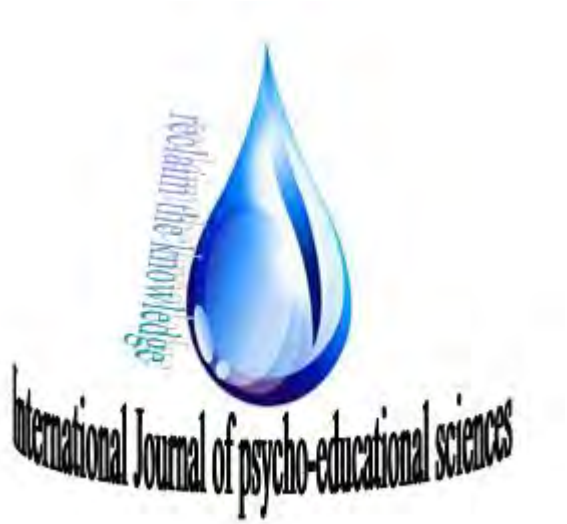


The Potential of Interactive Media and Their Relevance in the Education Process

Dorota Siemieniecka * Wioletta Kwiatkowska Kamila Majewska ****
Małgorzata Skibińska **** [1]**

[1] * Assoc. Prof., PhD, Vice Dean of Faculty of Education, Chair of Disability Studies, Nicolaus Copernicus University, Lwowska Str. 1, 87-100 Torun, Poland e-mail: dsiemien@umk.pl
** Assist. Prof. PhD, Chair of Didactics and Media in Education, Faculty of Education, Nicolaus Copernicus University, Lwowska Str. 1. , 87-100 Torun, Poland e-mail: wkwiatka@umk.pl
*** Assist. Prof. PhD, Chair of Didactics and Media in Education, Faculty of Education, Nicolaus Copernicus University, Lwowska Str. 1. , 87-100 Torun, Poland e-mail: majewska@abs.umk.pl
**** Assist Prof. PhD, Chair of Didactics and Media in Education, Faculty of Education, Nicolaus Copernicus University, Lwowska Str. 1. , 87-100 Torun, Poland e-mail: gosiek@umk.pl

Abstract:
The article discusses the importance of interactive media in the teaching-learning process in the light of selected educational theories and research. The potential of social media to initiate and develop interactive learning communities was also demonstrated. Attention was drawn to the need for an appropriately prepared teacher, ready to creatively initiate educational situations involving interactive media and supporting student activities.

Keywords: education, interaction, interactivity, information skills, social media

Introduction

In education, we can see increasingly evolving trends, manifested by the rapid development of interactive media and their use by a human being, taking into account his active participation. Narration has been transferred to an interactive environment in cyberspace or applications enabling exploration and multi-sensory learning in a fuller and more conscious way. Traditional tools do not appeal to today's students, who rely on modern technology. They have become insufficient to adequately meet their needs while stimulating their thinking (Kwiatkowska, 2013, pp. 256-259). We are witnessing educational and socio-cultural changes with a focus on learning from digital resources, the implementation of education programs in various forms, the creation of interactive environments for the education of different groups of people, and the development of learning communities. Due to the new needs and expectations, educational practitioners are increasingly eager to seek inspiration in theories of education, media education, and even cognitive science, propagating the ideas of active cognition, experimentation, experiential learning, mutual communication and their cognitive role in knowledge creation (e.g. J. Dewey, E. Claparede, J. Piaget, L. Wygotski, J. Bruner et al.).

The right foundation for the ideas discussed here may be the concept of *symbolic interactionism* which is based on reciprocal human communication with symbols, and its effectiveness is conditioned by the ability to reconcile their meaning and sense (cf. Sipińska, in: Pilch 2003, pp. 404-412). There are two main assumptions here, namely: 1) the reciprocal action takes place with a variety of verbal symbols, language, non-verbal symbols, signs, sounds; 2) the individual is not only an imitator, but also a creator; he creates actions, is aware of himself, makes choices, makes decisions, is capable of self-reflection and self-evaluation (Ibid., p. 411). Nowadays, people both in the real and virtual world communicate with a recognized canon of symbols, expand it, interact with each other, read the message, and thus create its next meaning. The theory of symbolic interactionism can be used to explain and describe the problem of interactive media potential and its role in education.

Interactive Media in the Light of Selected Theories and Research

The term *interactive media* has been a very trendy and meaningful concept for a long time (Majewska, 2015). Interactivity, in the terms adopted here, means the potential of technical devices for maintaining a human-digital relationship with the required aspect of participation and interaction[2]. In turn, the concept of *interaction* in the teaching process itself is understood as "the kind of interaction between a teacher-educator and a student or a group

[2] Understanding is reflected in literature in various ways, cf. Z. Wałaszewski, Interaktywność gier komputerowych, [in:] Nowe media w komunikacji społecznej w XX wieku, ed. Maryla Hopfinger, Oficyna Naukowa, Warszawa 2002, p. 404; interactivity is also understood more precisely as "the relation with the subject of attention, in which it is shaped as an object of perception of an extended meaning - together with the process of interaction" (G. Karwasz, J. Kruk, 2012, p. 17). In the context of communication - interaction is accepted as the negotiation of meanings (cf. S. Szykowna, 2008, p. 35).

of learners" (Pilch, 2003, p. 398). The *technological interaction* is also mentioned which is related to the impact of technical means and innovative communication methods (Wieczorkowski, as cited in: Pilch 2003, p. 400). In information technology interaction means "the mode of operation consisting in alternating exchange of information between the user and the computer - the user issues commands to the computer, whose effects can be monitored and used to make further decisions" (Ibid, p. 399). Human interaction with the computer becomes a key mechanism for acquiring knowledge, education, furthering education, developing interests and passions, and realizing the idea of lifelong education. The long-term empirical research on the use of media and digital technologies has confirmed the need to use activation methods with a high level of interaction (L. Leja, W. Strykowski, B. Siemieniecki, S. Juszczyk, M. Kozielska, K. Wenta, M. Furmanek, W Osmańska-Furmanek and others).

The impact of connectivism on the perspective of computer education is also worth noting. Connectivism draws its assumptions from social constructivism and cognitivism. One of the methods described in the literature is MIT (minimally invasive teaching). It was developed by Sugata Mitra on the basis of the famous "Hole in the Wall" experiment. The researcher believes that effective teaching requires social interaction and problem-based teaching. The stages of acquiring IT competencies are as follows: 1. one child tests the GUI (graphical user interface), then the other children watch his random discoveries; 2. the children repeat the discovered functions; 3. the other children show their own discoveries; 4. all children repeat their discoveries and describe them based on their own experience, 5. children will remember the discovered procedure, which increases the effectiveness of their learning (Mitra, 2000).

Mitra emphasizes that effective learning requires the proper selection of sources and minimal guidance given by the teacher only when the students stop and repeat the same activities without seeing a solution. But the teacher's hints open up only a certain possibility, and are not a final solution to the problem (Mitra, 2000).

This model has much to do with the theory of social learning by Albert Bandura. In the literature, the following experiment is known: the children were divided into experimental and control groups. In the experimental group, the children observed a model who used different objects to beat a doll. In the second group, the model showed no aggression towards the doll. As a result, the children in the control group did not pay attention to the sharp objects, they played with the doll, but in the experimental group children not only beat the doll in the manner of the model, but also themselves invented further aggressive behavior with the use of these objects (description of the experiment on page: Youtube). As a result of his research, the author emphasized that the process of acquiring knowledge requires activation of attention, which should be directed to the subject or activity. This interaction can be described as cognitive. It occurs between a human being and the surrounding environment. Thus, effective education requires a well-designed environment for relation, interaction and dialogue (Forster, 2007).

Interactivity should not be limited in an educational context to clicking a mouse button, reading a text, or viewing images. There are various variants of interaction, differing in the degree of user control over the outcome of the operation, as well as the degree of involvement, modality of the response, task type, software type and complexity of the project (cf. Szykowna, 2008, pp. 30-31). We can also talk about the complexity of interaction because of its duration: *current / synchronous - immediate interaction* - when a teacher and student perform a task together or use the same program, e.g. videoconferencing systems, multimedia

systems; *delayed / asynchronous interaction* - checking tasks, e-mails, etc. (Wieczorkowski, as cited in: Pilch, 2003, p. 400).

Let's use here the example of studies focused on the activity of learners who have the opportunity to participate in the project while exercising control over it and taking responsibility for the result. The teacher, in this case, is limited to the role of the initiator and moderator of the creation of the work, raises questions and signals possible problems, according to which learners are to set goals and stages, implement the plan through action and present the final result. Such a strategy can be used, for example, to create a hypertext photo essay, a thematic blog, a team project, co-creation of images and animations, interaction in wiki services or chat rooms, etc. The development of interactive media extends the possibilities of participation and interaction, leading to significant changes in the final shape of the work, as well as creating opportunities for new experiences and reflections.

The mentioned varieties of interactivity define the theoretical models of communication, where various carriers determine the message, giving it certain meanings, requiring the recipient to interpret them properly (cf. Siemieniecki, 1993; 2007, pp. 176-192). Due to the emancipation of the media and modern technologies, there has been the change in the scope and quality of interaction depending on many factors. Certainly we are dealing with a new quality of user relationships with the media, and thus a new perception of their educational potential.

The human being who uses the media not only actively searches for information, but creates and transforms them, giving them sense and meaning, and marks his presence in the virtual world. An increasingly common model of multimedia teaching is the structure of nodal points. Information in nodes differentiates its level (it may be more or less advanced). George Simens emphasizes the multimodal nature of such resources, which are co-created by network users. It often happens that these websites associate people with similar interests, passions, creating online communities.

At the same time, the people accept both the role of the receivers and the creators, leaving the passivity for active co-creation (cf. Szykowna, 2008, p. 29). They are agitated and psychologically and physically engaged (ibid, pp. 46-47). With the development of interactive media, we deal with the ever-improving storage and processing of patterns of interaction with the possibility of designing and embedding in the artificial body (robots), and going beyond the human body and its limitations expressed through ever-better interfaces and forms of avatars and agents (cf. Kerckhove, 2001, pp. 40-41). At present, we deal not only with human-computer communication, but also with communication between objects. In the future we will deal with programs that read non-verbal communication of man. According to Rosalinde Picard, emotionally intelligent devices will be able to read voice and facial expressions to see how a person feels at a given moment. Computers will then interact with each other based on emotions (Sollinger, 2015).

The constant change, the need to search for sense and meaning, forces society to continuously learn, including in the Internet.

Interactivity in social media: educational potential

The importance of interactivity in learning is emphasized in modern theories and concepts of education. Constructivism treats learning as a social process in which knowledge is actively constructed as a result of social interaction, while connectivism recognizes that the digital and network nature of everyday life requires learning that is realized by interacting with various sources of knowledge and participating in communities that share interests, as

well as social networks, and group tasks. The important role of technology in the learning process is also highlighted (Majewska, 2012, 2016).

The digital media, including the Internet and social media, in addition to information and communication functions, are becoming increasingly social, although they do so in a different way. Traditional societies were based on direct interactions of people living close to each other, and contemporary people more and more often build relationships by complementing direct communication with mediated communication. This allows them to establish contacts and create relationships, even within non-local groups (virtual communities). Jan van Dijk calls this type of relationship the *articulated relation*. It is built according to the concept of symbolic interactionism as a result of mutual communication, using symbols, whose meaning and sense are based on mutual agreement. With information and communication technologies, it is possible to cross the dimensions of time and space and to create virtual times and places, which allow people to act, receive information and think simultaneously at the global and local level (cf. van Dijk, 2010, pp. 56-61).

Manuel Castells, in his theory of network society, justifies this phenomenon by the appearance of the material basis of coincidence, the so-called *space of flows*, i.e. the material infrastructure that enables functional individuals to organize themselves into one whole operating in real time, regardless of their geographical location. The flows are understood as "purposeful, repetitive, programmable sequences of exchange and interaction between physically disjointed positions held by social actors" (Stalder, 2012, p. 170, p. 178). Residents of traditional places leave them to meet their traditional needs (i.e. information, communication, transaction, entertainment, educational, social and identity) in a modern and convenient way by acting individually or in a community. However, it is important to emphasize that in order for these new forms of personal fulfilment to be effective, one needs to master digital competences and skills

- of communication - to, using language signs, speech, and other means of expression, assimilate and creatively transform the new virtual reality and communicate effectively through the digital media, thanks to the ability to understand the intentions and meanings that underlie the actions and acts of speech of the participants of interaction (cf. Kron, Sofos, 2008, p. 55);
- of information - to learn effectively through digital media, thanks to having a personal ability to recognize when information is needed, as well as the ability to locate, evaluate and use the needed information effectively;
- of media - to consciously and effectively use digital tools for effective communication, learning and constructive entertainment through the ability to decode, analyze, evaluate and use media in various forms;
- of network - to work effectively on the Internet thanks to the ability to search for information, navigate through hypertext, evaluate web content, and collect information;
- visual skills - to understand and use images in different areas of human activity, thanks to the ability to think, to learn and express oneself through images (cf. Skibińska 2012, p.147).

Mastering the above mentioned skills is the basis and the requirement for effective action and interaction between people, as well as between people and the media in the space of flows, which in the context of educational activity of network users can be called the space of educational flows. Educational flows can be understood analogously to the Castells' definition of flows, as *purposeful, repetitive, programmable sequences of exchange and*

interaction between physically disjointed positions held by social actors for educational purposes.

The material infrastructure that would allow for implementation of educational flows on the Internet could be social media.

Numerous studies have shown the benefits of online social interaction in learning by:

- access to peer and expert knowledge,
- opportunity to receive feedback from teachers and peers,
- expressing own thoughts, discussing and questioning others' ideas,
- cooperation to find a group solution to a problem, so students develop critical thinking skills, as well as the ability to self-reflect and construct knowledge (Jovanovic, Chiong, Weise, 2012, pp. 39-40).

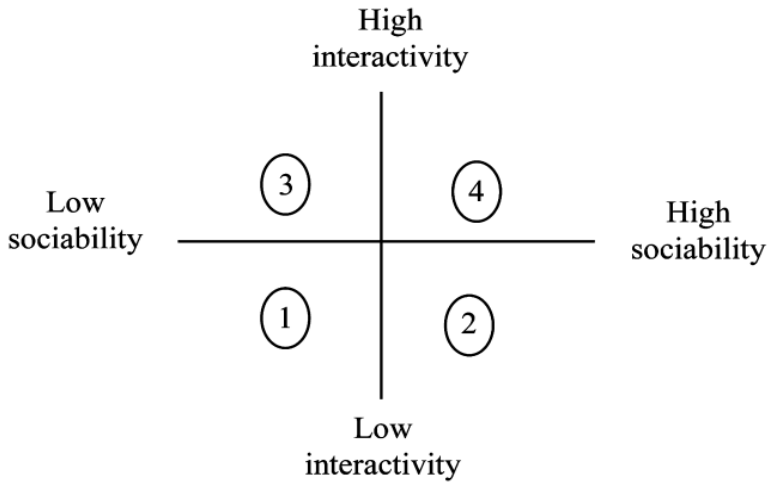
However, according to academics and practitioners of teaching it is difficult to interact in the educational environment. This is often due to improper course design and / or lack of student cooperation skills, i.e. decision making, consensus building, and conflict management. Therefore, careful planning of teaching and learning with teacher support is required to achieve the appropriate level of benefit from the use of social media in the learning process (ibidem).

Andreas Kaplan and Michael Haenlein define social media as a group of online applications based on the ideological and technological foundations of Web 2.0 that enable the creation and exchange of user generated content (Kaplan, Haenlein, 2010, p. 61). The main policy of 2.0 websites is to provide users with the greatest possible interaction, integration and personalization of web pages. Among the technical and social features of the mentioned websites are interactivity, user generated content, possibility of making contacts, sharing and co-creating, creativity, wiki mechanism, blogs, podcasting, folksonomics, screencasts, webcasts, and groupware and open-source software (Wadróbski, Wolanicka, 2010, p. 99). The main benefit of social media is the ability of author controlling of the generated message at the level of each form of content (text, image, sound) published in social media.

Kaplan and Haenlein included among the most important types of social media the following: collaborative projects (e.g. Wikipedia), blogs, content communities (e.g. YouTube, Flickr, Slideshare), social networking sites (e.g. Facebook), worlds of virtual games (MMORPGs - a type of role-playing game in which a large number of players can play online, e.g. World of Warcraft) and virtual social worlds (e.g. SecondLife) (cf. ibidem, pp. 61-64). It should be noted here that the technical characteristics of the social platforms are just the basic criteria for fulfilling the functions assumed by the designers, i.e. the production and exchange of content and the building of virtual communities. Their actual implementation depends mainly on the level and quality of activities and interaction of the users themselves.

Information exchange is the core of every interaction. Yaron Ariel and Ruth Avidar argue that the kind of information exchange (non-interactive, reactive or interactive) in social media determines the level of interactivity of the platform, and the number of users and types of activity on the platform determines its level of "sociability" hereinafter referred to as the level of community. The authors presented a model (Figure 1) illustrating the relationship between information, interactivity and social interaction in the context of social media. As it was previously suggested, social media platforms serve as technologies that promote different levels of social engagement and participation. The real engagement of users, their interactions and activities carried out on the platform determine the level of sociability (Ariel, Avidar, 2015, p. 26).

Figure 1. *Model of the relationship between information, interactivity and sociability of social platforms*



Source: Ariel, Avidar (2015) p. 27.

The analysis of each type of relationship indicates that the characteristics of social media, i.e. interactivity and sociability, are two different constructs defined by the number of users and the level of their interactions (as cited in: ibidem):

1. low level of sociability and low level of interactivity - the platform has a small user base and content exchange, the information is mostly non-interactive (not related to previous content) or reactive (refer to previous entries but do not encourage further interaction, limited only to tag or like),
2. high level of sociability and low level of interactivity - the platform has many users and a lot of content exchange, but the content is mostly non-interactive or reactive (e.g. lots of likes and shares, posts on the platform, but their content does not refer to previous entries, nor encourages further interaction),
3. low level of sociability and high level of interactivity - the platform brings together a small number of users and inconsiderable content exchange, mostly interactive (such as niche forums where several members discuss the issue, referencing their positions, commenting and asking questions, supporting others).
4. high level of sociability and high level of interactivity - "ideal" status of social media - many users are active and there are many interactive content exchanges (e.g. Facebook page of a well known person with many "friends" interacting with each other, exchange information concerning events, ask questions, and comment on their posts).

From the above it can be concluded that the potential of social media is conditioned by the level of engagement of participants in the interaction, reinforced by the right community building efforts, where users decide to engage and maintain interactivity in both the areas of content and relationship with other users of the virtual community.

Is it really possible to use the potential of social media in the field of education?

Chris Piotrowski (2015) from the University of WestFlorida has analyzed and summarized the main conclusions of the 29 research papers that focused on the use of social media in

education. Of these, only two research reports reported negative feedback on the implementation of social platforms to teaching-learning process, including the main problems: *lack of proper preparation of teachers in the use of Web 2.0 technologies*, *privacy issue* and *data overloading*. Among the benefits of integrating social media into the education process is the support of Web 2.0 technology to promote student learning, i.e. *involvement*, *promoting autonomy*, *intentionality*, *reflection* and social *relations*.

At the same time, aggregate findings indicate that Web 2.0 technologies can *increase engagement* of college students, improve their *results in science* and *interaction* between lecturers and students, as well as support communication between administrators and students (Kwiatkowska, 2016, pp. 151-175).

In turn, the analysis of critical attitudes towards the use of social media in education requires special attention *to be paid to the need to educate and promote critical thinking skills and literacy skills* in contemporary students.

In turn, the research involving Malaysian students and concerning their use of social media in the learning process has shown that the respondents' results were dependent on their interaction with other members of the group, their interactions with supervisors, their level of engagement and satisfaction, contributing to their shared learning. In general, social media is a platform for collaborative learning, enabling participants to perform tasks quickly and efficiently. They help to improve peer interactions, leading to greater diversity and improved communication between students and teachers. Social media also facilitates discussion and exchange of information, which contributes to a better understanding of content. In general, social media increases the productivity of all participants in the education process (Al-rahmi, Othman, Yusuf, 2015).

Nikola Draskovic, Ana Kustrak Korper and Katharina Kilian-Yasin (2017) have cited numerous studies that show that social media has the potential as an educational tool in the area of motivation and participation. However, the effective use of these media in the classroom depends on the level of interaction between both students and instructors. Unfortunately, instructors usually show lack of preparation and interest in using social media for educational purposes, thereby excluding the discussed medium from the selection of didactic tools.

Draskovic, Korper and Kilian-Yasin (2017) conducted a comparative study of Croatian and

German students on the use of social media for educational purposes. The result is the following:

- student often use social media and have a positive attitude and relatively low motivation to integrate social media into education;
- lecturers should therefore be the primary source of motivation for students to participate and communicate through social media for educational purposes,
- there are no significant differences in the use of social media among Croatian and German students.

Referring to the numerous reports from the literature on the subject and the studies presented in it, it can be stated that students and young people commonly use social media in everyday life. They mostly meet their own communication, entertainment and social needs with it. In spite of this, they are positively inclined to use these media also for educational purposes. However, due to the lack of experience in this area, they expect initiatives and support from teachers with whom they will be willing to engage in communication, and will take action and interact with other learners in the learning process. Teachers need to know

how to use interactivity in teaching. A good lesson is one that has been learned by the student, and the content carried by the media is the means to get answers to the questions asked.

Conclusion

Education with new technologies requires not only interactivity, but something more, namely, participation, cooperation with other people, and interaction with digital tools. All this, however, should not obscure the main purpose which is human education and the development of various spheres of human functioning.

References

Forster: Msg. 14. Re: *What Connectivism Is?* Online Connectivism Conference: University of Manitoba, http://ltc.umanitoba.ca/moodle/mod/forum/discuss.php?d=12 [Access: 5.11.2017].

Jovanovic J., Chiong R., Weise T. (2012). *Social Networking, Teaching, and Learning*, "Interdisciplinary Journal of Information, Knowledge, and Management", Volume 7, http://www.ijikm.org/Volume7/IJIKMv7p039-043Editorial572.pdf [Access: 12.10.2017].

Karwasz G., Kruk J. (2012). *Idee i realizacje dydaktyki interaktywnej*. *Wystawy, muzea i centra nauki*, Toruń: Wydawnictwo Naukowe Uniwersytetu Mikołaja Kopernika.

Kaplan A. M., Haenlein M. (2010), *Users of the world, unite! The challenges and opportunities of Social Media*, "Business Horizons" (2010) 53, s. 59—68, http://citeseerx.ist.psu.edu/viewdoc/download?doi=10.1.1.462.9491&rep=rep1&type=pdf [Access: 20.10.2017].

Kerckhove, de D. (2001). *Inteligencja otwarta. Narodziny społeczeństwa sieciowego*. Warszawa: Wydawnictwo MIKOM.

Kron F. W., Sofos A. (2008). *Dydaktyka mediów*, GWP, Gdańsk.

Kwiatkowska W. (2016). Engaged academic e-learning – research report, *Acta Universitatis Nicolai Copernici Pedagogika,* XXXII, Z. 424, p. 151-175, DOI: http://dx.doi.org/10.12775/AUNC_PED.2016.029

Kwiatkowska W. (2013). *Intergenerational Relations in Teaching and Learning Compared to Modern Digital Technologies*, In: *DisCo 2013. New technologies and media literacy education*, Center for Higher Education Studies, ISBN 978-80-86302-45-4, p. 256-259.

Majewska K. (2016). Efektywność interaktywnej formy nauczania z użyciem tablicy multimedialnej, *E-mentor* 1 (63), p. 31-39, http://www.e-mentor.edu.pl/_pdf/63/art_31-39_Majewska.pdf

Majewska K. (2012). *Efektywna nauka z tablicą interaktywną*, „Wychowanie na co Dzień" 1-2 (220-221).

Majewska K. (2015). *Tablica interaktywna w procesie nauczania wczesnoszkolnego*, Toruń: Wydawnictwo Naukowe Uniwersytetu Mikołaja Kopernika.

Mitra S. (2000). *Minimally Invasive Education for Mass Computer Literacy*, CRIDALA, Conference, Hong Kong 21-25 June 2000, s.1, http://www.hole-in-the-wall.com/docs/Paper01.pdf [Access: 5.11.2017].

Pilch T. (2003). *Encyklopedia pedagogiczna XXI wieku* G-Ł. Tom II. Warszawa: Wydawnictwo Akademickie „Żak", hasła: interakcja, interakcjonizm symboliczny.

Piotrowski Ch. (2015). Emerging research on social media use in education: a study of dissertations. *Research in Higher Education Journal*, Volume 27, http://www.aabri.com/manuscripts/142097.pdf [Access: 13.10.2017].

Siemieniecki B. (1993). *Komunikacyjny model komputerowego wspomagania kształcenia a badania pedagogiczne*. *Toruńskie Studia Dydaktyczne*, 3 (II).

Siemieniecki B. (2007). *Pedagogika medialna*. Warszawa: Wydawnictwo Naukowe PWN.

Siemieniecka D. (2014). *Status praktyczny konektywizmu,* In: *Pedagogika społeczna wobec zagrożeń człowieka i idei sprawiedliwości społecznej*, red. W. Danilewicz, W.Theiss, Warszawa: Wydawnictwo Akademickie Żak, s. 331 – 344.

Skibińska M. (2012). *Umiejętności informacyjne gimnazjalistów*, Toruń: Wyd. A. Marszałek.

Skibińska M., Kwiatkowska W., Majewska K. (2014). *Aktywność uczących się w przestrzeni Internetu*. Toruń: Wydawnictwo Naukowe Uniwersytetu Mikołaja Kopernika.

Stalder F. (2012). *Mauel Castells. Teoria społeczeństwa sieci*, Kraków: Wydawnictwo Uniwersytetu Jagiellońskiego.

van Dijk J. (2010). *Społeczne aspekty nowych mediów*, Warszawa: Wydawnictwo Naukowe PWN.

Wałaszewski Z. (2002). *Interaktywność gier komputerowych*. In M. Hopfinger (Eds.), *Nowe media w komunikacji społecznej w XX wieku*. Warszawa: Oficyna Naukowa.

https://www.youtube.com/watch?v=dmBqwWlJg8U [Access: 13.10.2017]. .