The research has been conducted by electronic survey in spring 2016 based on simple random sampling; the target group involved full time and part time students studying pedagogy, economics or engineering. The research focused on social media using habits. We got N=122 analyzable answers within the deadline. The survey consisted of 16 closed questions. The main results are as follows.

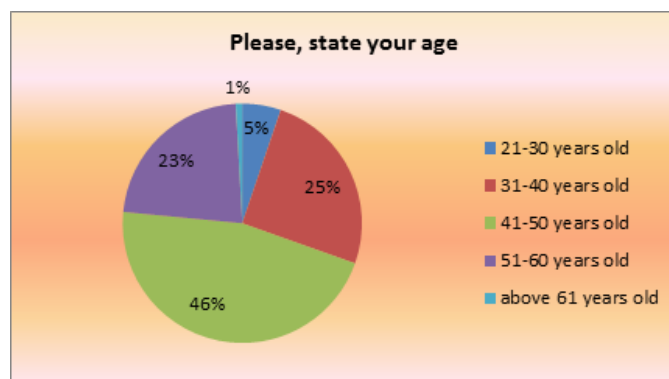


Figure 5: The distribution of age of the respondents, own chart

The next diagram below shows the use of community media. According to it more than half of the students find social media useful in their studies. This shows how much they know and how confident they use these kinds of media elements.

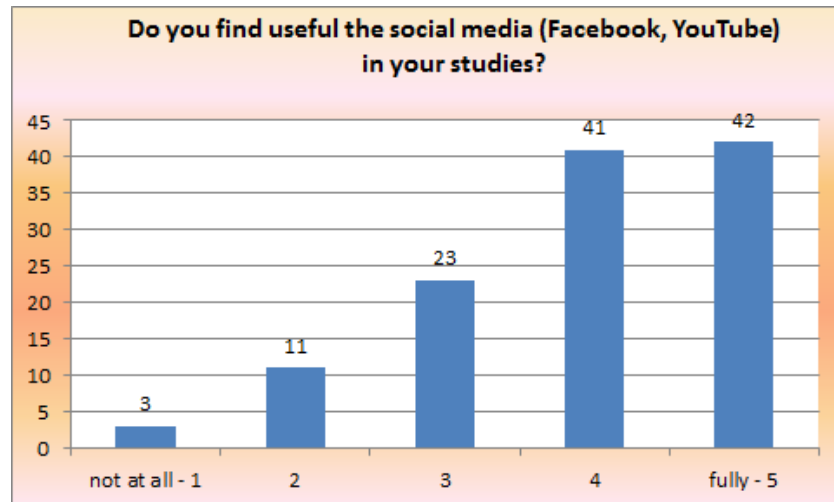


Figure 6: The distribution of social media, own chart

The majority of the respondents community media provides a completely or moderately suitable field for getting information about and discussing various opinions in connection with learning. According to answers, 29 students full, 39 mostly find social media capable of discussing actual teaching and learning issues.

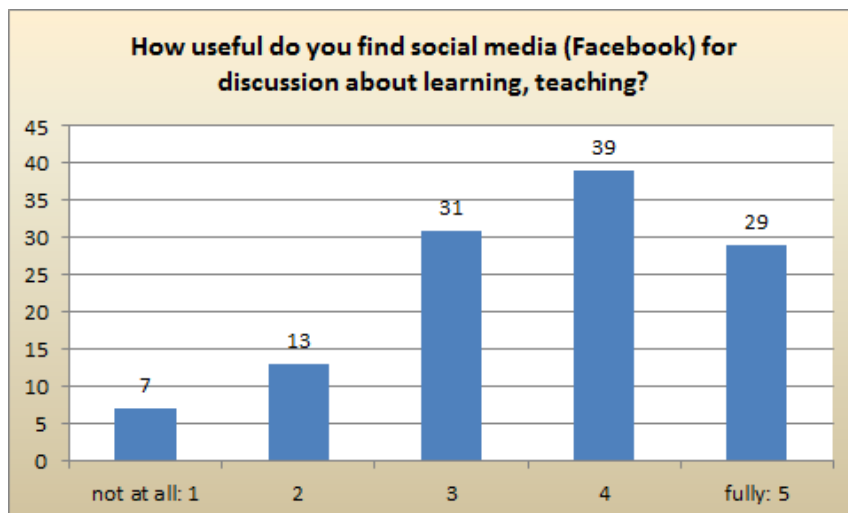


Figure 7: The distribution of useful of the topic of discussing, own chart

Some 60% of the respondents stated daily use in connection with the frequency of social media using habits which is assisted by mobile tools such as smart phones or tablets. 24% percent of students on weekly basis, 7% monthly, while 5% annually use social media. However, there is some 7% that has never used a service like that. Altogether, there is a positive picture about social media use.

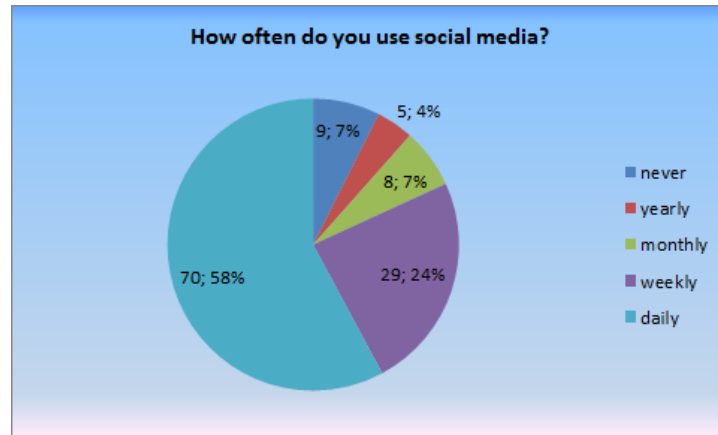


Figure 8: The distribution of timetable of the social media, own chart

In the last chart we can see the types of information related to learning. According to this learning support online contents are at the first place, general news about learning at the second place and feedbacks given in connection with curriculums at the third place, which is a special feature of the new network-based learning theories as well. 25% of the respondents do not share contents of this kind.

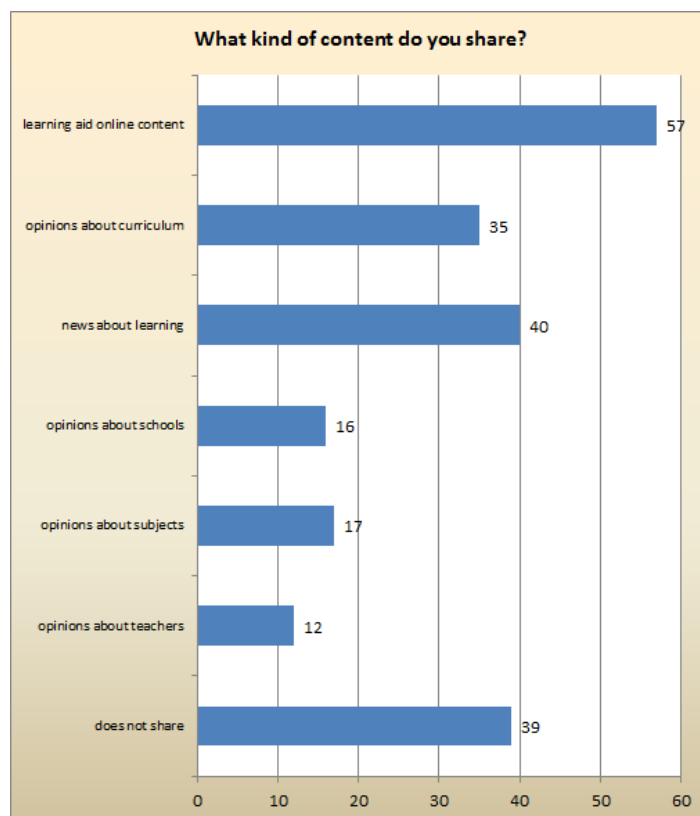


Figure 9: The distribution of kind of content, own chart

NEW POSSIBILITIES IN THE ICT ENVIRONMENT OF THE FUTURE

Education policy in some countries emphasized adaptive learning support systems which are completely flexible in time and space and are based on intelligent technology. A

good example of that is the Republic of Korea where the government has launched Cyber, a home learning system, software and infrastructure, which improves the quality of public education and smoothes away the differences between private and public schools. The system significantly decreases the cost of education due to the lack of travel costs.

The system provides the possibility of attaining curriculums at home though the internet. It aims to cease the digital gap between primary school and high school in the education system. Cyber home education system operates development diaries, following attendance, and Learning Management System (LMS) used for evaluation, as well. It supports creating experience-based, cooperative learning and enables teachers to provide online support.

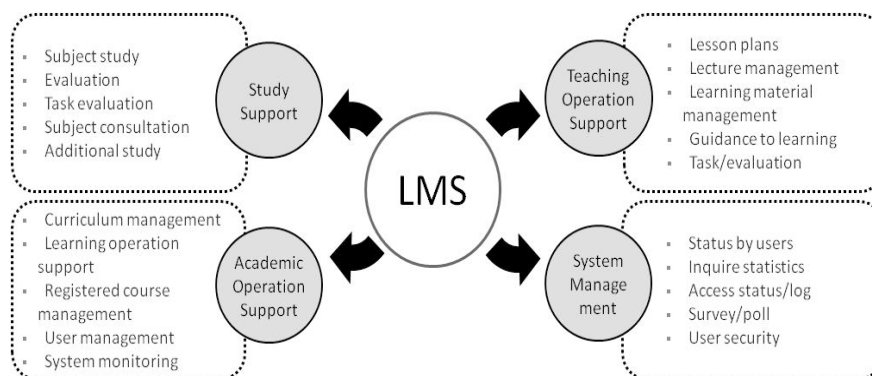


Figure 10: LMS at home, source: own photo

CONCLUSION

Using social media has become an integral part of our information society, especially those who belong to the digital generation take the opportunity of using it. Nevertheless it is typical of them being online all the time and the immediate share of information, which is generally considered as a positive phenomenon, but they do not really know all the functions of social media and this results in a deficit in their digital competency. Based on the results of the above mentioned empirical researches we can state regardless of age that there is no doubt about the usefulness of social media and that learning related information is shared most often besides general and personal information. Mobile communication tools have greater and greater significance regarding access, positive habits and opinions are dominant in connection with sharing and use.

We should not forget that use of IT/ICT cannot be a substitute for personal interactions rather the supporter, more and more indispensable supplement of it. It provides – in case of suitable application – countless possibilities, experience for teachers and students as well. If it is “tuned” well it is a helpful supporter of self-directed teaching and learning process.

REFERENCES

- M. F. Paulsen, 2002. Online Education Systems: Definition of Terms, In: Web-Education Systems in Eu, ZIFF Papiere 118, FernUniversität Hagen, pp. 23-28.

- Gy. Molnár, 2012. Collaborative Technological Applications with Special Focus on ICT based, Networked and Mobile Solutions., Wseas Transactions on Information Science and Applications 9:(9) pp. 271-281
- Z. Szűts, 2012. Communication theory related issues of Web 2.0, Jel-Kép. http://communicatio.hu/jelkep/2012/1_4/szuts_zoltan.htm
- Z. Szűts, 2012. An Iconic Turn in Art History - The Quest for Realistic and 3D visual Representation on the World Wide Web. In: Benedek A, Nyíri K. (ed.) The Iconic Turn in Education (Visual Learning). Frankfurt: Peter Lang Internationaler Verlag der Wissenschaften, 59-66.
- Z. Szűts, 2014. Ghost in the Machine, Budapest, Kossuth, 2014.
- S. Forgó, 2011. New Media Competencies in sight - Teaching competencies needed for teaching new media, Agriamédia Conference, 2011
- Benedek, A. 2013. New educational paradigm: 2.0: items of digital learning, In: Benedek A. (ed.) Digital Pedagogy 2.0. Budapest, Typotex, pp. 312
- P. Kommers, 2010. ICT as explicit factor in the evolution of life-long learning. International journal of continuing engineering education and life-long learning, 20 (1/2010), pp. 127-144., [last access: 15.08.2012]
- M. Castells, 2005. The Rise of the Network Society". Classics of the Information Society. The Information Age. Economy, Society, Culture. Volume I. Thinking – Infonia, 489. p.
- A. Buda, 2010. Attitudes of Teachers Concerning the Use of ICT Equipment In Education, Journal of social research and policy 1.(2) pp. 131-150.
- Benedek, A.; Molnár, Gy.(2014) ICT in Education: A New paradigm and old obstacle. In: The Ninth International Multi-Conference on Computing in the Global Information Technology. Arno Leist, Tadeusz Pankowski (ed.) Sevilla: IARIA, pp. 54-60.
- Dukan, P., Kovari, A. 2013. Cloud-based smart metering system, In: Anikó Szakál (ed.) CINTI 2013 Proceeding of the 14th IEEE International Symposium on Computational Intelligence and Informatics. IEEE Hungary Section, pp. 499-502.
- Baróti, E., Mészáros, A. 2011. Methodological diversities appearance of technical higher education, In: Hegedűs J., Kempf K., Németh A. (ed.) Public education, teacher education, science education - the values of the past and the future challenges, pp. 273.
- Balogh, Z., Munk, M., Turcáni, M. 2011. Analysis of Students' Behaviour in the Web-based Distance Learning Environment, Recent Researches in Circuits, Systems, Communications and Computers, pp 339-344
- A. Benedek, 2008. A Tét és a technológiai fejlődés összefüggései, In: Benedek András (ed.) Tanulás életem át (TÉT) Magyarországon. 255 p. Budapest: Tempus Közalapítvány, pp. 105-125.
- I. Lükő, 2009. Modern Ingenieurpädagogik und Arbeitspsychologie-Umweltergonomy, In: Hortsch H, Kersten S, Köhler M (ed.) 6. IGIP Regionaltagung "Renaissance der Ingenieurpädagogik- Entwicklungslinien im europäischen Raum. Dresden
- Gocsál Á., Tóth R., 2013. Development of student competences by creating an instructional video: presentation of a case. PRACTICE AND THEORY IN SYSTEMS OF EDUCATION 8:(4) pp. 316-330.