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TRANSFORMATION OF EDUCATION POLICY STRATEGIES AND THE MANAGEMENT OF VIRTUAL LEARNING ENVIRONMENT DURING COVID-19

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Abstract. The paper examines the modelling dimensions of the virtual teaching/learning environment and its practice aiming to reflect in the changing environment. The aim of the research is to reveal the process of modelling the virtual learning environment by analysing the policy of the learning environment changes and how is reflected in the education and economic development policies. Focus groups and interviews are used as qualitative research methods. The results of this research make an input for both *academic and practice areas* of education management, social-learning innovations, and human resources development. Findings particularly show the nature of learning that becomes more learner-centred; learning opportunities meet the individual needs; innovative educational concepts will be implemented through experiential or inclusive learning and social-cognitive processes will meet the needs of economic change. The suggestions to be used by the economic development and education policymakers and practitioners, and focus on enabling the learning environments to adapt to the labour market and business development.

Keywords: virtual learning environment, learner-centered practices, education policy, social innovation, teaching and learning, transformation.

JEL Classification: I25, O15, O35.

Introduction

Narratives (discursive narratives) of teaching/learning environment change are created and presented by politicians and education specialists who seek to identify the identity of teaching/learning environment change, define it, give it a descriptive form and communicate it in the perspective of education reform (Affouneh et al., 2020; Dhawan, 2020). Therefore, education policymakers try to see a vision of the teaching/learning environment change. The political narratives of teaching/learning environment change represent the stories of professionals and experts in a certain field, and their main function is to promote a specific vision and the ideology of teaching/learning change. When trying to identify the origins of the representations of the teaching/learning environment change in education policy, a constant transformation is observed, which offers contours of modality. These contours of modality are metatheoretical elements designed to describe the teaching/learning environment and construct the typology. In this way, clear contextual dimensions are established.

Representations of teaching/learning environment change are always associated with the transformation of dominant educational paradigms. According to Dhawan (2020) and Donahoe et al. (2019) the space of social phenomenology is a conceptualised and seeks to name a study of subjective meanings and their constructs. It can be argued that this scientific article belongs to the field of *social phenomenology,* and thus seeks to explain how the change of teaching/learning environment is made meaningful in the discourse of education policymakers and in the consciousness of various social groups. The approach to social phenomenology proposed by Bourdieu is an appropriate tool because it recognises the role of everyday

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cognition and practical knowledge in the continuous development of a knowledge-based society (Affouneh et al., 2020; Martin, 2020). Our first attempts to look at the perceptions on the teaching/learning environment and its change have shown that there are representative perspectives that form the general understanding of the teaching/learning environment and the culture of its change. According to Mehall (2020), the state of change in the teaching/learning environment is legitimised by the definition and semantics of space. The existing logic of space always subordinates the identity of the group. By attaching to its space, a social group transforms (dynamics) and adapts (statics). Memory, that draws the boundaries of the semantics of space, also plays an important role in such a complex relationship. Semantics offers a comprehensive ideological picture of the learning environment.

As technology and the socio-economic situation change rapidly, so do learning strategies and trajectories. Considering that during the last 10–20 years the generation and order of knowledge has changed substantially (Affouneh et al., 2020; Mehall, 2020), leading not only to new models of communication and work, but also to a new approach to learning, teaching/learning environment and competence needs (Mehall, 2020), it is important to have a clearer understanding of how teaching/learning environment opportunities may change over the period of the strategic guidelines for reform (2013–2022) in order to better advise education policymakers as Redecker et al. (2011). Thus, in order to determine how education and training policies can adequately prepare young people for life in the society of the future and also later for the needs of the market (Goczek et al., 2021), it is necessary to anticipate what competences will be important and how they will be acquired in a learner-centred virtual teaching/learning environment (Huang et al., 2020). From that comes the *definition of scientific problem* that is related to how the virtual teaching/learning environment modelling dimension is contextualised in the processes of change of Lithuanian education policy as well as economic development and education policy-making while enabling the learning environments for everyone to receive an appropriate learning, adapt to different life situations and use the capabilities in the labour market and business development. Thus, the following problem-related research questions are raised: i) how the discourse of learning environment changes is perceived on the individual, business, and economic development level, ii) what are the key trends in virtual learning environment while applying new learning policy and how do they manifest in education sector?

The object of the research is the virtual learning environment as a priority for the new education policy strategies' implementation in school organizations.

The aim is to reveal the process of modelling the virtual learning environment in the education sector by analysing the policy of the learning environment changes in education organizations and is reflected in the education and economic development policies.

For data collection, the scientific literature analysis method (employed to reveal theoretical aspects of virtual teaching/learning environment modelling) and group interview method (adopted to reveal practical aspects of teaching/learning environment change and their expression features in the general education school sector) were used. This article draws on research in a general education school to gain a deeper insight into the information provided by research participants.

Paper structure consists of three chapters that cover both theoretical observations, research methodology, and the findings. Conclusions and recommendations draw the attention to a more contextualized insights and suggestions for the involved parties of this phenomenon.

1. New virtual learning environment modelling approaches

The perception of learning in a fully digitalised (networked) knowledge society will be fundamentally different from today's situation in Europe and globally (Goczek et al., 2021; Lv et al., 2017). The development of information and communications technologies (ICTs), together with other socio-economic and demographic changes, not only opens up new learning opportunities, but also leads to the need for new skills and knowledge for work, education, training, self-development, and participation in society (Affouneh et al., 2020; Dhawan, 2020; Donahoe et al., 2019; Mehall, 2020).

The process of modelling a virtual teaching/learning environment is based on a vision in which *digital literacy* is defined as the acquisition of the skills necessary to participate in these virtual learning environments. Learning to use ICT tools is certainly part of that, but other higher cognitive skills are also needed to facilitate participation in virtual learning environments in all respects. Skills to search, evaluate, manage, and use information and digital resources are essential for working and learning in a digital environment. This includes the ability to systematise knowledge according to personal choice and to use tools to form systems that track and update relevant information. However, in the network knowledge society, *communication with other people* is also considered a value, and the skills gained from such communication are becoming increasingly important (Ala-Mutka, 2008). In fact, all these skills are becoming an essential part of the digital literacy that must be acquired. Thus, by constantly gaining experience through participating in ICT-based virtual teaching/learning environments with other learners and mentors, these skills are developed and become part of the lifelong learning process (Huang et al., 2020). Virtual teaching/learning environments enable the learning of both aspects of digital literacy.

Policymakers and other stakeholders generally agree that Europe needs to make fundamental changes in education and training to implement such important policy goals as, for example, the goals of *competitiveness, growth, employment and more sustainable social cohesion*

set out in the Lisbon Strategy (Tapio, 2004). Education, together with research and innovation – the so-called "knowledge triangle" – is seen as a key factor in building a competitive and inclusive knowledge society. Technologies, especially ICTs, have a unique role to play in bringing about these changes. It is almost impossible to imagine a virtual learning environment without some kind of ICT being used as a primary or complementary learning tool. While it is clear that technology alone, no matter how powerful, cannot in itself bring about the necessary changes, the potential of ICT is important when ICT is used in a social, economic and organisational context that is open to innovation and supported by a favourable political environment (Ala-Mutka, 2008; Donahoe et al., 2019; Punie, 2007).

The main discussion is how to adapt these new requirements to formal education and training in Europe and to relate to the economic development and businesses also with a focus on entrepreneurship (Goczek et al., 2021; Hanushek & Woessmann, 2020). It is recognised that significant progress remains to be made in implementing important changes in education and training to accelerate the development of the knowledge society (Donahoe et al., 2019; Mehall, 2020). The contribution of learning to people's liberation, social advancement and self-expression is also significant. Achieving learning goals, such as developing *social skills and critical thinking, learning to share and collaborate* is becoming increasingly important (Ala-Mutka, 2008). As the role and meaning of information and knowledge in the knowledge society are different, the vision of what knowledge and skills people must have and how they must acquire them must also change. Knowing where to find certain information, who can access different sources and why is becoming increasingly important in a network society. Social skills and "relationship capital" are part of digital literacy required to live and work in a knowledge economy that is becoming increasingly evident due to the rapid development of "web 2.0" or social computer applications (Dhawan, 2020; Mehall, 2020; Huang et al., 2020). Various European stakeholders are working hard to identify what digital literacy and skills are needed today and soon for people to be full members of the digital society and for educational organisations to remain competitive. Therefore, three types of electronic skills are distinguished: ability to perform ICT-related works, ICT user skills and e-business skills.

Today, ICT user skills are clearly important to all members of society as our society is becoming increasingly digital. As the younger generation is better acquainted with ICT, it is important to note that it is not enough to just learn about the "use of ICT", i.e., learn to use technology. In the digital knowledge society, it is important to learn to use ICT as a tool for new ways of working and communicating and to understand the importance of using ICT. This can be understood as a group of new skills needed in the knowledge society. The European Commission has integrated digital literacy into the "key competences" for lifelong learning, i.e., the list of skills that *encourage personal development, active citizenship, social inclusion and employment* (Ala-Mutka, 2008; Donahoe et al., 2019; Mehall, 2020; Tapio, 2004): *Digital literacy* is associated with the reliable and critical use of Information Society Technologies (ISTs) at work, during one's free time and when communication with other individual. It is based on basic ICT skills: *the use of computers for finding, evaluating, storing, compiling, presenting and exchanging information and for communicating and participating in collaboration networks on the Internet* (Tapio, 2004). The following article examines the different competences that form the basis of digital literacy necessary for learning in the knowledge society.

Virtual learning environments can take many forms, but they all have the features in common (Ala-Mutka, 2008; Lopez-Fernandez et al., 2021; Redecker et al., 2011; Smyrnova & Zegzu, 2021). *Virtual learning environments as personal digital environments.* Every learner (and every teacher, educator, tutor) has a personal digital virtual learning environment where all the learning resources particular learner needs are available at any time and on a variety of devices and media. A personal virtual learning environment is a virtual desk where everything is personalised and easily accessible. The personal environment allows different abilities and "partial identities" to be shown to different groups of people, while at the same time maintaining a safe and personal environment in the digital world (Daskala & Maghiros, 2007; Martin, 2020).

Virtual learning environments as social virtual environments. For learning to become a social phenomenon, virtual learning environments bring together community, interrelationships, and communication. In these environments, a variety of actors – teachers, students, learning institutions and developers of learning programmes, as well as family members, friends, colleagues, and other peers – meet and interact to teach/learn or share experiences. Virtual learning environments are supported by a variety of synchronous and asynchronous communication channels, but learners, members of the same group, and teachers can also meet in the physical world (Martin, 2020; Mehall, 2020; Huang et al., 2020). Personal digital virtual environments enable the individual formation of knowledge and the provision of advice and assistance to other learners and experts through communication technologies.

Virtual learning environments as trust-based virtual environments. The key thing that connects learners and teachers is trust. The accuracy and reliability of the knowledge conveyed is important, as is the openness of personal expression and thinking. Learning communities connect the knowledge and experience of many people (Ala-Mutka, 2008). Validation and accumulation of knowledge in alternative social trust-based environments complements and compensates for the diminished importance of authority, proximity, and face-to-face meetings (Donahoe et al., 2019; Mehall, 2020).

Virtual learning environments as personal digital environments. Virtual learning environments prioritise not the knowledge accumulation but individuality, personal creativity and innovation in the learning process (Cipresso et al., 2018; Klopfer, 2013; Savanevičiene et al., 2008). Different learning methods are often associated with different learning environments, but as the boundaries between work, private and public life and learning become less clear, virtual learning environments need to be flexible and adapt to such changes. It is not unusual to use and apply different learning styles, methods and techniques, depending on the purpose of the learning object, the learner, the teacher, the environment, and so on. Learning activities are formed, say, from the usual elements, such as communicating with teachers directly or through video, individualised communication using a computer, asynchronous or synchronous teamwork, mutual communication, and so on.

Virtual learning environments as certificate-issuing environments. Digital environments, connectivity and trust in online communities also lay the foundations for new certification systems that allow social networks, members of the same group, informal tutors or other participants to issue certificates. These new certification methods complement the traditional formal certification methods and thus allow not only the development and lifelong learning in a variety of ways, but also the formal recognition of that learning (Council of the European Union, 2012).

Virtual learning environments as stimulating and engaging environments. A personalised personal digital environment and flexible learning methods provide valuable opportunities to develop *appropriate and stimulating learning plans* best suitable for a specific individual. Learning is related to objectives and goals that demonstrate and validate the learner's level of knowledge and skills (Martin, 2020). Through multimedia, learning resources become enjoyable, and the connection facilitates social and non-formal learning approaches that are engaging and link learning to positive emotional aspects.

Virtual learning environments as controlled virtual environments. Virtual learning environments control both access to them and the end of learning. Open (modular) learning systems allow students to connect whenever they can or want to (Ala-Mutka, 2008). Future learning facilitates reflection, allowing students to reflect on their work, learning and life, and to learn from their own experience and personal circumstances.

Virtual learning environments as knowledge management systems. Nowadays, when it is easier than ever to keep in touch with someone through various means of communication, learning does not necessarily mean acquiring knowledge. Instead, it often means finding and managing the knowledge or aids needed to perform tasks. Linking personal virtual learning environments allows for the formation and management of interpersonal and inter-institutional knowledge. Thus, virtual learning environments enhance personal knowledge and work by offering and providing easy access to other relevant individuals and their public virtual learning environments.

Virtual learning environments as inclusive environments. The last and most important feature of modelling a virtual learning environment is the ability to engage. Virtual learning environments do not single out any individual. They are open to people of all ages, with different backgrounds, from different cultures, speaking different languages, regardless of disability or other complications (Ala-Mutka, 2008). The social communication aspect, trust-based systems, and the ability to create a certain learning environment for people with less learning and ICT experience allow for individuals to easily join such virtual environments.

2. Research methodology

A qualitative research strategy was chosen for the research. The aim is to make certain insights that are distinguished from the point of view of the people involved in the educational process. A semi-structured interview and focus groups methods were chosen for the research (Denzin & Lincoln, 2017; McLellan et al., 2003; Wilkinson, 1998). During public consultations and seminars, education experts (N = 10), teachers (N = 100) and education policy-makers (N = 10) are interviewed. The purpose of this method is twofold: first, to develop discussion and gather information about ideas generated in practice, and second, to create an educational environment that allows participants to express not only their opinions but also to think about what they can change personally and in what areas more collaboration is needed (Castillo-Montoya, 2016; Denzin & Lincoln, 2017; Sim & Waterfield, 2019). When discussing the topic of virtual teaching/learning environment modelling, the use of group interaction effect provided new qualitative features of the interviews. What is more, *concept maps* were created, reflecting the main changes in learning strategies and the response of learning systems to the challenges. Although each of the jointly developed visions has its own clear accents and scope, together they form a detailed, diverse and changing model of expression, where technological directions and socio-economic dynamics influence teaching/learning strategies and their expression perspectives. As a result, there is a need to reflect on fundamental changes in the teaching/learning environment. The research was conducted in May 2021. During group interviews, all participants are involved as much as possible. After asking the question, the opinion of those who wish to speak is heard, and all individuals involved in the research are encouraged to speak, with appropriate supportive questions, usually focused on the responsibilities and experience of the respondents. Qualitative research of virtual learning environment modelling allowed to reveal the dynamics, expectations, and attitudes of educational entities towards the virtual learning environment.

3. Results

Teachers' insights into the change of the teaching-learning environment. During the qualitative research, teachers were asked to indicate changes in school education. The collected responses were grouped into categories (clusters), each of which had subcategories (topics).

The main changes are contextualised in the field of learning process optimisation (Table 1).

Table 1. Contexts for changes in the learning process

Category	Subcategory	Contextual learning
Changes in the learning process	Learning objectives	*'Promoting values, respect, diversity* [...]*'; 'Learning "how" instead of "what"'*; *'A new balance between content and competences'* [...]; *'Learning about one's own culture and the culture of others* [...]*'*
	Learning methods	'[...] *task-based learning*'; '[...] *learning by doing*'; '[...] *interactive learning*'; '[...] *understanding of a subject matter, not just receiving of information* [...]'; '[...] *practical, not just abstract, learning*'
	Learning roles	'[...] *reduced hierarchy*'; '[...] *students develop their knowledge individually, under the guidance of a teacher*'; '[...] *teachers are moderators*'; '[...] *teachers are not the owners of information*'
	Learner-centred learning	'[...] *learning is more individual*'; '[...] *greater account is taken of individual progress*'; '[...] *constructive learning*'; '[...] *specially adapted for pupils*'.
	Learning spaces	'[...] *a high-tech environment*'; '[...] *ICT employed everywhere, not just at school*'; '[...] *mobile technologies*'; '[...] *iPads given for every learner*'; '[...] *learning should be open to the public*'
	Learning links	'[...] *global learning*'; '[...] *involving the local community*'

Upon comparing the results of the research with the main goals, it is possible to determine which goal should be the focus of education policy to change the situation by 2022 and achieve the expected result of learning quality. In the *Strategic Framework for Education* (2014), one of the measures to ensure the efficiency and coherence of the development of the quality of the learning process emphasises that the quality of the learning process is based on a learner-centred approach (e.g., '[...] *learning is more individual*'; '[...] *greater account is taken of individual progress*'), a vision of multidimensional social interaction (e.g., '[...] *global learning*'; '[...] *involving the local community*'), and principles of social justice, inclusion and access to education. Therefore, learning becomes the most important and should be at the very centre when thinking about the quality of education (Donahoe et al., 2019). Inputs, processes, environments, and outcomes work together and stimulate learning. Two levels have been distinguished: the internal level of the learner operating in the learning environment (e.g., '[...] *students develop their knowledge individually, under the guidance of a teacher*') and the external level - the level of the education system that creates and supports the learning experience (e.g., *'Learning "how" instead of "what"'*; *'A new balance between content and competences'* [...]; *'Learning about one's own culture and the culture of others* [...]). In this environmental model, elements of training organisation are perceived as learner-centred.

At the learner level, teaching/learning material and tools should respond to changes in the world, and the learning-related needs of modern society and the individual. Therefore, teachers: 1) integrate the more active learning methods: *Learning became more active, the focus was on learning by doing, by experience. At the same time, it became more public-spirited and based more on collaboration and evidence, where each student constructed their knowledge and performed practical and other tasks while communicating with others. A learner-centred approach to learning became prevalent, considering the individual needs and progress of each student. In support of this change, the traditional roles of teachers and students are changing teachers have become moderators and tutors (mentors), while students form personalised knowledge and knowledge gained through collaboration*; 2) review learning targets: *More constructive active learning ways resulted a changed balance of knowledge and skills and the appearance of new competences. In a world full of information, knowing 'how' has become more important than knowing 'what'. In addition, values such as cultural acceptance and diversity, tolerance, respect, and responsibility became important in the learning field*; 3) create new learning environments and contexts: *Along with changing learning goals and ways to achieve them,* new learning environments *and their links with different contexts have emerged. Learning is supported by* flexible and dynamic virtual environments *and* a wide range of tools and applications *that facilitate individual and collaboration-based learning within and outside the school, and in links with a variety of contexts. No more physical or virtual barriers. Learning environments became more holistic, are motivating, public-spirited, and connected to the local community and the global society.*

In the second phase of the public consultation, teachers were asked to identify what key competences students will need to acquire. It is noteworthy that all the competences currently described as key in Europe have been mentioned as important for the future learning environment, thus confirming their continued importance and relevance. However, in their discussions and suggestions, the participants in the qualitative research analysed and improved the current composition of key competences,

pointing out how competences can be changed to better meet the needs of the future. *For example, digital literacy competences have been complemented by a proposal to include new communication models such as a permanent online presence and an agreement to use different means of communication in parallel (Web 2.0, digital identity management).*

To sum up teachers' preferences when it comes to the contexts of changes in the learning process, it can be observed that with the rapid increase in the flow of new information and the development of technology, it becomes important to look for new ways of learning based on multifaceted abilities. In the 21st century, when new learning needs are emphasised, a specialist in any field must be able to identify, understand, analyse, and solve the most relevant problems, as well as apply the available knowledge in new situations.

Insights of education experts (school heads) (N = 10) about changes in the teaching/learning environment. The targeted discussion provided insights about current and future trends and their impact on learning. The main changes are contextualised *in the field of the national learning system* (Table 2). When comparing the findings of the experts with those of the teachers who were asked to focus on *school education* rather than on the overall big picture of changes in communities, many general aspects of the analysis can be noticed. Both groups of experts and teachers emphasise that *technological change* will be an important factor affecting the learning environment change. At the heart of the maps of both concepts, the following have been identified: *changes in learning strategies and approaches* (new emerging competences, *assessment procedures with a focus on skills and attitudes rather than fact and knowledge*; learning strategies, *that make the learner central to the learning process*; personalised learning approaches, *tailored to individual learning needs and goals*; dominance of collaboration-based learning processes, *that also change student-teacher relationships*, and new learning environments integrated into life and work processes).

Education experts have modelled a picture of a rapidly changing world, where *integration, collaboration, coordination, and personalisation are key strategies* for citizens to acquire the skills and attitudes needed for active participation in society. In addition, experts said that education and training institutions have become learning communities working with employers to identify skills needs and tailor learning information to the individual needs of each student. Thus, the desirable future of the teaching/learning environment, as described by experts, is a learning perspective in which everyone has access to many freely available opportunities that flexibly respond to the learner's learning needs and preferences.

Insights of education policymakers (specialists of the municipal education department) about the change of the teaching/learning environment. The main changes are contextualised *in the field of systemic educational change* (Table 3).

Like teachers and experts, policymakers have also emphasised that *technology is one of the main drivers of change in learning.* They also argued that *personalisation and collaboration-based learning processes will become*

Table 2. Contexts for changes in the learning system

Category	Subcategory	Contextual learning
Changes in the learning system	Socio-economic trends (*Lifelong learning*)	'[...] *Increasing importance of lifelong learning, but also the separation of institutions*'; '[...] *Balance between primary education and training, and lifelong learning*'; '[...] *More reliance on lifelong learning*'; '[...] *Personal lifelong learning becomes an advantage*'; '[...] *New ways of learning will emerge, tailored to future skills-related needs in line with the needs of the labour market.*
	Learning processes and strategies: assessment, personalisation	'[...] *there will be more research-based learning, the development, testing, and continuous improvement of personal theories*'; '[...] *new models of assessment (especially of formative assessment)*'; '[...] *personalisation of learning strategies*'; '[...] *less unnecessary skills and expertise required from students when learning*'; '[...] *holistic learning management*'; '[...] *learning in project teams*'.
	New skills: collaboration	'[...] *Learning from peers will be part of the learning process*'; '[...] *the market will decide what we will need to learn (loss of knowledge about our cultural heritage)*'; '[...] *The need to learn how to educate oneself*'; '[...] *need for multiple skills (multidisciplinarity and "do it yourself" practice)*'; '[...] *problem solving and adaptation skills*'; '[...] *focus on knowledge creation*'; '[...] *skills development takes precedence over knowledge*'.
	The science of educating oneself	'[...] *To integrate, test and continuously improve*'; '[...] *teachers will be more involved in team training activities*'; '[...] *leadership-based learning*'.
	New strategies and technologies	'[...] *strong artificial intelligence*'.
	Learning with technology	'[...] *High quality digital learning environments*'; '[...] *Learning without having physical classrooms*'; '[...] *Augmented reality and innovative modelling*'; '[...] *learning motivation will be based on social networks*'; '[...] *mobile tools will be a substitute for learning and memory*'; '[...] *mobile tools support learning*'.
	Content and education programs	'[...] *The content and environment of learning will change*'; '[...] *A proportionately growing knowledge base*'.

Table 3. Contexts of systemic changes in education

Category	Subcategory	Contextual learning
Contexts of systemic changes in education	Institutions	'[...] *more integrated into the world*'; '[...] *accessible to the needs of pupils and society*'; '[...] *the boundaries of formal and non-formal learning are exceeded*"
	New skills	'[...] *technological, digital literacy skills*'
	Compatibility of education and training with labour market objectives	'[...] *matching programmes to the needs of the labour market*'; '[...] *improving the transition from training to the labour market*'; '[...] *employees are more involved in education and training*'.
	Technologies	'[...] *ICT will be commonplace and integrated into the education program*'.
	Challenges	'[...] *Implementation gap*'; '[...] *to respond to technological and demographic change*'.

prevalent, and that teachers and students will be able to *design their learning processes* to be better *adapted* to individual needs *on the one hand* and to societal change on the other. Accordingly, it is emphasised that while the current set of key competences will remain important in the future, competences will place more emphasis on skills and attitudes that will be acquired and complemented through lifelong learning, than on knowledge. According to policymakers, the key challenge for education and learning in the future will be bridging the current 'implementation gap' and putting into practice what has long been recognised as necessary and subject to change (Dhawan, 2020; Mehall, 2020). This is thought to be particularly difficult to do in the face of expected or sustained budget cuts and further changes in technology and the demographic situation. Obstacles that prevent taking on promising learning strategies, such as new ethical issues arising from privacy or a lack of adequate and targeted teacher training, also need to be properly addressed for change to take place.

Conclusions and recommendations

Within identification of the origins of teaching/learning environment change in education policy, a constant transformation is observed that suggests rather clear shape of modality. Such a shape consists of metatheoretical elements designed to describe the teaching/learning environment and construct the typology. Consequently, clear contextual dimensions are established.

When analysing the content of various groups (clusters), four general directions were identified.

The first group of clusters emphasises the changes expected in formal education and learning. Experts stressed that in this sense, institutions will change to become empowering and interconnected in a global education and labour market. Informally acquired competences and skills are to be better recognised and integrated into qualifications systems. These cluster groups also show that the responsibility for acquiring competences and skills will shift from the institutional responsibility level to individual.

At the very heart of the concept maps is a *lifelong learning cluster*. Said concepts show not only that this cluster will be in a central role in the future of learning, but also that it brings all other clusters together. According to experts, this means that many of the expected changes in learning strategies and practices and ways are related to the fact that in the future, skills and competences will be acquired through lifelong learning.

ICT takes significant position in the way that learning will take place in the future. While the statements in all groups reflect learning models that are changing due to the opportunities provided by ICT, there are three groups that clearly show how emerging technology will condition the emergence of new learning strategies. Some of the expected changes stand out as particularly important: *the nature and focus of learning become more learner-centred, both on the individual and societal levels; learning opportunities due to personalisation and being tailor-made meet the individual needs; innovative pedagogical concepts based on what was previously mentioned will be developed and implemented, for example through experiential or inclusive learning and social and cognitive processes will meet the needs of economic change; formal education institutions will respond flexibly and dynamically to the market and individual needs through integrated the learning environment into everyday life; education and training will be available and accessible to all citizens and this way respond to the needs of the market and individual career changes.*

The consequence of the changed patterns of communication and interaction will be that interpersonal skills (communication, collaboration, overcoming difficulties and collaboration skills) will become more important. Self-determination, resilience, experimentation, risk-taking, creativity and entrepreneurship will become key competences for people to actively manage their personal and professional skills and find their way in an interconnected maze of interactions.

The results of this research should be interpreted bearing in mind several *limitations* as well. The findings appear to reflect a qualitative analysis of the data gathered through the interviews and focus groups. Therefore, application of other tools for getting access to some quantitative data, which leads to a more statistical picture of the phenomenon and more comprehensive results is required. Besides, as the sample population presented here was limited to only a few experts, this fact restricts the generalizability of the findings to other educational institutions, and it remains wise to avoid interpreting them as definite.

The *recommendations* along with the insights *for the future research areas* are mainly drawn to the Lithuanian

policymakers in education and economic development, to local businesses and to education organisations and professionals. Policymakers, as a general trend, *learning will respond to the changing situation in the labour market* and evolving entrepreneurship that are to be used as catalysts for economic development. The suggestions *should be better aligned with curriculum*, content and learning objectives. The market should also be more involved in shaping and redesigning the learning programme to facilitate the transition from education and training to the labour sector. In general, education and *training institutions will need to become more transparent and accountable*, open to the public and to the needs of learners. Non-formal learning activities will need to be better recognised.

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