Twitter as a Conversation through e-Learning Context

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Abstract

The article addresses new opportunities in e-learning and specifies the role of the micro-blogging service Twitter as a connecting link between e-learning 2.0 and e-learning 3.0. The authors suggest that communicative features of Twitter resonate with the ideas of semantic Web and highlight the potential of e-learning 3.0 as an educational system based on expert rating, high interactivity, and the efficiency of all learning practices. The goal of this paper is to discuss the use of Twitter for e-learning 2.0 and e-Learning 3.0. Both as a blogging instrument and a social networking tool, Twitter serves as a perfect platform for the global academic community to engage in real-time dialogue.

Keywords: e-learning 2.0, e-learning 3.0, micro-blogging, Web 2.0, Web 3.0, Twitter

Folosind serviciul Twitter ca instrument de conversație în contextul e-Learning

Rezumat

Acest articol abordează noi oportunități în e-learning şi arată faptul că serviciul de micro-blogging Twitter joacă un rol de legătură între e-learning 2.0 şi e-learning 3.0. Autorii sugerează că particularitățile de comunicare ale serviciului Twitter se află în concordanță cu idea de Web semantic şi evidențiază potențialul pe care îl are e-learning 3.0 ca sistem educațional bazat pe calificari expert şi un grad înalt de interactivitate, precum şi eficiența tuturor practicilor de învățare. Scopul acestei lucrări este acela de a discuta modurile de utilizare pe care le prezintă Twitter pentru e-learning 2.0 şi e-Learning 3.0. Folosit ca instrument de blogging sau de social networking, Twitter funcționează ca o platformă perfectă pentru un dialog în timp real în cadrul comunității academice globale.

Cuvinte-cheie: e-learning 2.0, e-learning 3.0, micro-blogging, Web 2.0, Web 3.0, Twitter

INTRODUCTION

E-learning 2.0 is viewed by many as an alternative model for innovative education. According to numerous research studies, e-learning 2.0 (first introduced by Stephen Downes) is rendered as „small pieces, loosely joined approach that combines the use of discrete but complementary tools and web services - such as blogs, wikis, and other social software (social nets, micro-blogging, podcasting, video channels, etc.) - to create and sustain of ad-hoc learning communities" (Buharkina 2010; Downes 2005b).

Since blogging and micro-blogging are considered by many as the most popular educational techniques (Titova, Filatova 2010:21-61; Internet v obrazovanij 2009:45), we proceed with the following questions:

RQ1: What are main characteristics of micro-blogging in education?

RQ2: Should micro-blogging be viewed as a catalyst to promote e-Learning 3.0?

MICRO-BLOGGING AS A SOCIAL SOFTWARE TOOL

Micro-blogging is a broadcast medium that allows us to use a limited number of type characters (Twitter restricts its user to only140 characters). Micro-blogging platforms allow users to exchange small units of content such as short sentences, individual images, or video links. Micro-blogging messages can be exchanged through various channels, including other blogs, e-mails, mobile phones, web sites, etc. The increasing popularity of blogs resulted in a commonly accepted use of the embedded micro-blogging by broadcast and networking services. For example, Kevin Rose, the founder of the social bookmarking service Digg, introduced Pownce where micro-blogging used as a part of file-sharing and „event-inviting". More recent Plurk has a timeline view with video and picture sharing. Flipter uses micro-blogging as a platform for people to post topics and survey public opinion. Emote.in is another micro-blogging service that helps people to share their emotions. PingGadget is a location based micro-blogging service - a peculiar kind of Geolocator. Norwegian programmers have created the Folkstr service where the micro-blogging function integrated into another social networking service. The most popular international social networks, such as Facebook, mySpace, Ning, vKontakte have a micro-blogging function named as „Status Update" or „Status". In Yandex blogs this function is called „Change the Mood".

In short, micro-blogging allows users to use:

- Tagging through hash tags;
- Status updates limited to 140 – 200 characters;
- A restricted number of messages from registered users;
- Other Web 2.0 services as a part of convergence (Kaplan, Heinlein 2011).

Additionally, micro-blogging presents collaborative technology targeted at common use of content and mutual co- sharing. Namely, this feature initiates the development of new formats of e-Learning such as e-Learning 2.0 and e-Learning 3.0 (Barret 2008; Jones 2008; Wheeler 2008).

TWITTER AS MICRO-BLOGGING SERVICE

Twitter presents currently the most popular service in micro-blogging with the motto: «The best way to discover what's new in your world». This service was created in March 2006 by Jack Dorsey and launched in July of that year. Dorsey wanted to create a certain platform permitting to share instantly short massages constantly among friends. These short massages could be immediately located on his home-page and delivered to his subscribers. The „twttr" was the original code name to this project associated with the name of famous photo-hosting Flickr. Initially, Twitter

was designed as a service permitting to answer the question: „What are you doing now?" The fist tweet written by Dorsey sounded as «Just setting up my twttr» (Dorsey 2006; Dubois w.d.).

Twitter rapidly gained worldwide popularity, with 200 million users as of 2011 generating over 200 million tweets and handling over 1.6 billion search queries per day. It is sometimes described as the „SMS of the Internet". Basing on the number of users registered at different micro-blogging services only the Google service Jaiku is a real rival to Twitter (Twitter w.d.).

What does Twitter as micro-blogging service manifest itself?

Twitter is originated from the verb „to tweet". It is not a traditional blogging service as LiveJournal but more as an operational communicative tool, presenting a hybrid version of various web-services – IM, e-mail, social networking. Currently Twitter service shows brightly the convergent nature of new social media as Facebook or Vimeo. Summing up, Twitter is an online social-networking and micro-blogging service that enables its users to send and read text-based posts of up to 140 characters, informally known as „tweets" (Goroshko 2011; Johnson 2009). When a Twitter user chooses to follow another Twitter subscriber, his/her tweets appear in reverse chronological order on his/her Twitter profile. If one follows 100 users, there is a feed of tweets scrolling down a profile page: followers' status updates, interesting links to music, video files, etc.

Since 2007 Twitter has begun its triumphant widespread in the Internet. A few years later Twitter became so popular that even the word „twitting" has been coined. It means the communication on the Net through this service. Today, on every measure of growth and engagement, Twitter is growing at a record pace. It took 3 years, 2 months and 1 day from the first Tweet to the billionth Tweet. Currently, it takes only one week for users to send a billion Tweets. The average number of Tweets people sent per day, one year ago was 50 million, the average number of Tweets people sent per day, July, 2001 amounts 140 million. By March, 2011 177 million tweets have been sent (Twitter w.d.). There are 572,000 new accounts created on a random day. An average number of new accounts per day over the last month counts 460,000. 182% was the increase in number of mobile users over the past year (Twitter Blog 2011). By now Twitter has 105,779,710 registered users, and 300,000 new users sign up per day. Approximately 60% of them are coming from outside the U.S. Twitter receives 180 million unique visitors per month. 75% of Twitter traffic comes from third-party applications, and 60% of all tweets come from third-party applications. Since the new Blackberry application was launched, it has accounted for 7 to 8% of new sign. There are 600 million search queries on Twitter per day. There are over 100,000 Twitter applications and it gets 3 billion requests a day through its API. 37% of active Twitter users use their phone to tweet. According to Alexa Traffic Rank Twitter occupies the eleventh position among the most popular sites on the web (The top sites on the web, ordered by Alexa Traffic Rank 2011). In the Top 15 Most Popular Social Networking Sites Twitter ranks the second position climbing down only Facebook (Top 15 Most Popular Social Networking Sites 2011). Nielsen.com blog ranked Twitter as the fastest-growing website with a monthly growth of 1,382%. However Twitter has a user retention rate of 40% (Twitter's Tweet Smell of Success 2009). As for The 1000 most-visited sites on the web created by Google service by June 2011 Twitter occupies the 14th place with 160 000 000 unique visitors, and 5 900 000 000 page views among all sites on the web (The 1000 most-visited sites on the web 2011).

As for language distribution of the tweets English-speaking messages prevail (70%) followed by Japanese and Spanish (Herring, Honeycutt 2009: 5). Content analysis conducted by Pear Analytics reveals that pointless babble occupies 40% of tweet messages, conversation – 38%, pass-along values – 9%, self-promotion – 6%, spam and news cover 4% each (Kelly 2009).

Some scholars define pointless babble as a peripheral (boyd 2009) or ambient awareness[1] (Goroshko 2011). It must be valuable feature in learning process as an element of socializing in the classroom.

TWITTER IN E-LEANING 2.0 CONCEPT DEVELOPMENT

Rendering Twitter as a core of the e-Learning 2.0 educational paradigm we should first address contemporary education with a closer look at the role of technology. The literature analysis specifies *communication, mobility*, and *interaction* among leading terms within this paradigm. Simultaneously, the role of context and communicative possibilities of new social media in virtual learning communities support also increase. These trends facilitate in overcoming of cultural and social learning barriers (distance, age and gender of learners, their social backgrounds, etc.) (Kuhlen 2006; Jones 2009; Stein w.d.). Thus, we should further review the communication potential of Twitter in e-Learning 2.0.

Clearly, Twitter in e-Learning fills the gap existing between e-mail and IM services. It combines synchronous and asynchronous messaging. Tom Barret argues that namely this feature is very important since „it allows a teacher the best of both forms of communication and the ability to utilize the power of them using just one application" (Barret 2008). He compares Twitter with the river that is constantly flowing. He thinks also that namely the consequence of tweets constructing a certain communicative surrounding presents the most value for Twitter use in learning (ibid.).

Additionally some educators delineate the main communicative characteristics of Twitter useful for learning:

- High degree of interactivity;
- High degree of *addressivity* serving to catch addressee's attention constantly with the help of «@» symbol, and because the addressee's attention must be recaptured with every new tweet;
- Strong *coherence* that defines through the context of computer-mediated communication (CMC) sustained, topic-focused, person-to-person messaging*;*
- Aimed at *collaboration* through thematic context discussion (Grosseck and Holotescu 2008).

One can stress that a high level of interactivity of this service presents the most important Twitter feature. To be efficient in Twitter it is necessary to be constantly online, „inside this service" (we use the adverb „constantly" taking in mind the frequency of Twitter user's visits per day).

In September 2010 Twitter launched a new version of its site with additional communication features (one can fix the changes in the tweet thread, innovations in design, the expansion of tool bar) that greatly strengthened Twitter opportunities targeted at the integration with the other web 2.0 services such as Flickr, YouTube, Vimeo, etc. It increased its navigability, user-friendliness, and connectedness with the other Twitter users, consolidating both Twitter and social media community in general. It integrates Twitter into Facebook. Currently one can observe a rapid blurring of social boundaries in this media service: the private and personal became open and accessible to all followers or friends. Twitter would combine personal communication with public promulgation. As

[1] This awareness is propagated from relatively constant contact with one's friends and colleagues through social networking platforms on the Net. The term describes the type of omnipresent knowledge one experiences by being a regular user of social media with a constant connection with one's social circle. Clive Thomas argues that this term specifies the situation that is „very much like being physically near someone and picking up on mood through the little things; body language, sighs, stray comments ..." (Thomas 2008). Therefore, in effect two friends who regularly follow one another's digital information can already be aware of each other's lives without actually being physically present to have a conversation (Ambient awareness w.d.).

a result, a great amount of messages are published synchronically in real time format sustaining Twitter operability and interactivity greatly (Herring, Honeycutt 2009: 4).

In 2010 Twitter presented a new function called Hovercards. Hovercards is a feature that can be seen on Twitter.com and now available to users through @Anywhere. It is a small, context-aware tooltip that provides access to data about a particular Twitter user. Hovercards also allows a user to take action upon a Twitter subscriber such as follow and unfollow, as well as toggle device updates. This function increases information richness and the level of linkage with other social media services and the Web in general.

Twitter is a user-friendly service: soon after registration a user is ready to communicate with the Web. This option is very important for learning purposes (e.g. in class-management dynamics). Furthermore, the public access to the tweet thread update expands the learning opportunities of this service drastically.

One can mention about Twitter statistics services (Tweeteffect.com, Tweetvolume.com, Twitteranalyzer.com, etc.) that allow users to obtain the latest information about their account state, behavior of other Twitter subscribers, volume of messages per minute or the most popular tweet-words. E.g., TwitterAnalyzer permits users to research the way your fellow Twitter mates behave. For example, users can see which messages they should answer and which ones ignore. They can also find out the topics of other people's tweets and their activity updates. This will give them an opportunity to decide if other users might be of any professional interest to them.

Tweetwasters.com is a website that tells you how much time you've 'wasted' on Twitter. It looks at how many tweets you've made then calculates the time based on 30 seconds per tweet. It must be important for class management also. The Twitter service Yelpguru helps users to make choices. If users have to make a decision between two options log on to Yelpguru.com with certain user Twitter account create the decision dilemma (Yelp) and list your options that you have to choose form. After the Yelp is created a tweet will be send to all your followers, they can then go and vote on the options users have listed.

All mentioned features make Twitter a unique service in itself among other micro-blogging services and social media permitting users to think over about their communication or learning success through Twitter. These Twitter statistics can be also effectively used for learning purposes.

One of the most valuable Twitter features is that communication starting in Twitter can continue through Jabber[2] or IM. It reveals the high level of social media convergence and can augment connectivity in the whole e-Learning 2.0 model. Due to its feature to post instant updates via different digital devices, Twitter is a perfect communication tool for emergency situations (Twitter w.d.). It is notable that the analysis of social media development shows that this service efficiency is not less important than synchronicity/asynchronicity of communication through Twitter. You have simultaneously two options at once – to reflect and react or interact. The efficiency of communication through Twitter and its integration with other social media make this service a unique electronic environment for negotiating and managing different societal needs, including learning.

Twitter can be used effectively to inform and consolidate virtual community, to make contacts, to socialize, to relax, to present, and to manage social impressions online. All these functions make Twitter one of the most popular open source tools among the other social learning software (Turtle 2009; Twitter tweets for Higher Education; Peachey 2011; Wenger et al. 2005).

In view of the above, to what extent would Twitter impact the development of e-Learning 2.0 model?

[2] Jabber.org is the original IM service based on XMPP (http://xmpp.org/), the open standard for instant messaging, and one of the biggest nodes on the open XMPP network (http://www.jabber.org/index.php/network/). In order to use this service you must create an account by visiting register.jabber.org or one of the other public XMPP services, then download a free client, log in, and start chatting! (http://www.jabber.org/).

SOCIAL SOFTWARE TOOLS USE IN E-LEARNING 2.0

The Web 2.0 technologies and the educational model e-Learning 2.0 can be used with a variety of modern Internet trends: user-generated content, crowd-sourcing, the exponential growth of information volume, the architecture of collaborative learning networking, and transparency. While Web 1.0 users could act as information only, Web 2.0 user serve as user, author, producers and publishers, and, hence, can co-create, edit, monitor evaluate the online content a well as receive a prompt feedback from the online community. Thus, the user-generated content becomes an important channel of social communication which follows the idea of the wisdom of crowd expressed by James Surowiecki that under the same conditions a group of individuals can offer more efficient decision-making solutions as compared to individual solutions suggested by a single most intellectual member of this group (Surowiecki 2004). Thus, Web 2.0 is aimed to meet the user demands more accurately than any Web 1.0 sites (Titova, Filatova 2010; Filatova 2009: 10-11; see also Barret 2008; Grosseck 2009; Parry 2008; Surowiecki 2004).

What characteristics of Web 2.0 concept initiate the birth of e-Learning 2.0?

The rapid growth of user-generated content; the ability to collaboratively edit and co-edit any content and store large volumes of information directly online; the quick widespread of user-friendly interfaces, the availability of advanced audio and video content to enhance to the learning process, etc. (ibid., p.5-9, see also Filatova 2009; Goroshko 2009a; 2009b). A rapid online socialization leads to the strengthening of consultative component in all learning practices also transforming the educational model of e-Learning. Internet becomes more and more a unique platform for unparalleled creativity (Johnson 2009) and learning opportunities (Peachey 2011).

Steve Hargadon analyzing these e-Learning 2.0 practices offers a few points in regard to the move form E-learning 1.0 to e-Learning 2.0:

From consuming - to producing (one can mention currently the word *prosumer* meaning consumer and producer simultaneously in one person), from authority - to collaboration, from expert – to consultant and adviser, from lecture – to discussion and workshop, from access to information – to access to people, from teach about – to teach how to do; from passive learning - to active learning, from presentation – to participation, from formal dogmatic teaching - to teaching through real life, from publication – to conversation, from monologue - to dialogue, from *supply-push learning strategy - to demand-pull learning strategy* (Hargadon 2008; Goroshko 2009a; Grosseck 2009).

Due to these shifts one can observe a substantial withdrawal from teacher-centered model prevailed for a long time on post-Soviet space in favor of learner-centered model which is more sensitive to individual learners' demands, needs and knowledge of learning practices context.

Thomas Cochrane declares that „…teaching and learning innovations are best implemented when informed by learning theory" (Cochrane 2007: 31). The social constructionist approach (*theory of construction*, Piaget 1973; Sharples et al 2006) and *social construction of technology theory* (Bijker 1995)), *community of practice theory* (Wenger at al. 2005), *conversational model of learning* (Lennon 2009);, *blended learning theory* (Alvarez 2005; Bershin 2004), *connectivizm* (Freeman 2006; Garson 2010); *activity theory* (Vygotsky 1978), and *social networking theories* (Downes 2005a; 2005b; Wellman 199) towards viewing learning provide the theoretical foundation for *social software learning* and e-Learning on the whole. However the *theory of connectivizm* constitutes the core of e-Learning 2.0 functioning and development (Sharples et al. 2006; Kop et al 2008; Laurillard 2007). Take notice that this notion presents an umbrella term covering three modern models of learning - *e-learning 2.0*, *mobile learning* and *lifelong learning* (Cohrane 2007; Laurillard 2007; Sharples et al. 2006; Moreno et al 2007).

As you see e-Learning 2.0 possesses a substantial theoretic background for its effectiveness and widespread application.

The literature data analysis reveals seven leading managing tendencies in e-Learning 2.0:

- One should view the learner as a focus on the mobility approach rather than the technology;
- Learning is interwoven with other activities as a part of everyday life;
- Learning can generate satisfying goals;
- The management and control of learning can be split;
- Context is constantly constructed by learners through interaction;
- E-Learning 2.0 can both complement and conflict with official system of education;
- E-learning 2.0 raises deep ethical issues of privacy, ownership and digital rights (Vossen, Hagemann 2007, Grosseck 2009).

Consequently, one can suppose that namely the shift from Web 1.0 through Web 2.0 to Web 3.0 conceptions initiates the shift in learning model from e-Learning to e-Learning 2.0, and launches e-Learning 3.0 development.

WHAT IS WEB 3.0?

The notion of Web 3.0 (or Semantic Web) has been around for a while. Web 1.0 meant an access to the content located on the web in one click. Web 2.0 meant the manifestation of personal inner world on the external media in dynamics where all conditions to generate common shared content, or the model of mutual construction of the reality created. The term Web 3.0 (by Tim Berners-Lee) means the formation of human communicative space with the help of networks technologies which in turn produce the following change in the surrounding environment. This is „a web of data that can be processed directly and indirectly by machines" (Berners-Lee 1999; 2001). Some scholars argue that namely Web 3.0 becomes a tool of humankind self-regulation (Andreev 2006; Artuykhin 2010). The Web 3.0 is interpreted as a web of data, facilitating to understand the semantics or the meaning and social senses of information located on the web. It extends the network of hyperlinked and hypermedia web sites by inserting machine-readable metadata about pages and how they are related to each other, enabling automated agents to access the Web more intelligently and perform tasks on behalf of users. Currently the term „Semantic Web" is often used more specifically referring to the formats and technologies that enable it (Herman 2008). These technologies include the Resource Description Framework (RDF), a variety of data interchange formats (e.g. RDF/XML[3], N3[4], Turtle[5], N-Triples[6]), and notations such as RDF Schema[7] (RDFS) and the Web Ontology Language[8] (OWL), all these means are targeted at providing a formal description of concepts, notions, terms, relationships within a given subject domain. Many of the mentioned technologies already exist and are actively used in various contexts, particularly those dealing with the information that encompasses a limited and defined domain, and where sharing data practice is commonly used, such as scientific research or data exchange among businesses. In addition, other technologies with similar goals have emerged, such as micro-formats. Nevertheless, we can delineate that the main goal of Web 3.0 is to drive the evolution of the Web by enabling users to find, generate, share, and combine information more efficiently. The Semantic Web is a vision of information that can be readily interpreted by machines, so they can perform more of the tedious work involved in finding, combining, and acting upon information on the web. Tim Berners-Lee

[3] http://en.wikipedia.org/wiki/Resource_Description_Framework
[4] http://en.wikipedia.org/wiki/Notation_3
[5] http://en.wikipedia.org/wiki/Turtle_%28syntax%29
[6] http://en.wikipedia.org/wiki/N-Triples
[7] http://en.wikipedia.org/wiki/RDF_Schema
[8] http://en.wikipedia.org/wiki/Web_Ontology_Language

originally expressed the vision of the Semantic Web as follows: „I have a dream for the Web [in which computers] become capable of analyzing all the data on the Web – the content, links, and transactions between people and computers. A 'Semantic Web', which should make this possible, has yet to emerge, but when it does, the day-to-day mechanisms of trade, bureaucracy and our daily lives will be handled by machines talking to machines. The 'intelligent agents' people have touted for ages will finally materialize" (Berners-Lee 1999).

Discussing positive features of Semantic Web we cannot but speak about challenges in the use of this technology. Some of the challenges for the Semantic Web include vastness, vagueness, uncertainty, inconsistency, and deceit (Lukasiewicz, Straccia 2008) that cannot but impact e-Learning. It keeps at thinking about other alternatives. Computer scientists argue that automated reasoning systems will have to deal with all of these issues in order to deliver on the promise of the Semantic Web.

In what way the conceptual shift from web 1.0 through web 2.0 to web 3.0 can impact learning?

E-LEARNING 3.0

Steve Wheeler points out that that there will be four key drivers in e-Learning 3.0: distributed computing, extended smart mobile technologies, collaborative intelligent filtering, 3D visualization and interaction (Wheeler 2008).

He also stresses that e-Learning 3.0 must become more self-organized due to the expanded access to learning tools and technologies which help to make it more individually orientated also.

Simultaneously, the appearing of *cloud computing*, the use of *mash-up* and *bricolage techniques*, and expanded opportunities of *data processing and storage* make e-Learning 3.0 more independent from centralized institutional web-sites. It initiates also the disappearing of virtual learning environments as unified consolidated resources concentrated on the one place (platform).

Derek Bird (2008) considers that mobile technologies form the basis of e-Learning 3.0. He stresses that e-Learning 3.0 is all about mobile technologies as it needs to be an ubiquitous access to tools, services and learning resources covering peer and expert learning group. The scholar claims that „digital divides of the future will not focus on 'have and have not' socioeconomic divides, but will more likely be 'will and will not' psychological divides, and 'can and cannot' skills divide" (ibid).

Wheeler (2008) specifies also the truly collaborative nature of e-Learning 3.0 through all contexts due to predictive filtering and massive multi-user participative features. With the help of such primitive filtering tools as RT, DM, @ and hash-tagging users can work smarter and more collaboratively as Wheeler predicts (Ibid).

Complementary 3D visualization and multi-touch screens make e-Learning more visual and user-friendly. It facilities to solve a wide range of tasks (perfecting file-management, add motor-skill interaction, more effective exploration of virtual spaces and objects). However mentioning 3D visualization one can add one more 'D' and speak about the time. In general, the fourth dimension is the dimension we live in, containing the dimensions *length*, *height*, *width* and *time*. This dimension is rarely spoken of, because most people don't view time as dimension at all, but namely this dimension in e-Learning 3.0 helps learners to come closer to 'anytime anyplace learning' and provides intelligent solutions to proper web surfing, management of learning and organization of content.

John Moravec (2009) suggests a comparative classification scheme for e-Learning 1.0, e-Learning 2.0 and e-Learning 3.0 models. It looks like:

	e-Learning 1.0	e-Learning 2.0	e-Learning 3.0
Meaning is	Dictated	Socially constructed	Socially constructed and Contextually reinvented
Technology is	Confiscated at the classroom door (digital refugees)	Cautiously adopted (digital immigrants)	Everywhere (ambient, digital universe)
Teaching is	Teacher to student	Teacher to student and student to student (progressivism)	Teacher to student, student to student, student to teacher, people-technology-people (co-constructivism)
Classrooms are located	In a building (brick)	In a building or online (brick and click)	Everywhere (thoroughly infused into society: cafes, bowling alleys, bars, workplaces, etc.)
Teachers are	Licensed professionals	Licensed professionals	Everybody, everywhere
Hardware and software supply	Are purchased at great cost and ignored	Are open source and available at lower cost	Are available at low cost and are used purposively
Industry views graduates as	Assembly line workers	As ill-prepared assembly line workers in a knowledge economy	As co-workers or entrepreneurs

(adopted from Moravec 2009: 33)

Following this chart one can see that within e-Learning context technologies change the classroom dynamic, main learning stakeholders' roles and responsibilities, students' expectations for learning. However, the transformation in meaning generation presents the most important shift observed through these changes.

Wheeler emphasizes that „If Web 1.0 was the 'Write Web' and Web 2.0 is the 'Read/Write Web', then Web 3.0 will be the 'Read/Write/Collaborative Web'" (ibid.). But we think that Web 3.0 will be 'Read/Write/Collaborative/Intelligent Web' when the machine facilities the human thinking greatly and Twitter must be an effective tool in this process due to a number of its communicative conceptual characteristics as a means of communication; a place to share and consume information, a new real-time search engine, a service for Web users, a platform o debate, a tool for listening and analyzing, a perfect traffic generator, an excellent means to meet new people and create new connections, and talk about what you are doing right now (Pouy 2009: 22).

Pouy declares that Twitter is a new means of communication because it allows for analyzing people's thoughts, perceptions and interests in real time. He thinks that it is the only real-time search engine currently available. Twitter is growing exponentially and can be a model for other platforms. Since it has an exemplary acceleration process allowing for relaying new information fast, re-tweeting vs. content creation Twitter is certainly not a tool that is massively used by the general public, such as Facebook or YouTube, but due to its qualitative audience, where users also are opinion leaders or potential ones, namely Twitter can be used as a sophisticated means or organizing platform for all types of organizational communications (ibid: 39).

The question is posing „What is the main goal of using Twitter in e-learning 3.0?"

We think Twitter will bridge or facilitate the transition between e-Learning 2.0 to 3.0.

In fact all basic requirements claimed by the Bologna educational process about effective learning that must be:

- *learner-centered* (building on the skills and knowledge of students, helping them to reason from their personal experience);
- *knowledge-centered* (the learning curricula are formed from sound validated knowledge with inventive use of concepts and methods);
- *assessment-centered* (evaluation must be adopted to the abilities of learners, providing diagnosis and formative guidance basing on success);
- *community-centered* (basing on mutual learning co-sharing communities) (Sharples, Taylor, Vavoula 2006: 2).
- Notice that all mentioned requirements could be applied to the Web 2.0 functioning and probably will be augmented in web 3.0 concept.
- „What is the main role of Twitter through e-Learning 2.0 and 3.0 contexts".

THE USE OF TWITTER IN LEARNING

Sergei Samoilenko (2011) addresses the use of Twitter at U.S. universities: „The Forensics Team in the Department of Communication at George Mason University uses Twitter during their practice sessions while perfecting impromptu (improvisation) skills. For example, an impromptu speaker receives twitts from the audience a few minutes prior to his/her presentation in order to seamlessly create a half-an-hour monologue based on the bits and pieces prompted by the Twitter community.

In my new *Multimedia Public Relations Techniques* course we actively use *Twitter Grader* to evaluate the efficiency of students' micro-blogging as a part of their audience involvement efforts. This approach helps me better assess the quality of public interaction initiated by my students during public relations campaigns. It also serves as a good indicator of their relationship-building skills and the level of commitment for a specific class project.

My colleague Mike Wesh from Kansas State University uses Twitter, Twittpic and Flickr to address some real-life challenges in the classroom. For examples, they recently assisted local landscape designers to draft maps for new biking and skating roads by exploring with his students different parts of their university town and then geo-tagging and posting pictures of selected locations online.

Thus as an effective learning tool Twitter can be used:

- To communicate with learners;
- To effectively manage educational projects;
- To assess various learning practices,
- To developed various learning skills (critical thinking, collaborative writing, language skills, etc.);
- To provide communication platforms for learning and academic activities (trainings, seminars, conferences, presentations, workshops organization);
- As bibliographic tool and search engine;
- As an auxiliary means to debate, discuss, negotiate, etc. (Moravec 2009; Grosseck, Holotescu 2008; Stein 2007).

Summing up one can say that Twitter is used to develop certain communication skills, to manage learning process online, to search information on the web more effectively.

Svetlana Titova and Alla Filatova provide a slightly different assessment of Twitter educational potential (Titova, Filatova 2010: 58-60). They view Twitter primarily as an organizational tool in classroom activities (ibid: 59).

Some scholars point out the following positive features in the use of Twitter in education:

- To expand learning and informational potential for all educational stakeholders (both students and teachers);
- Change classroom dynamics;
- To facilitate in conducting classroom discussions;
- It keeps tracking rigidly on the topic of classroom discussion;
- To strengthen connectivity and collaboration in learning process, building into definite contexts, certain social surroundings, consolidate feeling of co-sharing with global community;
- To develop cognitive skills of learners, form wider outlooks on the surrounding world, permitting to comprehend it deeper;
- To make learning process more user friendly and sensitive to learners' backgrounds;
- To make learning process more flexible in learning strategy choice and building or strengthening university curricula (Goroshko 2009b; Grosseck, Holotescu 2008; Barret 2008; Parry 2008).

Basing on this list of positive Twitter items one can argue that Twitter can be used simultaneously as an object and subject of learning.

Gabriela Grosseck and Carmen Holotescu discuss also negative features in Twitter use:

- The Twitter user is rather time-consuming activity;
- It distracts learners' attention greatly from other parts of learning process;
- It is addictive technology;
- To reduce learners grammar skills due to the text message volume restriction;
- To sustain the circulation of unreliable or unchecked information as grape-vine media (Grosseck, Holotescu 2008; Dawson 2007; Davis 2007; Turtle 2009).

Simultaneously Twitter shares all dysfunctional features alike to other Internet services (spam, loss of privacy, high level of mistrust to the information spread through Global Net, etc.) (Artjuhin 2010).

The analysis of positive and negative features in the use of Twitter in learning enlightens an ambivalent and contradictory character of the social media and e-Learning 2.0 model. On one hand, they strengthen the illusion of involvement into global education development and make social stratification not so obvious (Goroshko 2009a).

On the other hand, Twitter is a time-consuming technology with a format that does not meet all users' demands. Also, Twitter subscribers possess different communication skills, abilities and knowledge which must be taken into account. It is not an age-sensitive technology and cannot be used effectively in Lifelong learning classes for example since among older users Twitter is not so popular service as an e-mail for example (Blog Twitter 2011).

At any rate, the effective use of Twitter in education requires an improved methodological foundation. Some scholars propose to adopt certain measures to use this service successfully in learning. Before using Twitter in the classroom it is recommended to think over the learning topic to debate through Twitter, about the language of instruction in the class, check learners' computational skills and experience in Twitter use. It is better to exploit Twitter firstly in small pilot groups. It is necessary to sustain self-discipline, self-reflection and self-motivation through all Twitter classes. A special attention must be given to the assessment of learning results (Twitter tweets for higher education 2007). Grosseck and Holotescu argue also that „Twitter is meaningless without a network, which must be willing to share, to engage, to provoke, to discuss" (Grosseck, Holotescu 2008), to network, to collaborate. Twitter is needed to make connections between learner

and information or another learner (Parry 2008). And may be the most proper advice for all learners and teachers using Twitter can be formulated as: Your learning experience obtained through this service has to follow the ethics of online collaboration and support (Ibid.). We can also recommend Twitter as a tool providing a peculiar social care in learning.

CONCLUSIONS

In conclusion we can stress that every technologically advanced epoch predetermines a new educational paradigm. In the era of Guttenberg the textbook was taken as a core in education with its main goal to transmit the knowledge and its canons but the last twenty years of digital technologies development demonstrate that the educational system has been refocused on the knowledge construction through information retrieval, modeling and interaction. The latest tendencies in the education development in the 21 century show that education becomes a conversation through contexts (Barret 2008). It becomes possible only through constant interaction among a man, technologies and society.

Schematically the shift from e-Learning 1.0 through e-Learning 2.0 to e-Learning 3.0 can be presented in the following Table 1.

Table 1 „Paradigmatic Shift: From e-Learning 1.0 through e-Learning 2.0 to e-Learning 3.0"

Direction to Shift	e-Learning 1.0	e-Learning 2.0	e-Learning 3.0[9]
1. Focus on knowledge	Strong[10]	Tendency to weakness	Tendency to strengthening
2. Assessment of knowledge obtained and learning process effectiveness generally	Average	Tendency to strengthening	Changes are unknown. However more probable that the forms of assessment will be changed and its object to some extent
3. Professional community building with the following successful integration of learner into professional environment	Weak	Tendency to strengthening	Tendency to strengthening
4. The way of knowledge transmission	Passive	Active	Active and interactional, more social
5. The shift from knowledge consumption - to knowledge generation	Weak	Tendency to strengthening	Changes are unknown
6. The shift from authority in learning process - to collaborating and networking through context	Weak	Tendency to strengthening	Tendency to strengthening

[9] Relating to e-Learning 3.0 by this moment we can predict only certain tendencies and future perspectives in its development as this model is being only formed beneath our eyes.
[10] We indicate only the level in tendency manifestations according to three-point scale (weak, average, strong) (see bibliography to this paper).

Direction to Shift	e-Learning 1.0	e-Learning 2.0	e-Learning 3.0[9]
7. Shift from expert - to consultant and advisor	Weak	Tendency to strengthening	Tendency to weakness
8. Shift from lecture - to discussion, workshop, i. e. the strengthening of consultative component in learning	Weak	Tendency to strengthening	Changes are unknown
9. Shift from access to information - to access to people	Weak	Tendency to strengthening	Tendency to strengthening
10. Management of learning	Strong	Tendency to strengthening	Changes are unknown
11. Shift from passive learning - to active learning	Weak	Tendency to strengthening	Changes are unknown
12. Shift from presentation – to participation	Weak	Tendency to strengthening	Tendency to strengthening
13. Shift from publication - to conversation through context	Weak	Tendency to strengthening	Tendency to strengthening
14. Formality in learning (from more formal – to learning through real life)	Weak	Tendency to strengthening	Changes are unknown
15. Shift from the strategy *demand - push* – to the strategy of *support – pull*	Average	Tendency to strengthening	Tendency to weakness
16. Sociality in learning	Average	Tendency to strengthening	Tendency to strengthening
17. Mobility	Weak	Tendency to strengthening	Tendency to strengthening
18. Interactivity	Weak	Tendency to strengthening	Tendency to strengthening
19. Influence of context	Strong	Tendency to strengthening	Tendency to strengthening
20. Flexibility	Weak	Tendency to strengthening	Tendency to strengthening

Table 1 demonstrates that the move from e-Learning 1.0 through e-Learning 2.0 to e-Learning 3.0 is not so simple. The analysis of the moves between e-Learning 1.0 to e-Learning 2.0 is beyond the scope of this paper (Hargadon 2008; Goroshko 2009a; Grosseck 2009). We want to review only the tendencies generated by the shift between e-Learning 2.0 to e-Learning 3.0.

Evidently, e-Learning 3.0 will be more focused on obtaining the professional, expert knowledge. It should be more flexible, mobile, interactive, targeted directly at individual learner's needs and demands. It will facilitate more actively the learner's integration into the professional community. It helps to build these communities according to the concept: „*Think globally, act locally*". Within the contexts of Global Village and e-Learning 2.0 one can expand the notion of professional learning communities and add teacher communities, administrator communities, student communities, school/real world communities and cross-cultural communities.

The modern tendencies in education demonstrate clearly that our society becomes gradually *knowledge society* with interpreted information, personally- and socially-constructed meanings where chaos and ambiguity are managed (Cross 2007).

One can suppose the learning in this society will be not so hierarchically constructed but organized as a network and dispersed among professional expert communities or social groups formed on the base of common co-shared goals and communicative learning practices.

There is a lot of unknown in this e-Learning 3.0 model. Currently it is rather difficult to predict all directions where its development goes. We cannot know for sure characteristics in its management, forms of assessments, formats of instructions and many other things. Only the future practice based on the Semantic Web development will be able to specify the latest tendencies in e-Learning 3.0 evolution. But we are trying to predict the impact of Twitter on such tendencies.

Our analysis (prediction) of theoretic and empiric data is generalized in the Table 2.

Table 2 „Twitter Use Impact on the Shift between e-Learning 2.0 to e-Learning 3.0"

Direction to Shift	e-Learning 2.0	e-Learning 3.0	Use of Twitter
1. Focus on knowledge	Tendency to weakness	Tendency to strengthening	Strong
2. Assessment of knowledge obtained and learning process effectiveness generally	Tendency to strengthening	Changes are unknown. However more probable that the forms of assessment will be changed and its object to some extent	Strong
3. Professional community building with the following successful integration of learner into professional environment	Tendency to strengthening	Tendency to strengthening	Strong
4. The way of knowledge transmission	Active	Active and interactional, more social	Strong
5. The shift from knowledge consumption - to knowledge generation	Tendency to strengthening	Changes are unknown	Obscure
6. The shift from authority in learning process - to collaborating and networking through context	Tendency to strengthening	Tendency to strengthening	Strong
7. Shift from expert - to consultant and advisor	Tendency to strengthening	Tendency to weakness	Neutral
8. Shift from lecture - to discussion, workshop, i. e. the strengthening of consultative component in learning	Tendency to strengthening	Changes are unknown	Strong
9. Shift from access to information - to access to people	Tendency to strengthening	Tendency to strengthening	Average

Direction to Shift	e-Learning 2.0	e-Learning 3.0	Use of Twitter
10. Management of learning	Tendency to strengthening	Changes are unknown	Obscure but it is clear that must be different
11. Shift from passive learning - to active learning	Tendency to strengthening	Changes are unknown	Neutral
12. Shift from presentation – to participation	Tendency to strengthening	Tendency to strengthening	Strong
13. Shift from publication - to conversation through context	Tendency to strengthening	Tendency to strengthening	Strong
14. Formality (high theorization) in learning (from more formal – to learning through real life)	Tendency to strengthening	Changes are unknown	Obscure but it is clear that must be different
15. Shift from the strategy *demand - push* – to the strategy of *support – pull*	Tendency to strengthening	Tendency to weakness	Obscure
16. Sociality in learning	Tendency to strengthening	Tendency to strengthening	Strong
17. Mobility	Tendency to strengthening	Tendency to strengthening	Strong
18. Interactivity	Tendency to strengthening	Tendency to strengthening	Strong
19. Influence of context	Tendency to strengthening	Tendency to strengthening	Between Average and Strong
20. Flexibility	Tendency to strengthening	Tendency to strengthening	

This table demonstrates that namely the micro-blogging service Twitter which is able to combine both networking and pure blogging features initiates this shift rather effectively. The popularity of Twitter impacts effectively the e-Learning 3.0 development. It implements an expert knowledge in this model providing more flexibility, hyperinteractivity, and operability to all global learning practices. There is a great potential in the use of Twitter to support teaching and learning in speaking to global network of fellow professionals, to interact online with virtual and real classes, to manage effectively the whole learning. Barret stresses that the role of Twitter in education is unique as Twitter presents conversation through global community, between teachers and learners within global learning context or rather *Beyond* (Barret 2008). We should only be aware of the following question: „Where will this conversation take us and how away?"

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