

Connectivism. Implications for andragogical activities during professional gatherings

Konektywizm. Implikacje dla działań andragogicznych w trakcie wydarzeń branżowych

DOI 10.25951/4157

Introduction

The necessity of continuous acquiring professional knowledge has become of vital importance due to the development of information society and knowledge-based economy. Professionals are to be provided with the up-to date information and one way of acquiring desired professional knowledge is participation in professional gatherings such as trade fairs and congresses. Professional gatherings can be viewed as *temporary nodal networks*, or more generally, as a specific activity or organizational context for not only for interaction, but also for learning, as “these short-lived hotspots of intense knowledge exchange, network building and idea generation can thus be seen as temporary clusters” (Maskell, Bathelt, Malmberg 2005, n. pag.).

The emergence of new technologies changes the way we receive and gather information, collaborate with others, communicate and last but not least: how we learn. Also the offer for adult learners taking part in professional gatherings is bound to be changed. Connectivism has been acknowledged as potentially the most relevant learning theory for digital age, because of its emphasis on thinking about information in a networked society (McBride 2012), therefore the proposed solution is to follow the connectivism principles (autonomy, interactivity, diversity, openness).

The paper is structured as follows: in section 1 the theory of connectivism is examined. Section 2 is devoted to the idea of lifelong learning, with special attention draw to adult learning. In section 3 the andragogical processual learning model is presented. In section 4 the process

of nodal network is creation is provided, together with a brief description of professional gatherings. Section 5, by way of conclusions, concentrates on improvement of the andragogical activities during hybrid and online professional gatherings.

Connectivism and its Principles: Autonomy, Connectedness, Diversity and Openness

Connectivism is discussed in relation to behaviourism, cognitivism, and constructivism (Siemens 2004; Anderson, Dron 2011), although Siemens argues that none of the above mentioned learning theories cannot explain theoretically learning that resides in technology-driven networks of information or learning that happens within social and business organizations (2004).

The theory of connectivism created by Siemens proposed a completely new approach to learning in a digital age (Downes 2005; Siemens 2004), although it hasn't been universally accepted yet (Verhagen 2006; Kop, Hill 2008; Bell 2009). Connectivism as a theory was created for e-learning environments, therefore special emphasis is placed on collaboration between learners as a way of improving learning outcomes and motivating greater engagement with learning (Johnson, Johnson 1994). Collaborative learning with technology embraces the use of digital, mobile, and networked devices within a group of learners and collaborative technologies are considered as kind of online collaborative environments that provide features for collaborative problem solving (Scardamalia, Bereiter 2006). The emphasis is put on learning through collaboration with other learners via social interaction mediated by advanced technological tools that support this networked structure (Stahl, Koschmann, Suthers 2006).

Connectivism is a theoretical framework which views learning as a network phenomenon influenced by emerged technologies and inherent tension of socialization (Siemens 2006).

Knowledge can be stored in a variety of digital resources and learning can be developed through tools used for user-generated content, sharing, peer critiquing, aggregation, and personalization among learners. Knowledge is, what grows and enhances while individuals and societies enhance through and in networks (Downes 2012), therefore learners should develop capacity to identify, navigate, and evaluate information from their learning networks. An ad-

ditional parameter is so called the *know-where* (the understanding of where to find needed knowledge).

According to connectivism knowledge is to be considered as a relationship that exists within complex networks (Downes 2007). Networks are connections among various entities such as experts, databases, blogs, colleagues, and websites – and socially oriented software stimulate the learning process and enable learner to collaborate (Churches 2008).

In connectivism, learning is considered as the ability to construct and traverse connections (Downes 2007). It is the process that is built on conversation and interaction within one's personal network and that has developed from being a transfer of content and knowledge to the production of content and knowledge (Downes 2012). The use of collaborative and social tools to enhance connections, such as YouTube, Twitter, blogs, management systems, and podcasts in order to deliver online instruction provides learners with the opportunity to learn autonomously, but also allow them to share new knowledge with peers (Mallon 2012).

The learning process is cyclical, learners connect to a network to find and share new information, modify their beliefs in terms of their new learning then reconnect to share their new understandings and find further information. Through this process, learners become active contributors to their networks as they use tools to share their own research and knowledge (Transue 2013). Downes defined *autonomy*, *interactivity (connectedness)*, *diversity* and *openness* as the key components of learning in networks (Table 1).

Table 1. The Principles of Connectivism

Principle 1	Description 2	Condition 3
Autonomy	„The system of education and educational resources should be structured so as to maximize autonomy. Wherever possible, learners should be guided, and able to guide themselves, according to their own goals, purposes, objectives or values. It is a recognition that, insofar as a person shares values with other members of a community, and associates with those members, it is a sharing freely undertaken, of their own volition, based on the evidence, reason and beliefs they find appropriate” (Downes 2010).	„Each person must be free to pursue his or her own good in his or her own way” (Downes 2007).

1	2	3
Connectedness / Interactivity	„The system of education and educational resources should be structured so as to maximize interactivity. This is a recognition both that learning results from a process of immersion in a community or society, and second that the knowledge of that community or society, even that resulting from individual insight, is a product of the cumulative interactions of the society as a whole. Just as a language represents the collective wisdom of a society, so also an insight represented in that language is based on that collective insight” (Downes 2010).	„Ideas and expressions are communicated from one to the next, originating from many different sources, rather than from one to all, diffusing from a single source” (Downes 2007).
Diversity	„The system of education and educational resources should be structured so as to maximize autonomy. The intent and design of such a system should not be to in some way make everybody the same, but rather to foster creativity and diversity among its members, so that each person in a society instantiates, and represents, a unique perspective, based on personal experience and insight, constituting a valuable contribution to the whole” (Downes 2010).	„The widest possible range of beliefs and opinions ought to be sought and encouraged” (Downes 2007).
Openness	„The system of education and educational resources should be structured so as to maximize openness. People should be able to freely enter and leave the system, and there ought to be a free flow of ideas and artifacts within the system. This is not to preclude the possibility of privacy, not to preclude the possibility that groups may wish to set themselves apart from the whole; openness works both ways, and one ought to be able to opt out as well as in. But it is rather to say that the structure of the system does not impede openness, and that people are not by some barrier shut out from the system as a whole” (Downes 2010).	„Each person ought to have the ability to contribute in his or her own way, and to be able to receive the contributions of the others” (Downes 2007).

Source: Downes 2007; Downes 2010.

The four principles, according to Downes, constitute a concrete guide to action and enable a mechanism for deciding not only what to offer, but also how to improve an offer.

Lifelong Learning (LLL) and Adult Learning

LLL is defined as „all learning activity undertaken throughout life, with the aim of improving knowledge, skills and competences within a personal, civic, social and/or employment-related perspective” (Commission of the European Communities 2001). When considering LLL, cognitivism and constructivism are theories of particular relevance. Cognitivism speaks of learning as making sense of the relationship between what is old and what is new (Gestalt theory), whereas constructivism underlines that „knowledge is not passively received from the world or from authoritative sources but constructed by individuals or groups making sense of their experiential worlds” (Yilmaz 2008).

In XIX century, the term *andragogy*¹ was proposed as to underline the need of special approach towards adult learning as based upon comprehension, organization and synthesis of knowledge. Taking into consideration Knowles, Holton and Swanson assumptions on adult motivations, the andragogical activities require different approach (Figure 1), i.e.:

1. Adults need to know the reason for learning something.
2. Adults need to be involved in planning and evaluation.
3. Experience provides the basis for learning activities.
4. Adults are most interested in learning subjects having immediate relevance.
5. Adult learning is problem-centered.
6. Adults respond better to internal motivators.

Critiques of the notion of *andragogy* (as opposite to *pedagogy*) point out the effort to offer a „framework for thinking about *what* and *how* adults learn”. Cross (1981, p. 248) and that it is not clear whether this is a theory or set of assumptions about learning, or a theory or model of teaching and that the assumptions are prescriptive statements about what the adult learner *should* be (Hartree 1984). However, it is worth citing Kidd: „adult learning is not a different kind or order from child learning. Indeed our main point is that man must be seen as a whole, in his lifelong development. Principles of learning will apply, in ways that we shall suggest to all stages in life. The reason why we specify adults throughout is obvious. This is the field that has been neglected, not that of childhood” (1978, p. 17).

¹ Term *andragogy* (Greek: „man-leading”) is used to distinguish from *pedagogy* (Greek: „child-leading”).

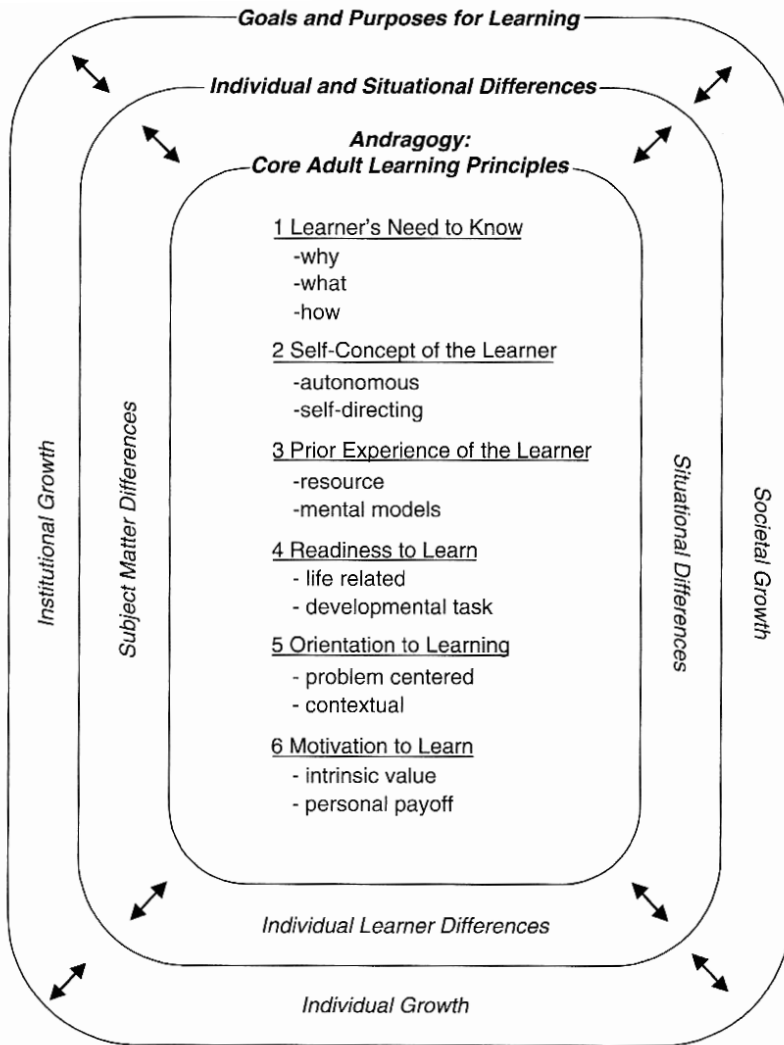


Figure 1. Andragogy in Practice

Source: Knowles, Holton, Swanson 2005, p. 149.

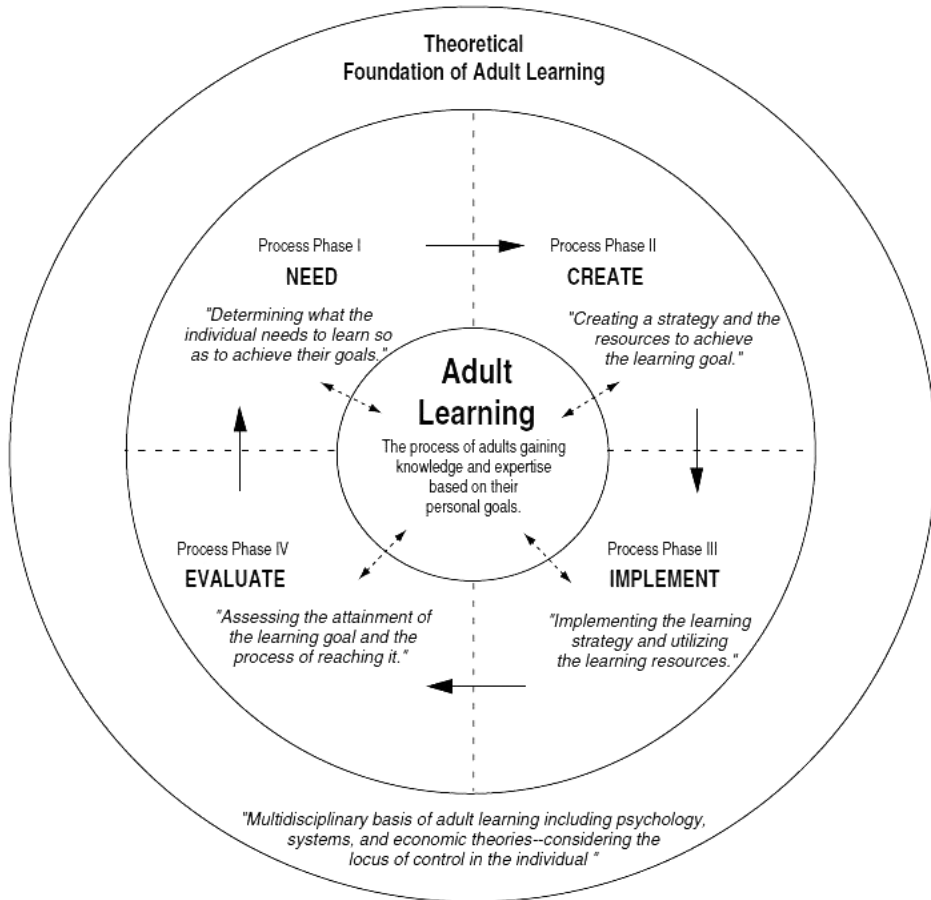
The andragogical processual learning model

LLL is based on „continuous renewal and improvement of knowledge and qualifications” (Aleksander 2003, p. 985), therefore the andragogical processual learning model needs is of great relevance.

Knowles claims that pedagogy is a content model and andragogy is a process model and proposes the andragogical processual learning model with a set of procedures engaging learners in a process prepared on the basis of the following elements: preparing the student, creating an atmosphere conducive to learning, launching mechanisms enabling joint planning, diagnosing educational needs, formulating goals that meet these needs, designing a model of educational experiences, managing this experience with the help of appropriate techniques and measures, assessing learning outcomes and re-diagnosing educational needs. The andragogical model is definitely different from the pedagogical model, as it focuses on procedures and resources supporting the knowledge and skills acquisition.

In the andragogical processual model, following rules are obligatory:

- *Target group orientation* – organizing the didactic process according to expectations and possibilities of specific groups of participants;
- *Participant orientation* – individualization of the process of instruction, becoming familiar with needs and experiences of an individual;
- *Work on interpretation patterns* – exchanging opinions referring to the ways of perceiving the world, reinforcement of interpretation patterns;
- *Adjusting the language of instruction to the recipients* – adjusting the language to the cognitive possibilities of a learner;
- *Joint perspective of a teacher and a learner* – striving to reach an agreement through showing respect of individual differences and indicating similarities;
- *Learning aims orientation* – possibility of establishment of the instructional aims;
- *Confronting with curriculum content* – appropriate choice and analysis of curriculum content;
- *Self-education* – reflective learning;
- *Integration of general and professional education* – integration of various fields of knowledge and life;
- *Influence of emotions on the teaching-learning process* – teaching-learning culture causing positive reactions;
- *Action-orientation* – combining theory with practice, using experiences;
- *Aestheticisation* – aesthetic sensations causing psychological comfort (images, music, classroom interior, teacher appearance);
- *Time economics* – good planning of time budget;
- *Mistake probability* – creating conditions facilitating the process of learning, arousing reflections, differentiating methods of teaching;
- *Using humour* – using humour during classes to intensify the effects of teaching (Błaszczak 2013, p. 309).



© Richard A. Swanson, St. Paul, MN 1996

Figure 2. Adult Learners Controlling Their Learning Planning Process

Source: Knowles, Holton, Swanson 2005, p. 175.

Figure 2 shows the four phases of the adult learning planning process (*need-create-implement-evaluate*), i.e.:

1. determine what is needed so as to achieve goals,
2. create a strategy and resources to achieve the learning goal(s),
3. implement the learning strategy and the use of the learning resources,
4. assess the attainment of the learning goal and the process of reaching it (p. 175).

Discussing the model, attention is drawn to the cases where there is tension between the individual's need and the performance oriented organization's need.

In such cases, where adult learning principles cannot be wholly implemented it is vital to ensure the optimum balance. (Knowles, Holton, Swanson 2005, p. 172).

The process of nodal network creation

During adulthood „knowledge results from the combination of grasping experience and transforming it” (Kolb 1984, p. 41). In case of professionals and the professionals gatherings, the importance of learning community cannot be overestimated.

According to connectivism, knowledge is actuated by learners connecting to and participating in a learning community defined as the clustering of similar areas of interest that allows for interaction, sharing, dialoguing and thinking together (Siemens 2006). Connectivism has shifted the importance from the notion that learning occurs solely within a person, to connections between so called nodes (sources of information).

Professional gatherings possess many of the characteristics ascribed to clusters and from the considered analytical perspective, trade fairs and congresses can also be viewed as *temporary nodal networks* or, more generally, as a specific activity or organizational context for not only for interaction, but also for learning (Maskell, Bathelt, Malmberg 2005).

ICT development has always had a significant impact on changes related to knowledge sharing activities, including the coexistence and evolution of specific forms related to the dissemination of knowledge. Traditional channels of communication, enriched with new services (Internet services, digital signage, applications on smartphones), bring a new quality² in the relationship between business and customers. Over the years, gestors of the trade fair and congress centers, improved the infrastructure and expanded the offer of andragogical activities (organization of professional conferences/congresses, matchmaking

² *Poznan Trade Fairs* analyze the development of technologies and their impact on customer contact. The recent R&D *Project SWEP* concerns creating innovative solutions for multi-stream mass marketing communications aims to create a platform that will allow for the implementation of multi-stream, mass communication campaigns of with the common view and content. By integrating all communication streams, the platform will gather in an automated feedback from all channels which will allow to carry out the analysis and measurement of the effectiveness of the campaign and the examination of trends. As the results of the project new tools will be provided for marketing campaigns on a global scale (MTP).

meetings, co-organization of competitions, brokerage in advertising/publishing services). Nowadays, it is common to use the Internet to communicate with the participants before, during and after professional gathering therefore the hybrid and solely on-line character of the professional gatherings are to be considered.

The perception of contemporary trade fairs as *fairs of scientific and technical thought, market hybrids, or communication arenas* is a consequence arising from shift to events dedicated solely to professionals. Contemporary trade fairs and congresses are an example of the complexity of the modern educational environment: a system that includes infrastructure and tools for andragogical activities, educators/facilitators and adult learners.

The role of the professional gatherings organizers is to provide adequate learning environment for adults. This requires taking into consideration not only phases of the andragogical learning planning process, but also the principles of connectivism – because of the hybrid and on-line character of contemporary professional gatherings.

Conclusions. Implications for hybrid and on-line professional gatherings

Pursuit of knowledge for professional reasons leads adults to participate regularly in trade fairs, exhibitions, conventions, congresses, and conferences. Although considered as a „traditional form”, trade fairs and congresses adapt technological novelties – and go „on-line”.

Hybrid and on-line character of professional gatherings prevail changes in the offer and the services of organizers, who are to consider changes concerning the following quality areas³, arising from the possibilities due to the ICT, i.e.:

- communication type during professional gathering (*mass media communication, using all available channels; personalized message tailored to the needs and capabilities of participants*);
- added value creation for participants attending professional gathering (*community participation; infotainment/edutainment; time economics, Creative Commons license*);
- verification of achievements by the participant (*tools for selecting individual indicators by the participant and ongoing verification of achievements; tools to inform a participant about the completion of a given stage or a participant's achievements against the background of all participants*);

³ Identified by the author.

- feedback type for the professional gathering organizer (*a mechanism for assessing achieved financial and non-financial indicators and the possibility of comparison to previous editions of the service; a mechanism for assessing the implementation of planned goals and identifying areas for improvement in subsequent service editions; a mechanism for assessing the communication / educational /socialization impact of the service on the industry*).

The creation of an adequate learning environment for participants especially when planning andragogical activities, require taking into account the findings of andragogy and connectivism. In case of choice of communication type and added value creation, in order to strengthen and to expand the advantages perceived by adult learner it is worthwhile to consider the principles of connectivism (Table 2).

Table 2. Use of the principles of connectivism for evaluation of communication type and added value

Quality areas of professional gatherings	Selected attributes	Principles of connectivism			
		Autonomy	Interactivity	Diversity	Openess
Communication type	Mass media communication, using all available channels		×	×	
	Personalized message tailored to the needs and capabilities of participants	×	×	×	×
Added value for participants	Participation in an industry community		×	×	×
	Elements of infotainment / edutainment (education / information using entertainment)	×		×	
	Time economics	×			
	Creative Commons license	×		×	×

Source: own.

It is also worth remembering, that the best educational practices are the ones that directly refer to the participants' needs (perceived as significant) as well as the ones that respect maximum control from a participant (Aleksander 2003; Tuross 2010). Taking into account the above, research could concentrate on the use of connectivism principles by professional gatherings organizers while planning andragogical activities (communication type, added value for participants) as well as the way of adjusting other quality areas of the services

provided on-line (with special attention devoted to achievements verification and feedback from andragogical activities).

In 2020, due to the COVID-19 pandemic, a serious crisis affected the MCE⁴ Industry. The other noticed challenge concerning educational activities is acceleration in adapting ICT solutions. In Western motivational speaking the Chinese word for “crisis” is invoked as being composed of two Chinese characters signifying *danger* and *opportunity* respectively. Therefore, maybe now it is a chance and opportunity to think over and revise the areas of quality of on-line andragogical activities during professional gatherings as counteraction to MCE Industry crisis.

BIBLIOGRAPHY

- Aleksander T. (2003), *Edukacja ustawiczna*, w: T. Pilch (red.), *Encyklopedia pedagogiczna XXI wieku*, Warszawa: Żak.
- Anderson T., Dron J. (2011), *Three generations of distance education pedagogy*, „The International Review of Research in Open and Distributed Learning”, 12 (3), <http://www.irrodl.org/index.php/irrodl/article/view/890/1826> (accessed: 21.03.2020), DOI: 10.19173/irrodl.v12i3.890.
- Bell F. (2009), *Connectivism: a network theory for teaching and learning in a connected world*, „Educational Developments, The Magazine of the Staff and Educational Development Association”, 10 (3), <http://usir.salford.ac.uk/id/eprint/2569/> (accessed: 20.03.2020).
- Błaszczak I. (2013), *Contemporary perspectives in adult education and lifelong learning – andragogical model of learning*, <https://eric.ed.gov/?id=ED567158> (accessed: 23.03.2020).
- Churches A. (2008), *Bloom’s Taxonomy Blooms Digitally*, “Tech&Learning Journal”, <http://teachnology.pbworks.com/f/Bloom%5C’s+Taxonomy+Blooms+Digitally.pdf> (accessed: 25.03.2020).
- Commission of the European Communities (2001), *Making a European Area of Lifelong Learning a Reality*, EUR-Lex, <http://eur-lex.europa.eu/LexUriServ/LexUriServ.do?uri=COM:2001:0678:FIN:EN:PDF> (accessed: 27.03.2020).
- Cross K.P. (1981), *Adults as Learners. Increasing participation and facilitating learning*, San Francisco: Jossey-Bass.

⁴ MCE – abbreviation from Meetings, Conventions/Congresses and Exhibitions/Events. Further information on crisis in the MCE Industry can be found on <https://www.ufi.org/industry-resources/coronavirus/>.

- Downes S. (2005), *An introduction to connective knowledge*, <http://www.downes.ca/post/33034> (accessed: 25.03.2020).
- Downes S. (2007), *These Principles*, <https://halfanhour.blogspot.com/2007/12/these-principles.html> (accessed: 25.03.2020).
- Downes S. (2010), *What is democracy in education?*, <https://halfanhour.blogspot.com/2010/10/what-is-democracy-in-education.html> (accessed: 15.03.2020).
- Downes S. (2012), *Connectivism and Connective Knowledge: essays on meaning and learning networks*, „National Research Council Canada”, https://www.downes.ca/files/books/Connective_Knowledge-19May2012.pdf (accessed: 28.03.2020).
- Hartree A. (1984), *Malcolm Knowles' theory of andragogy: A critique*, „International Journal of Lifelong Education”, 3 (3).
- Johnson D.W., Johnson R.T. (1994), *Learning Together and Alone*, in: Cooperative, Competitive, and Individualistic Learning (4th. edn.), Edina, Minn.: Interaction Book Company.
- Kidd J.R. (1978), *How Adults Learn* (3rd. edn.), Englewood Cliffs, N.J.: Prentice Hall Regents.
- Knowles M., Holton E., Swanson R. (2005), *The adult learner: The definitive classic in adult education and human resource development* (6th ed.), Amsterdam: Elsevier.
- Kolb D. (1984), *Experiential learning: experience as the source of learning and development*, Englewood Cliffs, New Jersey: Prentice Hall.
- Kop R., Hill A. (2008), *Connectivism: learning theory of the future or vestige of the past?*, Open Distance Learn.
- Mallon M. (2012), *The new distance learners. Providing customized online research assistance to urban students on the go*, „Urban Library Journal”, 18 (1).
- Maskell P., Bathelt H., Malmberg A. (2005), *Building Global Knowledge Pipelines: The Role of Temporary Clusters*, „European Planning Studies”, 14 (8), https://www.researchgate.net/profile/Anders_Malmberg/publication/4979978_Building_Global_Knowledge_Pipelines_The_Role_of_Temporary_Clusters/links/00b49517ac1ebeb441000000/Building-Global-Knowledge-Pipelines-The-Role-of-Temporary-Clusters.pdf (accessed:16.03.2020), DOI: 14.10.1080/09654310600852332.
- McBride M. (2012), *Reconsidering Information Literacy in the 21st Century: The Redesign of an Information Literacy Class*, „Journal of Educational Technology Systems”, <https://www.researchgate.net/publication/274668313> (accessed: 29.03.2020), DOI: 10.2190/ET.40.3.e.
- MTP, *System wielostrumieniowej komunikacji masowej integrujący marketing bezpośredni i pośredni z weryfikacją rezultatów online, jako podstawa nowej usługi skierowanej do klientów targowych – SWEP*, <https://swep.mtp.pl/pl/> (accessed: 25.03.2020).

- Scardamalia M., Bereiter C. (2006), *Knowledge Building: Theory, Pedagogy, and Technology*, in: R.K. Sawyer (ed.), *The Cambridge handbook of: The learning sciences*, Cambridge: University Press.
- Siemens G. (2004), *A Learning Theory for the Digital Age*, <https://www.academia.edu/2857071/Connectivism> (accessed: 8.03.2020).
- Siemens G. (2006), *Knowing Knowledge*, [https://books.google.pl/books?id=P-j41TomgKXYC&lpg=PR5&ots=WurLFmvTiH&dq=Knowing%20Knowledge%20\(Siemens%2C%202006&lr&hl=pl&pg=PP2#v=onepage&q&f=false](https://books.google.pl/books?id=P-j41TomgKXYC&lpg=PR5&ots=WurLFmvTiH&dq=Knowing%20Knowledge%20(Siemens%2C%202006&lr&hl=pl&pg=PP2#v=onepage&q&f=false) (accessed: 12.03.2020).
- Stahl G., Koschmann T., Suthers D. (2006), *Computer-supported Collaborative Learning: An Historical Perspective*, in: R.K. Sawyer (ed.), *The Cambridge handbook of: The learning sciences*, Cambridge: University Press.
- Transue B.M. (2013), *Connectivism and Information Literacy: Moving From Learning Theory to Pedagogical Practice*, „Public Services Quarterly”, 9 (3), DOI: 10.1080/15228959.2013.815501
- Turoś L. (2010), *Andragogika autokreacji*, Warsaw: Lucjan Turoś and Piotr Turoś.
- Verhagen P. (2006), *Connectivism: A New Learning Theory?*, <https://www.scribd.com/doc/88324962/Connectivism-a-New-Learning-Theory> (accessed: 6.02.2020).
- Yilmaz K. (2008), *Constructivism: Its theoretical underpinnings, variations, and implications for classroom instruction*, „Educational Horizons”, 86 (3).

SUMMARY

The article provides a literature review on connectivism in order to present evidence, that the learning theory which typically has been used for e-learning, can (or even should) be applied to the andragogical activities provided during business gatherings (trade fairs and congresses). Therefore, the idea of connectivism is discussed, the four key principles of connectivism i.e. autonomy, interactivity, diversity and openness are defined. The adequateness of the principles of connectivism and the andragogical model of processual learning for professional gatherings is proved.

The aim is to indicate the areas for further research concerning andragogical activities for hybrid and on-line professional gatherings.

KEYWORDS: connectivism, lifelong learning (LLL), andragogy, professional gatherings

STRESZCZENIE

Artykuł zawiera przegląd literatury dotyczący konektywizmu, uzasadniając, że teoria nauczania odnosząca się do przedsięwzięć edukacyjnych on-line, może (i powinna) zostać zastosowana dla działań andragogicznych podejmowanych przez organizato-

rów branżowych wydarzeń targowo-kongresowych. W tym celu zostały omówione założenia konektywizmu wraz z czterema głównymi zasadami: niezależności, interaktywności, różnorodności oraz otwartości. Wykazana została adekwatność zastosowania andrologicznego modelu nauczania procesowego.

Celem jest wskazanie kierunków dalszych badań dotyczących działań andragogicznych w trakcie branżowych wydarzeń organizowanych w modelu hybrydowym oraz on-line.

SŁOWA KLUCZOWE: konektywizm, lifelong learning (LLL), andragogika, branżowe wydarzenia targowo-kongresowe

ANNA KANABROCKA – Uniwersytet Jana Kochanowskiego w Kielcach

Pedagogika / Pedagogy

Przysłano do redakcji / Received: 8.05.2020

Przysłano do redakcji po recenzjach / Received in revised form: 19.05.2020; 29.05.2020

Data akceptacji do publikacji / Accepted: 3.06.2020