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У статті розглянуто імплементацію європейських студій щодо інноваційних когнітивних технологій, що базуються на принципах інтерактивності візуальних комунікацій (IVCTs), в систему вищої освіти. Показані ці типи технологій, а також їх вплив на розвиток трансверсальних компетенцій. Основні трансверсальні компетенції пов'язані з творчістю та проблемами віртуальної реальності. У статті окреслено основні завдання щодо поліпшення європейських досліджень імплементації нових когнітивних технологій в українську систему вищої освіти.

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EUROPEAN STUDIES OF INTERACTIVE VISUAL COMMUNICATIVE TECHNOLOGIES (IVCTS) IN HIGH EDUCATION

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Problem analysis. Socio-economical global crisis challenges for the new innovation approach in education and upper-education of the specialists in the future creative economics. First of all this is a challenge for the system of high education. While the concept of "triple L" (LLL) – long life learning is suited to the innovative creative society. Anyway, it means to change the educational system of it's as creative. This is not only special course for the development of creative tools and approaches. The main task of modern high education (in particular) to prepare new learners for the current global realities. The core problem is changing of cognitive niche of humans. Especially young people are living in informational, digital society, mostly in virtual reality. Social reality is very non-stable with the high level of uncertainty. It actualises the problem of proper decision making and creative thinking. New generation needs higher thinking, higher cognitive effectiveness. Mainly it concerns of creativity, creative thinking. Forming creative economy demands creative actors. Thus, it leads to the problem of proper changes and innovations in the educational system. Education policies and curricula aim to incorporate a broad range of skills and competencies necessary for learners to suc-

successfully navigate the changing global landscape. “Transversal competencies”, sometimes referred to as “21st Century skills”, are broad based skills that aim to meet these challenges, such as technological advances and intercultural communication. Education policies and curricula aim to incorporate a broad range of skills and competencies necessary for learners to successfully navigate the changing global landscape [2].

Stages of problem development. Interactive Visual Communicative Technologies (IVCTs) – are the set of technologies which are based on the using of the most powerful visual cognitive channel. All these technologies aimed for the creativity development. Also they deeply involve students in interactive processes of teaching & learning for better results in education for better cohesion, teambuilding and social intellect training.

The objective of the above approach is implementation of ICT technologies of visualization successfully applied in the gaming, design, marketing & business spheres into the high education. There are technologies of video scribing, doodle video, serious games, graphic facilitation and art scribing which could be successfully connected with teaching & learning processes. They will help to increase a cognitive effectiveness, social cohesion in education, motivation and involvement in teaching & learning processes. These techniques will allow starting education from the youngest students and successfully educating them by creating of motivated learning dimension. So, these IVCTs will strengthen the concept of secondary and high education. The problem of youth motivation to learning is actual not only for Ukraine but for Europe too. Also this approach will help to solve the problem of social cohesion by education of various groups of students (with different social and cognitive styles).

Implementation of the visual technologies in the educational processes started very early. For instance, the predecessor of modern visual presentation technologies (like Microsoft Power Point or Prezi) – Kamishibai theatre. Kamishibai is part of an ancient visual

storytelling tradition that originated during the 12th century in Buddhist temples in Japan (kami = paper, shibai = drama; paper dramas). Monks there used picture scrolls to pass moralistic stories to a largely illiterate audience. Traditionally it is a small theatre box in which large prints can be inserted. On the back of these prints is a story that the kamishibai narrator reads or tells: image and language coincide perfectly. A kamishibai story is reminiscent of delayed animation. For thirty years, from 1920 to 1950, this narrative technique was all the rage in Japan; it was the forerunner of the popular manga culture. For the past several years, this unique narrative form has made a global comeback not only in Japan but in Europe. Kamishibai stories for educational purposes are still being published and can be found in schools and libraries throughout Japan and more recently, through the efforts of Kamishibai for Kids, in the United States and Canada. (www.kamishibai.com). It is very popular in kindergartens and various types of schools. It is connected with the one of main task of education – morality and sense making. The main approach is to develop thinking of the students, to increase the level of their cognitive ability. And the one of the efficient methods is implementing of philosophy in the system of high education. This approach is well-known in the pedagogics. PHILOSOPHY FOR CHILDREN (P4C) is a worldwide educational movement that began in 1972 with the work of Professor Matthew Lipman and colleagues at the IAPC. Lipman wrote special “philosophical novels” for use with children and comprehensive “manuals” of accompanying resources. He also suggested the “community of inquiry” as an appropriate method and aim of P4C. Now Philosophy for Children is practiced in more than thirty countries around the world (www.P4C.co.uk). Doubtless, this approach with the proper impact of visualization should be implemented (in accordance with the age psychology and axiology) into the system of high education. Luck of values platform for the successful adaptation and personal self-development of youth is the one of the most fun-

damental and painful problem nowadays. The above mentioned transversal competences include the sense-making competence as the important one of them.

Really, IVCTs in education and training are key factors in the development of transversal competences as the base of the European educational policy. In general, the main goal of education is to adopt student to the success activities in the complex, non-stable society (do not forget about challenges of the virtual and augmented realities). To date, no consensus has been reached for referring to non-academic skills, non-cognitive skills, 21st century skills, or transversal competencies, and this is reflected in the reports from the respective countries and economies. In the report from the Philippines, the term used is “non-cognitive skills”. In its report “Future Work Skills 2020” the Phoenix Research Institute has identified these transversal skills and defined them in ten large blocks of competences” [2]. These competences are as follows: **Sense-Making, Social Intelligence, Adaptation thinking: Intercultural competences, Computational thinking, Transdisciplinarity, Design mentality, Cognitive load management, Virtual collaboration.**

The European educational policy oriented to develop these important and useful skills. Some of them are well-known but changed a little. So, strategic thinking is very important cognitive competence but it is transferred to the more complex and actual competence of **Sense-Making**. We can define it as the ability to find the deepest or most significant meaning of what is being expressed. That means the competence to synthesize the key points that help to create a unique viewpoint before taking decisions. This is sort of “mix” between strategic thinking, proper decision making and creativity. And Interactive Visual Communicative Technologies should be the most important tool in the process of development and dissemination of sense.

The integral parameters of successful interpersonal communications are base of the competence of **Social Intelligence**: the ability to connect with other people deeply and directly,

to detect and stimulate the desired reactions and interactions. Socially intelligent employees know how to rapidly evaluate the emotions of people around them and adapt their words, tone and gestures. As a result, this is a key skill for working together and building relationships of trust, and it is necessary for getting along with groups of people in different contexts.

The information society demands the competence of **Computational thinking**: the ability to translate large amounts of data into abstract concepts and understand reasoning based on data. As the quantity of data that we have available to us increases exponentially, many more functions will require computational thinking skills in order to make sense of this information

In the behavior economics, managing cognitive patterns of social activities, there is very actual the competence of **Mastering the new media**: the ability to evaluate critically and develop content that uses the new media forms, using those media for persuasive communication. The coming generation of workers will have to have fluent competences in differing formats such as video, be capable of “reading” and evaluating information critically, and communicating it through a number of different channels.

The modern situation demands becoming experts in recognizing what way of thinking each task requires and reconditioning the working environments to improve that ability to carry them out. So, very important the competence of **Design mentality**: the ability to represent and develop tasks and work processes in order to get results.

In the conditions of unlimited flows and dimensions of information extremely useful the competence of **Cognitive loads management**: the ability to discriminate and filter out the important information, and to understand how to make the most of current knowledge using a variety of tools and techniques. Everyone has to develop their own technique to deal with the problem of cognitive overload.

In the nearest future will be the most appropriate competence of **Virtual collabora-**

tion: the ability to work productively, to enhance participation, and demonstrate a presence as a member of a virtual team now that ICT makes it easier than ever to work, share ideas and be productive in spite of physical separation [2].

There is very important direction of the development of transversal competences – implementation of their forming into the educational processes. Trends and challenges in integrating transversal competencies into education should be considered and applied in the Ukrainian educational policy.

All terms broadly refer to and encompass skills, competencies, values, and attitudes required for the holistic development of learners, such as: collaboration, self-discipline, resourcefulness, and respect for the environment [2]. So, it means that new approaches which are aimed on its development should be implemented into the system of high education. The IVCTs are the effective tools on this matter.

Many organizations in Europe have taken an interest in the problems of improvement of high education by implementing new approaches. For instance, National Learning and Work Institute (England and Wales) situated in UK is one of them. This is the one of the organisers of Festival of Learning. Festival of Learning is part-funded by the European Social Fund (ESF) to help promote ESF activities and successes in the field of educational policy support. The ESF is a European Union initiative that supports activities to extend employment opportunities and develop a skilled workforce. Established by the European Union, the European Social Fund helps local areas stimulate their economic development by investing in projects which will support innovation, businesses, skills development, job creation, social inclusion and local community regenerations. This is a sufficient financial support of high education because of investing over 2.5 billion in England in the 2014-2020 programme to extend employment opportunities and develop a skilled workforce for students (<https://www.festivaloflearning.org.uk/info/european-social-fund>).

The recent project supported by EU in the frame of the Seventh Working Programme of Horizon 2020 – “Idea Garden”. This is the project based on the motivation to better support creative practices and the goal to bridge the gap between traditional, often fuzzy, non-linear work practices and the available ICT infrastructure. The idea is to implement a creative learning environment which will consist of state of the art hard and software technologies that assist during all phases of the creative process (<http://idea-garden.org/>). This is a response of educators to the demands of creative economics.

Unsolved parts of the problem. The problem of new technologies in the system of high education is very actual because of increasing social problems. In particular, the problem of social cohesion and its educational background is very close to the modern European integration processes. So, today there is a growing understanding of the need to promote the European integration and EU Studies more enthusiastically and broadly; as well as build networks with colleagues in Ukraine and abroad. Therefore, to create interest in the EU and constitutes the basis for future poles of European knowledge, particularly in the implementation of EU Educational Policy principles and innovations in Ukraine. It is necessary to teach the EU issue students who do not study specifically on European issues, for instance, the future specialists for creative industries.

Goal of research. It is necessary to find methodological foundations for the implementation of Interactive Visual Communicative Technologies (IVCTs) both as advanced courses and important educational tools into the system of high education in Ukraine. This process should be based on the relevant aspects of European educational policy (including social cohesion and transversal competences studies). The main task is the dissemination of this direction of educational policy cognitive principles. For this purpose it is important to promote discussion and reflection on EU issues, including understanding the concept of the European high education policy, its funda-

mental principles, Ukrainian opportunities to implement the European experience via discussion, learning of theoretical materials and practical tools.

Problem research. Innovations in high education should be based on the latest scientific researches, approaches and technologies. Therefore the one of the most perspective direction is cognitive. Cognitive technologies in education based on multimodal learning, embodied cognition and interactive-learning framework. Cognitive technologies aimed to cognitive effectiveness improvement not using of new neurotechnologies (neurodevices) but training of various mental abilities (neurobics, eidetic and mnemonics). Cognitive technologies based on practical technologies of interactive communication (facilitation, mediation, active-learning based case studies, serious games, etc.). Implementation of the IVCTs has to take into consideration the basic cognitive mechanism. This cognitive mechanism is the game – through the game, as shows evolutionary epistemology, a person learns and develops. In addition, the game is one of the most emotionally deep, exciting process not only for children and young people but also for adults. This specificity of our cognitive system is successfully taken into account in "the experience economy", "economy of entertainment". The existing trend of development of social reality reflected in this area – "virtual offset": more and more games are transferred to virtual reality, and even in the space of social networks. The development of technology speeds up this process – right now there are gamers devices that combine the real physicality of the player with a virtual "avatar". Helmets for the other sensory experiences of reality are improving very quickly, along with a variety of devices that enhance our cognitive capabilities (for example, see or hear in the human range). But even without these devices a virtual game captures an increasing number of people. According to estimates of the Association of interactive computer programs back in 2006, they played about 146 million people, representing 60% of the US population [1, p. 102].

Gamification is intensively spread in the education system. An important aspect of applying a particular category of games (including in education) is in focus of interests of the company Serious Games – the Serious Games Society (www.seriousgamesociety.org). Last year the Serious Games Society conducted the international conference on The Games and Learning Alliance conference (GALA 2015), which was dedicated to scientific and applied researches and developments in the field of "serious" games. They are considered as a useful and effective tool for better learning, study, training, and evaluation in the education system. Sure, they could be considered as the brightest sample of IVCTs.

The normal practice of using innovative IVCTs is video scribing in the education processes. It is really practical because of possibility in a 5 steps to create your own whiteboard video (<http://www.videoscribe.co>). The same approach proposes another companies like Sparkol - Doodle Video, etc. This is sort of a new type of kamishibai: an interactive approach in drawing the pictures and following speech.

It is very actual that the above cognitive educational technologies (IVCTS) are aimed to the involvement and motivation for learning of youth. Video and graphic connects with young people. Multimedia whiteboard videos aren't just fun – they're shown to grab attention, invite engagement and boost retention for exams. Also it will help to empower teachers by using IVCTs (VideoScribe in particular) to illustrate complex ideas. IVCTs will bring dry topics alive, teach storytelling, design and media, to learn IT skills. The results of the application of the above cognitive educational technologies – new educational tools, new approach for subject education, methodological courses for supervision and upper-qualification of teachers (especially of high education schools). All these technologies will positively impact on creativity and social cohesion development of all subjects of educational sphere.

Conclusions and perspectives of further researches. New educational paradigm offers the

concept of cognitive effectiveness and how to reach it through educational technologies. It includes topics of creative thinking, teambuilding abilities, effective decision-making, engagement in the learning and teaching processes, cognitive skills improvement, etc. The idea is application of Interactive Visual Communicative Technologies in to the system of education. It will change the existing approach to the teaching and learning in secondary schools and pedagogical universities. The perspective direction of further researches is to find a methodological base for the platform for realization of innovative services for educational programs: integration of flexible teaching methods, the latest hardware and software, digital

3D-objects and multimedia content and elements of augmented reality.

Also the focus on transversal competences and their development by the way of applying the IVCTs as cognitive technologies in education will improve the process of real European integration for Ukraine. First of all it leads to the theoretical and practical implementation of European studies on the matters of educational policy, creativity, European values, cognitive effectiveness, etc. To increase social and personal impact it is necessary to deliver tailor-made courses on IVCTs. And EU issues on this matter should be relevant not only for students of high education institutions but for graduates in their professional life.

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