Open learning model architecture in higher education

Lukoševičiutė-Noreikienė, Ilona

Open learning model architecture in higher education

Ilona Lukoševičiutė-Noreikienė
Lithuanian University of Health Sciences, Lithuania

Abstract
Purpose: *A new type of question is becoming relevant for higher education institutions: how to organize the teaching process in an innovative way so that it guarantees high-quality teaching / learning results? Open learning is integral to ensuring the path to the implementation of innovative and high-quality study programs. In order to implement this idea, the problem of education arises and the questions that this article will try to answer: what are the parameters of the open learning process and what are the techniques for their recognition?*
Methods: *For problem investigation, scientific literature analysis and critical systemic analysis methods are be applied.*
Results: *Theoretical research allows to define the concept of open teaching / learning and identify its main characteristic, dimensions of recognition and their research criteria. The results of the theoretical research allow to assume that open teaching/learning environment plays an important role in open learning/teaching.*
Implications: *The matrix of the open learning process created in the article allows for the qualitative and innovative design of open learning studies in higher education. Using this matrix, it is planned to apply in practice the organization of studies at the university, focusing on the evaluation of the quality of implementation and teaching / learning outcomes.*

Keywords: *open teaching/learning, cooperative learning, learner self-directedness/autonomy*

JEL Classification: *I23, I20, I21*

Biographical note: Ilona Lukoševičiutė-Noreikienė is a researcher at the Lithuanian Univesity of Health Sciences. Corresponding author: Ilona Lukoševičiutė-Noreikienė (ilona.noreikiene@lsmuni.lt)

1 INTRODUCTION

With the rapid change of modern technologies, a relevant tendency is becoming apparent: more and more members of society are aiming to acquire higher education or to improve their qualifications. The institutions of higher education are encouraged to take interest in the competencies that their learners have, in the individual learning needs and in the ability of the institutions of higher education to meet the need to ensure high quality and innovative learning conditions (European Commission (2017). European Digital Economy and Society Index (DESI). Learning as a process of self-education is related to the qualities of the learner, the learning environment, learning methods and the learning materials that can be chosen. The concept of learning independence assesses the learner's total responsibility and motivation to learn and, therefore, foresees the possibility to choose the content, method, direction and pace of learning. A new type of question becomes relevant to the institutions of higher education: how should they teach so that the learner would develop the skills to take responsibility of the decisions made; how to teach to learn and generate a need for constant improvement; what innovative learning ways and methods would encourage the learners to acquire high quality skills and competencies. It is possible to find various learning strategies in the works of educologists that these scientists recommend to choose in an attempt to encourage the learners' independent and cooperative learning, to perfect learning skills and to reflect the changes of the roles of the lecturer and the learner (Ehlers, 2013; Taylor, 2017; Mezirow, 2009; Kolb Fry, 1975; Jarvis, 1999; Paulsen, 2013, Shell et al. 2010). Thanks to these technologies that emphasize a new learning process a new term of open learning emerges and, in educational practice, it becomes more evident that, in encouraging both learning and taking responsibility of the learning process, special attention should be paid to the creation of the learning environment (Ehlers, 2013; Paulsen, 2013; Coomey and Stephenson, 2001; Bartalomé, 2008; Castells, 2000; Linkaitytė, 2006; Volungevičienė et al. 2018; Volungevičienė et al. 2008;

Rutkauskienė et al. 2006). When applying the open learning concepts it is required to change attitude to the system of the provision of higher education services, to quality and to the concepts of teaching and studying. In order to achieve quality studying results, it is necessary to pay closer attention to the relation of the organization of an innovative teaching process and the received teaching/learning results (European Higher Education Strategy to implement the European Higher Education Area (ET2020 framework).

When creating an innovative learning environment it is important to know the dimensions of open learning and the possibilities of their recognition in the learning process, as well as the peculiarities of the study process organization. Open learning is related to the change of the roles of the participants of this process, independent activity of the learner and forming the right conditions to choose learning content, studying at convenient time, communicating and cooperating with other learners and teachers directly or in the virtual environment. Upon reviewing literature analysis it is clear that the idea of open learning in its essence is integral as: a method that ensures a way and methods of the acquisition of the learning content that learners can choose according to their needs; a study organization form that unfolds via various efforts (pedagogical, organizational, planning, coordination and control) put by institutional structures and individuals that guarantee quality realization of the study programmes; a didactic system that connects learning goals, learning forms and methods realized in the pedagogical interaction process.

Aiming to realize this idea arise education problem and questions that this article will try to answer: what are the parameters of the open learning process, and what is the technique of their recognition?

The aim of the article is to analyze open learning as an object of educational activity research.

Goals:

- Define the concept of open learning;
- Theoretically base the dimensions of recognition of this type of learning and to establish their measurement criteria.

Methods: for problem investigation, scientific literature analysis and systemic analysis methods will be applied.

2 THEORETICAL FRAMEFORK

Open learning and its concept have been actively discussed by various experts in the field of education for several decades. Open teaching/learning movement is gathering momentum as it strives to become open to the learner in its various teaching/learning venues and with its innovative methods and creative ideas.

Open teaching/learning movement aims to provide free and flexible access to quality teaching/learning processes and study results. It also attempts to connect university lecturers of the whole world who want to implement their academic ambitions to be top level educational leaders, share their educational innovations, create, support and provide engaging, innovative and responsive open teaching/learning in higher education. The question arises whether the educational concept of open teaching/learning and its

measurable criteria are clearly defined when striving towards quality studies and results

Different aspects are emphasised in the concept of open learning, so while analyzing scientific literature and publications an answer to the following question was sought: "What didactic elements are identified when defining open learning?" Open learning is based on a distinctive perspective on teaching/learning, its environment, methods, evaluation and feedback, the role of the lecturer and the learner ((Ehlers, 2013; Taylor, 2017; Mezirow, 2009; Gabeal, 2008). Open learning claims that the whole responsibility for learning resides only with the learners (Mezirow, 2009; Taylor 2017). Such scientists as Ehlers (2013), Teresevičienė et al. (2015) and Paulsen (2007) highlighted the peculiarities of open learning: the learner is allowed to choose a suitable study form, time, pace and venue; the learner, most often advised by a cognitive mentor or a tutor, can control the bigger part of the learning process, decide where, when and how to learn; learning forms that can be easily personalised, innovative methods and cutting edge information technology that facilitate transforming learning, teaching/learning content-development, learners' communication and cooperation are used.

Ramsden (2003), Taylor, (2017), Paulsen (2017), Shell, (2010) believe the open learning presents learners with a unique possibility to construct knowledge on their own thanks to the communication and cooperation between the learners and their mentors. This knowledge can is used in practice and shared. Measurable study results are achieved by utilising flexible content, active teaching/learning, communication and quick constructive feedback.

After carrying out comparative analysis of the concepts of open learning, certain distinguishing characteristics of open learning have been identified: personalised teaching/learning materials prepared for independent learning, personalised teaching methods, self-directed/autonomous learning, collaborative learning, possibility to raise learning objectives, plan one's studies and choose learning possibilities, the learner's responsibility for learning, a lecturer as a cognitive mentor, flexible teaching/learning possibilities (time, venue, content, pace and accessibility. These distinguished characteristics encompass teaching/learning processes, development of teaching/learning skills and creation of an innovative teaching/learning environment.

Looking at the scientific analysis, the possibilities of open learning research modelling have become clear: the roles of learners and lecturers in open teaching/learning (Taylor, 2017, Karjalainen ir Niemi, 2000), the dimensions of open learning (Linkaitytė at al. 2005) and the system of paradigms of open learning (Commey and Stephenson, 2001) which, according to the authors, defines the research object more comprehensively. In this system, the following teaching/learning paradigms were distinguished: resource and communication/cooperation-based learning with mediation by the mentor/lecturer and self-directional learning. These teaching/learning paradigms are recognized by applying two didactic techniques: learning process control – this control is performed either by the lecturer or by the learner himself/herself; definition of the learning/teaching content and formulation of tasks - the content can be controlled by the lecturer or chosen by the learner. The tasks

are formulated as open tasks to encourage communication and cooperation, creativity and reflexive teaching/learning (Bartalomé, 2008; Coomey and Stephenson, 2001).

2.1. Dimensions of open teaching/learning

Analysing scientific literature, the dimensions of open learning process become clear: learning while communicating/cooperating; learner independence / autonomy; construction of teaching/learning content and flexibility of learning conditions. The analysis of literature indicates that each of the dimensions should be understood as a continuous and uninterrupted sequence (Paulsen, 2003; Commey ir Stephenson, 2001). Analysis of these dimensions is important when attempting to define the dimensions of open learning and their parameters.

Communicative//collaborative learning dimension that allows to construct and transform knowledge through social interaction. Learners form their cognitive skills and other learning culture by communicating, discussing, asking questions and constructively criticising in the collaborative environment (Beaty, 2000, Wiersema 2000, Johnston, Johnston 1996; Rutkauskienė at al. 2011). Communicative//collaborative learning enables to reflectively apply the knowledge constructed during learning/teaching for solving learning problems and doing practical work (Rutkauskienė, 2011; Ramsted, 2003). Such learning is based of the parity of the learner and the lecturer as each one learns from the other striving to achieve a common teaching/learning goal (Beaty, 2000; Johnston, Johnston, 1996).

Learner independence/autonomy is understood as internal freedom, independence from the restrictions of the social environment. However, humans are social beings and they need communication. Candy (1991) suggests that the following features are characteristic of learner autonomy: collaboration, mutual respect, individual creativity, flexibility, rational criticism, inner-directedness, independence and autonomy.

According to Bulajeva (2002), independence/autonomy should be understood as an ability to be self-directed, critically reflexive and able to make independent decisions. The learner is independent, freely chooses his/her goals and plans. The learner does not succumb to the pressure of others and his/her decisions and actions are based on independent thinking. The learner independently overcomes arising problems and failures and perceives himself/herself as an autonomous individual. The theory of self-directedness/autonomy states that the learner should be given a possibility to choose learning goals, study methods and ways of learning, study pace, course and assessment methods (Ehlers, 2007; Taylor, 2017; Paulsen, 2007; Moore, 1997).

Flexibility of teaching/learning conditions. Cooperative/collaborative teaching/learning theory argues that learners need personal freedom as much as they need support while learning, favourable conditions for collaboration and for planning and implementing such collaboration (Ehlers, 2007; Taylor, 2017; Paulsen, 2003). The dimensions of open learning allow the learner to choose learning time, venue, pace, environment, access and content (Ehlers, 2013; Taylor, 2017; Teresevičienė et al. 2015,

Paulsen, 2007). Teaching/learning process is modelled based on these dimensions in which the learner is at the centre (European Higher Education Area and Bologna Process, ENQA)

In summary, it can be stated that it is necessary to equally apply all three dimensions and assess them according to the identified characteristics while modelling open teaching/learning:

Learner self-directed learning is assessed by evaluating whether the learner makes independent decisions, chooses learning goals nd study plans or has to adapt to the decisions made in a group and by lecturers, and whether is able to solve arising learning problems.

Communicative/collaborative teaching/learning is assessed based on the fact whether communication/collaboration knowledge and skills are developed when learning independently and performing tasks, or whether learning is based on the mutual efforts of the learner and lecturer and self-organisation of the group of the learners and whether knowledge is constructed;

Flexible teaching/learning conditions are assessed based on the fact whether the learner is able to freely choose the content and environment (time, pace, access, place) of learning or it is determined how strictly learning content and learning conditions are formulated and whether they can be changed.

2.2. Criteria of open teaching/learning process modelling and research

It is recommended to research open learning through the prism of the lecturer and the student, these being the pivotal subjects of teaching/learning process. According to Taylor, (2017) Bartalomé, (2008), Kolb (1974), learning in the process of knowledge acquisition, reflexive observation and abstract summing up.

It is recommended to research open learning through the prism of the lecturer and the student as the pivotal subjects of the teaching/learning process. According to Kolb (2017), learning is the process of knowledge acquisition, reflexive observation and abstract summing up as well as of active application of them all. Students learn from their experience by acting, observing and reflecting on their experience, which is called active, reflexive learning. In the process of teaching and learning the theoretical content of teaching/learning and the interaction between the student and lecturer are discerned. At the conceptual level abstract generalisations, concepts and hypotheses are formulated. At the level of interaction, learning takes place through practical activities of the learner. Learning that is to take place among the theoretical structures at the levels of conceptual and practical actions is a search for meaning, interpretations and analogues, formulation of theoretical generalisations and hypotheses, adjustment of rules and carrying out of actions.

Research of the dimensions and criteria of open learning process is based on two theoretical models- conversational framework and conversational framework. In the conversational framework (Mezirow and Taylor 2009; Ramsted, 2003; Laurillard, 1993) the lecturer can supplement teaching/learning content and ad additional learning activities to the course the need for which becomes apparent from

earlier conversations with the learner. An opportunity is created for creating individual learning activities. The following criteria of modelling are emphasized in the pedagogical interaction (see Table 1):

- Discussion - a dialogue between the lecturer and the learner when different concepts and questions are interpreted and publically discussed.
- Interaction - reflexive activity of the lecturer and the learner related to the formulation and execution of tasks, self-assessment, assessment and feedback.
- Reflexion - reflexion of the lecturer based on the analyses of the activities of the student and the student's reflexions that, in turn, are based on the analysis of the educational/learning environment created by the lecturer and feedback analysis.
- Adaptation- adaptation of the teaching/learning content and environment taking into account learning goals, results and needs.

Table 1: Criteria for modelling open learning process

Dimensions of open leaning	Criteria for modelling open learning process			
	Discussion	Adaptation	Interaction	Reflexion
Communicative/Collaborative learning	Learning is based on constructive dialogue	Educational activity with respect to the common needs of the group.	Interaction (between the learner and the lecturer; also interaction among learners). Feedback (to each other, 360)	Learning based on the mutual cooperative, collaborative reflexion of the group of learners
Learner autonomy	Personalised learning /teaching objectives and plans. Independent problem solving	Teaching/ learning activity is adjusted in line with individual needs of the learner	Learning /teaching is based on personal obligation.	Learning /teaching is based on individuality, creativity and self-management
Flexibility of teaching/learning conditions	Learning /teaching objectives, plans and conditions are determined based on the dialogue	Learning /teaching content and environment are defined based on the current situation	Absolutely guaranteed possibility to choose learning/ teaching content. Possibility to choose learning/teaching content and environment	It is reflected whether teaching/ learning content is fully understood Teaching/ learning content and conditions are assessed

Viable system model (Szűcs, 2018; Ehlers, 2013; Coomey et al., 2001; Britain, Liber, 1999) is meant for the projection and assessment of the structures of the created organisations. The perspective system model offers the criteria of organisational nature that enable its users to decide whether the system will complicate or facilitate the pedagogical model that is used. The suggested criteria are: adaptation, monitoring, coordination, self-organisation and personalisation. The application of the aforementioned criteria may allow to increase the versatility of the design and regulation of the open teaching/learning process while applying such intensive pedagogical models as the interaction model.
Based on the four described interaction model procedures, the following criteria of open learning process are formulated: discussion- based on reasoning. Is discussion an integral part of learning/teaching? Does it allow to define teaching/learning objectives and tasks based on the dialogue? Adaptability- adaptation of the teaching/learning topic according to individual student or student subgroup needs that have been identified during communication. Interactivity- based on the interaction between two or more individuals, their mutual understanding and feedback. Reflexivity- based on reflection.

Table 2: Criteria for open teaching/learning process research

Dimensions of open teaching//learning	The criteria for open teaching/learning process implementation			
	Monitoring	Coordination	Self-organisation	Personalisation
Communicative/collaborative learning	Observation of group learning/teaching activity	Provided feedback	Communication. Collegial solving of problems	Integration of the course structure and group activities
Learner self-directedness/autonomy	Self-observation of the learning/teaching activity	Administration and planning of teaching/ learning time	Participation in the formation of learner groups	Individual learning/teaching goals and plans
Flexibility of teaching/learning conditions	Observation of teaching/ learning results and educational activities	Organisation of groups and subgroups. Coordination of educational activities	Independent control of teaching/learning content and conditions	Making of decisions related to teaching/ learning content and conditions

Based on the four described interaction model procedures, the following criteria of open learning process are formulated: discussion- based on reasoning. Is discussion an integral part of learning/teaching? Does it allow to define teaching/learning objectives and tasks based on the dialogue? Adaptability- adaptation of the teaching/learning topic according to individual student or student subgroup needs that have been identified during communication. Interactivity- based on the interaction between two or more individuals, their mutual understanding and feedback. Reflexivity- based on reflection.
Viable system model offers teaching/learning guarantee criteria (see Table 2): monitoring – teaching/learning process observation, coordination – creation of groups, changing groups, regrouping, distribution of training content; self-organisation – ability of the learner group to independently control teaching/learning. Are the students allowed to rearrange the presented material, insert their own resources, comments, choose tasks. Individualisation- accountability for every learner. Individual consultations, differentiation of learners. This article offers a conceptual model for modelling open teaching/learning process that is designed as a matrix that includes the dimensions and criteria of open teaching/learning process. The criteria for the research of open teaching/learning criteria: while projecting the course curriculum the lecturer should take into account of the criteria of open learning/teaching process dimensions and the guarantee of conditions.

3 CONCLUSIONS

Theoretical research allows to define the concept of open teaching/learning and identify its main characteristics: flexible teaching/learning environment, communication collaboration based teaching/learning, reflexive cooperation of the learners and the lecturer enabling learner independence.
Educations activities that guarantee the recognition of open teaching/learning process that have been named as teaching/learning openness criteria, which entail learning through cooperation, learner self-directedness/autonomy and the flexibility of teaching/learning content and conditions.
The results of the theoretical research allow to assume that open teaching/learning environment plays an important role in open learning/teaching. A system of criteria that documents two functions is used: teaching/learning process documentation while observing the four criteria - monitoring, coordination, self-organisation and personalisation.

Learning/teaching environment is assessed based on the following criteria: dialogue, adaptability, interactivity and the aspects of reflection.

REFERENCES

Avdimiotis, S. (2019). Emotional intelligence and tacit knowledge management in hospitality. Journal of Tourism, Heritage & Services Marketing, 5(2), 3-10. https://doi.org/10.5281/zenodo.3601651.

Bartalomé A. (2008).Web 2.0 and New Learning Paradigms. eLearning Papers.

Beaty, L. (2000). Supporting Learning from Experience. InH. Fry, S. Ketteridge,

Bulajeva T. (2002) Šiuolaikinio ugdymo ir saviugdos autonomijos problema. Acta pedagogica vilnensia. Nr.9. Vilnius: VU. 265-270.

Candy P. (1991). Self-Direction for Lifelong Learning. San Francisco: Jossey-Bass.

Castells, M. (2000). Materials for an exploratory theory of the network society. British Journal of Sociology, 2000a. 51(1), 5-24. Retrieved from http://sociology.soc.uoc.gr/socmedia/zambarloukou/A001K/castells.pdf

Christou, E. (2002). A total quality approach for excellence in tertiary tourism education: The TEEQ model. Proceedings of the International Scientific Conference Rethinking of Education and Training for Tourism, University of Zagreb, Zagreb, Croatia, 135-147.

Christou, E. and Chatzigeorgiou, C. (2019). Industrial placement in hospitality management education: Students' experiences and development of skills. Published in: ICOMEU 2019 Conference Proceedings, International Conference on Management of Educational Units. Thessaloniki: Greece (1 December 2019): pp. 157-164.

Christou, E. & Sigala, M. (2000). Issues that Influence the Use of Multimedia in Hospitality Education in Europe: An Empirical Approach. EuroCHRIE Spring Conference 2000, Dublin Institute of Technology, Dublin, Ireland, 18–19 May.

Coomey M., Stephenson J. (2001). Online Learning: It Is All about Dialogue, Involvement, Support and Control –According to the Research. In Stephenson J. (Ed.), Teaching and Learning Online: New Pedagogies for the New Technologies, London: Kogan Page, , p. 37–52.

Ehlers U.D. (2004). "Quality in e-Learning from Learner's Perspective", In U. Bernath, A. Szucs (Ed) Proceedings of the Third EDEN Research Workshop Oldenburg. Germany: Bibliotheks und Informationssystem der Universitat Oldenburg, p. 130-137.

Ehlers U.D. (2013). "Open Learning Cultures– A Guide to Quality, Evaluation, and Assessment for Future learning". Springer.

European Commission (2017). European Digital Economy and Society Index (DESI). Retrieved from https://ec.europa.eu/digital-single-market/en/desi

European Higher Education Strategy to implement the European Higher Education Area (ET2020 framework). Internet address: https://ec.europa.eu/education/policies/european-policy-cooperation/et2020framework_en.Page viewed on 16/06/2019.

European Higher Education Area and Bologna Process, ENQA. "Quality for learning" EIT Quality Assurance and Learning Enhancement Model. Internet address: http://www.ehea.info/cid101643/enqa.html.

Gabeal M, Purser L, Wachter B, Wilson L. (2008). Internationalisation of European Higher Education: An EUA/ACA Handbook. Raabe.

Johnston C.A., Johnston, J.Q. (1997). Unlocking the Will toLearn: Teachers and Students as Partners. Paper presented atthe British Educational Research Association AnnualConference, 11-14 09 1997, University of York.

Karjalainen R., Niemi E. (2000). New Learning Environments. Pedagogogical approach. Univerity of Oulu.

Kolb A. Y., Kolb D.A. (2017). Learning Styles and Learning Spaces: Enhancing Experiential Learning in Higher Education. Academy of Management Learning & EducationVol. 4, No. 2Articles. 2017. Online access: https://doi.org/10.5465/amle.2005.17268566

Laurillard D. (1993). Rethinking University Teaching: a Framework for the Effective Use of Educational Technology. London. Routledge

Linkaitytė, G; Valiuškevičiūtė A; Čubajevaitė L; Žilinskaitė, L. (2005). E-Learning As a Mean for Transition of Higher Education Towards the Paradigm of Lifelong Learning. Lifelong E-Learning: Bringing e-learning close to lifelong learning and working life, a new period of uptake: Proceedings of the EDEN 2005 Annual Conference, Helsinki, 20-23 June, 2005. Helsinki : EDEN, 2005

Mezirow, J. Taylor E.W. (2009).Transformative Learning in Practice– Insights from Community, Workplace, and Higer education. Jossey Bass.

Moore M,G., Kearsley G. (1997). Distance Education. A Systems View. wadsworth Publishing Company. United States

Nair, R., & George, B. P. (2016). E-learning adoption in hospitality education: An analysis with special focus on Singapore. Journal of Tourism, Heritage & Services Marketing, 2(1), 3-13. https://doi.org/10.5281/zenodo.376329.

Paulsen M. F. (2007). Cooperative Online Education. Online access: file:///G:/Straipnis/paulsen_-_cooperative_online_education.pdf . Viewed on 15/04/2019.

Paulsen M. F. (2003)."Online Education: Learning Management Systems. Global E-Learning in a Scandinavian Perspective", NKI Forlaget.

Ramsden P. (2003). Learning to Teach in Higher Education. Routledge.

Rutkauskiene D, Casanova D, Huet, I, Gudoniene D, Karlsson, G. (2011). Pedagogic traditions, skills and competencesin higher education. Kaunas: Kaunas University of Technology, 64 pp. ISBN: 978-609-452-017-4.

Shell, D.F, Brooks D.W, Trainin G, Wilson K.M, Kauffman D.F, Herr L.M. (2010).The Unified Learning Model– How Motivational, Cognitive, and Neurobiological Sciences Inform best Teaching practices. Springer.

Sigala, M. & Christou, E. (2003). Enhancing and Complementing the Instruction of Tourism and Hospitality Courses Through the Use of On-line Educational Tools, Journal of Hospitality & Tourism Education, 15:1, 6-15, DOI: 10.1080/10963758.2003.10696755.

Skapinaki, A., & Salamoura, M. (2020). Investigating primary school quality using teachers' self-efficacy and satisfaction. Journal of Tourism, Heritage & Services Marketing, 6(1), 17-24. https://doi.org/10.5281/zenodo.3603340.

Szűcs, A. Volungevičienė, A. EDEN (2018): Exploring the micro, meso and macro: Navigating between dimensions in the digital learning landscape: 27th annual conference, Genoa, Italy, 17-20 June 2018: conference proceedings / edited by Airina Volungeviciene, András Szűcs.

Taylor E.W. (2017). Transformative Learning Theory in Transformative Learning Meets Bildung. Brill | Sense.

Teresevičienė M, Volungevičienė A., Žydžiūnaitė V. Kaminskienė L. (2015). Technologijomis grindžiamas mokymas ir mokymasis organizacijoje. Vytauto Didžiojo universitetas. Versus Aureus. Isbn: 978-609-467-118-0.

Tsagaris, A., Chatzikyrkou, M. & Simeli, I. (2018). Train the Robotic Trainers methodology. Journal of Contemporary Education, Theory & Research, 2(1), 38-42.

Tsaple, Vasiliki; Tzionas, Panayiotis: Qualitative system dynamics models to assess the effect of MOOCs on the system of tertiary education - In: Journal of Contemporary Education, Theory & Research 3 (2019) ... S. ... - URN: urn:nbn:de:0111-pedocs-190868.

Volungevičienė, A., Teresevičienė, M. (2008) Nuotolinio mokymo/si turinio projektavimo kokybės vertinimo dimensijos. Aukštojo mokslo kokybė = The quality of higher education. Kaunas : Vytauto Didžiojo universitetas., 2008, Nr. 5

Wiersiema, N. (2000). How Does Collaborative Learning Actually Work in a Classroom and How Do Students React to It? A Brief Reflection. Mexico City.