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Framework for the Innovative Development
of National Academy of Legal Sciences of Ukraine

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EDUCATIONAL PARADIGM SHIFT OF INNOVATIVE SOCIETY

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Abstract. The relationship between Industry 4.0 and education is a common research topic these days. Its examination is usually carried out either from the economic side or from the education side. However, this relationship also affects many other areas of life, so it is worth analysing from the perspective of other sciences as well. An outsider's point of view can draw attention to details that do not stand out from the overall picture for either industry or education researchers the purpose of this study is to draw attention to such points of view. For this purpose, authors examined the questionnaires of the pilot test of older planned research using the method of text analysis. Results show that not only the viewpoints of industry and education offer useful information. It can help in the development of modern educational content and methods.

Keywords: education, Industry 4.0, paradigm shift, out-of-the-box, viewpoints.

Author contributions

AK and BGK made the questionnaire and collected the data. NP-N conceived the study and were responsible for the design, ALL of authors analyzed the collected data and interpreted the results. AK and NP-N wrote the discussion and BGK collected the relevant literature.

Disclosure statement

The authors have not any competing financial, professional, or personal interests from other parties.

INTRODUCTION

"According to a popular estimate, 65% of children entering elementary school today will eventually work in new types of jobs that do not currently exist. Technological trends such as the fourth industrial revolution will create many new cross-functional roles that will require employees to have technical, social and analytical skills. Most existing education systems provide high-quality training at all levels and engage in many 20th-century practices that hinder progress on today's talent and labor market issues. ... Businesses need to work closely with governments, education providers and others to imagine what a true 21st century curriculum might look like," Schwab and Samans (2016 p.3) write for the World Economic Forum (WEF) on the future of jobs in his report. Practically the same statement is repeated by Schleicher (2010) in the OECD (Organization for Economic Cooperation and Development) is also the director of education.. The most important conclusion of that messages is that education in its current form hinders progress.

According to experts, the situation is not so hopeless. The only advice to be accepted should be the one given sixty-five years ago by Josephs (1958), who proposes a new approach where the gain of one person is not realized at the cost of another person's loss, but the new ideas of many people become the gain of the masses. This approach is now also spreading in the economy, nowadays it can be found under the name of Blue Ocean strategy (Kim & Mauborgne, 2015). At the same time, Josephs not only outlines a picture of a future based on cooperation, but also draws attention to the fact that the technologies of the future and the occupations related to them will be invented and created for themselves by the youth of today. So they don't have to sail in unknown waters – they discover the terra incognita themselves. THis article examines the changes taking place in the field of education, primarily in higher education In connection with Industry 4.0, the relationship between higher education and industry is getting closer and closer. In this regard, the research problem related with a new paradigm shift in teaching methods, tools, and content due to the transformation of innovation society has been especially urgent. The goal is primarily to draw the attention of professionals to aspects that the non-professional outsider sees from their own point of view. This approach can offer professional development trends in an innovative society.

THEORETICAL FRAMEWORK

In all cases, the great inventions of mankind first revolutionized production and affected everyday life in this way. Interestingly, the history of science does not link the first industrial revolution to the invention of the wheel (Parpola, 2012), but to the steam engine (Bertus-Barcza, 2013). Today is the era of Industry 40 (Winter, 2020). The relationship between man and machine is getting closer and closer. Today, machines also learn (artificial intelligence - AI) and are able to create the illusion of the real world for us (Virtual Reality - VR). Managing the new technology brought new competencies and skills to the fore. It is no longer enough to learn them while working, they require more serious preparation. Therefore, education is also undergoing transformation. This is clearly indicated by the annual report of the World Economic Forum (WEF) (Schwab, 2018) and even more so by its modified framework (Schwab, 2020). Not only the output requirements of education are changing, but also the length of time spent learning: lifelong learning (LLL), which complements traditional education, is playing an increasingly important role (European Commission, 2020; Reischmann, 2014). The educational aspect of the relationship between man and machine is industry-university cooperation (dual learning system of education/training) and joint research and development (R&D). Students should be prepared for the requirements of professions, some of which do not even exist today (Digital Marketing Institute, 2014; Tencer, 2017). According to calculations (Kurzweil, 2001), the amount of information is growing exponentially, nowadays the entire body of knowledge doubles every two years and this pace continues to accelerate therefore, during the preparation, they must acquire the general competences and the ability of LLL (OECD, 2019). In addition to knowledge and skills, you also need the right attitude (Kossev, 2020). Since education and the labor market are linked by the person of the students, it is worth asking them as well..

The purpose of the article is to carry out an analysis based on general scientific and special methods of scientific knowledge to changes of educational paradigm of innovative society from the perspective of various scientific approaches.

METHODOLOGY

In the framework of the research, 45 university students were interviewed, among them were students of humanities, natural sciences, and economics courses, as well as students of art courses. In short, in no more than 200 words, they had to answer the question of how they see the changes in higher education and what they think is the most important of them. By analysing the most frequently occurring words in the answers and their connection to other terms, the most important areas have been determined for consideration and the given scientific research.

The analysis was carried out via Excel and Taguette software and a new approach for studying: both the most frequent terms in answers and the most frequent words connecting to these ones have been statistically analysed. Authors examine today's educational paradigm shift using different viewpoints from the traditional one. This article focus on only a few aspects, in particular those not related to the tools of pedagogy or educational science, but to the approach of other sciences and the arts. Authors believe that a different focus will show opportunities with which the current trends can be refreshed and supplemented.

RESULTS

Among the results of the analysis, the most frequent terms are shown in Figure 1, and the most frequently occurring words for these terms are shown in Table 1.

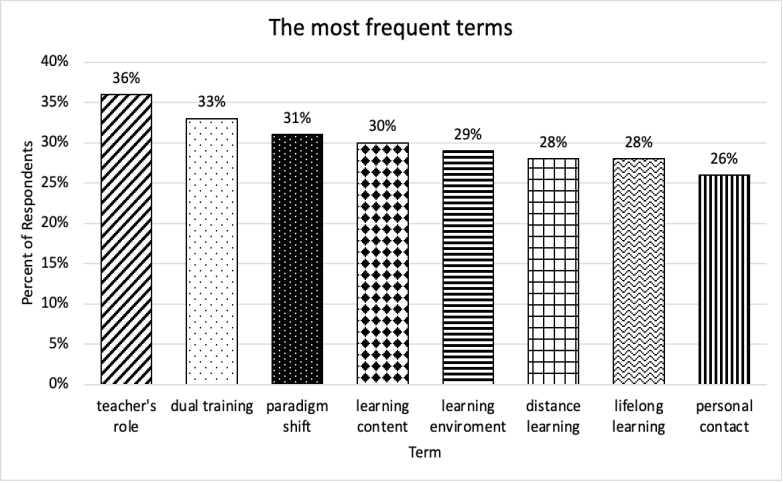

Figure 1 The most frequent terms in students' essays

The most frequent term used by respondents was 'teacher's role'. The next three terms (dual training, paradigm shift, learning content) represent the directions of innovation in education and society.

Table 1 The most frequent associated words

Term	Percent of Respondents	1st Assoc	2nd Assoc
teacher's role	36%	create	leading
dual training	33%	mutual	benefit
paradigm shift	31%	education	intelligence
learning content	30%	readiness	communication
learning environment	29%	distance	ergonomics
distance learning	28%	online	internet
lifelong learning	28%	workplace	training
personal contact	26%	explain	present

The associated words show the main way in which the given term is realized in practice. For example, the teacher does not tell what to learn, but creates the learning content and guides his students. The most important result of dual training is the mutual benefit for both industry and education.

Based on the results, it was investigated which scientific field's approach can be applied to the analysis of the given terminology consisted of the words associated with the five most common terms.

DISCUSSION

Dual training (and its ecological approach)

How does all this appear in education? Its best-known form is the so-called dual training – the intertwining of industry and education, which can best be described with the concept of ecological mutualism (Baranyai & Veres, 2020). The essence of this is that the relationship is mutually beneficial for all parties. An example of this is insect -pollinated plants: the insect gets its fill of the plant's nectar, while it ensures the plant's reproduction by transferring the pollen. The industry receives career starters who have already mastered the entry requirements for their application, and education will be competitive and attractive to students with the promise of a secure future in the labor market. Populations change over time, this is one of the foundations of the evolutionary process. This temporal and spatial change is described by mathematical models in the science of population dynamics (Bacaër & Dénes, 2022). In this case, the spread of dual training and its role in competitiveness indicate that mutualism is increasingly moving in the direction of symbiosis. That is, mutual benefits gradually turn into permanent coexistence. In the case of populations, symbiosis can help to expand the limits of tolerable living conditions, thereby enabling the conquest of new habitats. In the industry-education relationship, this can mean that both parties can significantly expand the other's room for manoeuvre: education ensures the replenishment of knowledge capital for industry more and more effectively, and industry provides education with up-to-date, modern material and technical conditions for knowledge creation. The field of infobionics presents the same symbiosis in the form of chips that come into direct contact with the brain (Roska, 2004).

Nowadays, many studies on dual training are published in both domestic and international scientific forums (Kocsis, 2020; Tryus & Herasymenko, 2021). However, the phenomenon is not new. The authors can still recall the vocational training schools from their childhood, whose students also learned the basics of the profession at companies. This system was gradually abolished after the regime change, and today it is quite expensive to revive it. However, it is worth bearing the costs, because dual education has been one of the determining factors of competitiveness for years (Keresztes, 2017). In principle, the dual nature of higher education differs from vocational school training, the definition of which is laid down in law in Hungary (Act CCIV of 2011 on higher education), but reading the law, it can be seen that the essence is the same: the school provides general and professional theoretical training, the company and provides a location, work and professionals to teach practical skills.

Educational paradigm shift (from the perspective of neuroscience)

Industry 4.0 did not simply affect the development of education, but forced a paradigm shift in the field. One of the main consequences of this is that the time horizon has come closer to us from afar. The acceleration of scientific development also resulted in a shorter time available for making decisions. The classic process of raising a problem – collecting information – analysing – synthesizing – making a decision has now been somewhat exaggeratedly shortened to the steps of raising a problem – making a decision. Since the world has undoubtedly accelerated, advantage must be taken of it (Colvile, 2016). This new algorithm requires new forms of behaviour. As one possibility, it must learn to make decisions apparently instinctively, but actually based on the background information already available to us. In many cases, the decision is speeded up if decision makers are able to look at the problem in a different way than is traditionally customary. Science calls this way of thinking out-of-the-box thinking (Mohrman & Cohen, 1995; Wax, 2009). Nowadays, this approach is characteristic of all areas of life, from politics to economics. It even plays a significant role in the renewal of marketing (Szalai & Tyth, 2020). The other way is to bring machine decision-making to the fore. The calculation speed of artificial circuits is apparently many orders of magnitude higher than that of the human brain. But mankind had to wait until 1996 for a machine to defeat humans (Tran, 2021). It is also important to note that computational speed only applies to arithmetic operations: an obstacle can be dogded still faster than a robot vacuum cleaner. This is no accident. The human brain is still more "modern" than today's supercomputers.

For a long time, even scientists thought that people do not use most of brain's capacity. The well-known communication specialist and lecturer, Dale Carnegie (1936), also testified to this. A science fiction film was also made on the subject (Besson, 2014), presenting the use and consequences of an ever-increasing part of the brain's capacity. In fact, according to new findings from neuroscience, people use more of their brain than it was previously thought (Herculano-Houzel, 2009). It is also a proven fact that so-called subthreshold stimuli play an important role in learning and decision-making (Jiménez-Ortega et al., 2017). The human brain and artificial intelligence – AI) is another significant difference between the above-mentioned ability to operate instinctively.

On the one hand, the machine's decision is always "conscious", and on the other hand, humans give the basic information to the machines as well. These are then combined by the machine program and after counting the possible outputs, it decides. The result of this may not always be favourable for the person. The consequences of a possible "cold-headed" machine decision have already been filmed (Cameron, 1985). Although the phenomenon of machine learning and AI are known now, the machine will never have instincts, at most it will simulate instinctive behaviour. At the same time, the instinctive decision is not a function to be underestimated. In many cases, such a reaction can even save a life. Therefore, no matter how much technology develops, the human factor can never be relegated to the background.

Topál (2017) summarizes the results of neuroscience related to education in his article. The author covers many important topics in this, but the questions raised in connection with the article are more relevant. Two of them are highlighted now. One is the fact that the brain takes in all information, but also selects: consciously experienced, subliminal (i.e. acting unconsciously) and indifferent (that is, remaining in the unconscious) information. However, the phenomenon of hypermnesia exists. This, in contrast to amnesia, is a condition in which the individual remembers all information perfectly, even the most insignificant details. It was not described in the most descriptive way by medical magazines, but by an artist in his short story (Borges, 1954). Given the phenomenon of accurate memory, the question arises timidly: wouldn't it be worthwhile to explore the mechanisms that record information in such a way that it remains available to consciousness?

The other question arises from the fact that no matter how small the nervous system, that is, the brain is divided, our main question cannot be answered: how people learn. The neurotransmitters are well-known for playing a role in the learning process (dopamine, oxytocin, gamma-amino-butyric acid), but their role is questioned based on numerous evidences (Hurlemann, 2014; MDS, 2016). Therefore, one more suggestion comes: if researchers cannot understand how people learn, it should research how they forget. Maybe Jung (his book was last published in 2022) was right with his theory about the collective unconscious, and this is where what people "forget" comes in? If so, the question will be how the brain excludes unnecessary information from the collective knowledge.

The transformation of the teacher's role (from the point of view of the arts)

Let's look at all this now from the point of view of education. Due to the closures of the COVID-19 pandemic, education was forced into the digital space. Plans for the development of online education have long preoccupied academic circles and policy makers. The question of distance education arose in Hungary as early as the 1950s. This is when the concept of programmed education appeared (Szegediné, 2010). This word connection sounds unusual today. In fact, it was the basis of self-study – in practice, the fact that a textbook should be written in such a way that the reader could understand and master the content contained in it (Takács, 1978). In the 1960s, the Budapest Electroacustic Factory produced an audio-visual training machine called Manokorr (Nádasi, 2010). The teaching machine was replaced by the computer in the 1980s, but the real breakthrough came when the Internet became available to households. With the help of the Internet, everyone can study anywhere, even at home, and at any time, according to own schedule, and can acquire the desired knowledge. This opportunity led to the spread of distance learning. Of course, distance learning presupposes the appropriate level of digital competences because the necessary tools can only be used properly if these are mastered. Research results prove that there is a correlation between the time spent online and the level of digital competences (Czeglédi & Juhász, 2019). The characteristics of this form of education

are spatially separated teacher and student and the technical equipment background that ensures communication between them (Keegan, 1996). Because of the separation, it is necessary to revive programmed education by creating content that promotes independent learning. For the same reason, the teacher's role is also being transformed. He turns from an instructor into a helper, a catalyst for independent learning and often compiles the learning content himself. This change of roles is not new, either it can be traced back to ancient times. The arts also illustrate this well. Before this is presented with examples, authors draw the reader's attention to the fact that the interpretation of works of art is always subjective, so the results obtained in this way can never be considered as exact findings as a mathematical result. On the other hand, art is characterized by very intensive information compression. To some extent, therefore, a work of art – such as the ones mentioned below – can also be considered an early form of zip or rar computer files. In fiction, the Virgil accompanying Dante (1320) or Lucifer (Madách, 1861) fulfills the same guiding and advisory role as is/will be expected of the nowadays teacher (Szalai & Tyth, 2022). In the visual arts, Raffaello's Vatican fresco, The School of Athens (Figure 2), painted in 1511, is an example of this role.

Figure 2 Raphael The School of Athen (Stanza della Segnatura, Palazzi Pontifici, Vatican, 1511)

This is how the greatest Greek philosophers teach: in the middle of the picture, Plato explains to his best student, Aristotle, and to their left, Socrates teaches a smaller group. They all teach by conversation and not ex cathedra. This Latin term is related to the doctrines of the Catholic religion, it means that the doctrines revealed from the papal chair (cathedra) are unquestionable. The other method is the project learning (in groups). Even more interesting is Michelangelo's fresco entitled The Creation of Adam in the Sistine Chapel (Fig. 3), which was painted at the same time as the above-mentioned painting by Raffaello, also in 1511.

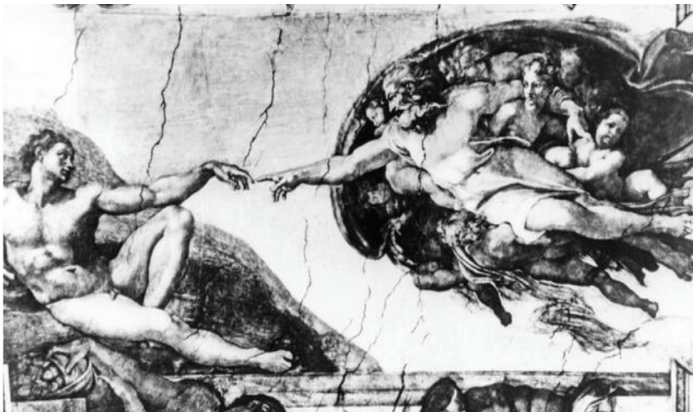

Figure 3 Michelangelo The Creation of Adam (Sistine Chapel, Vatican, 1511)

On this mural is the moment of the transfer of Knowledge. There are several aspects in the picture. On the one hand, the older one teaches the younger one. On the other hand, the power of personal teaching in God's energy-filled index finger is demonstrated. It should be noted that, despite the personal presence, the relationship is still indirect: the index fingers of the two hands do not touch, the handover takes place through an invisible "fluid", i.e. the teacher and his student are present at the same time, but at a distance that is still for God is also insurmountable. The reason for this distance is Adam's separation from the divine form of existence, which is indicated by the green cloth floating below the figure of the Lord, which, according to mystical interpretations, is a symbol of the severed umbilical cord. There is also an example of informal learning in the picture: Eve, embraced by God's left hand, watches carefully how the process of creation takes place in the womb, symbolized by the God's reddish-brown cloak according to some interpreters, even before her birth, i.e. her creation. Formal and informal learning play a significant role in innovation (Bencsik et al., 2019). The painting itself not only depicts the handover, but also the paradigm shift itself: Adam receives the ready-made content specially compiled for him from his creator. Gradual progress is indicated by the fact that the creation of Eve will only take place later - when Adam will be able to use the knowledge he has just received. Adam learns from birth, and the Greek Aristotle does it even as an adult. So, the two pictures also give a good impression of the concept of lifelong learning.

Table 2 summarises the most important new educational paradigm directions appearing in the two paintings. All of them play a significant role in the development of industrial innovation processes.

Table 2. The new paradigm in medieval murals

New paradigm	Fig. 2	Fig. 3
personal teaching	Yes	Yes
informal learning		Yes
project approach	Yes	
ready-made personalised content		Yes
lifelong learning	Yes	Yes

There are examples of the same teacher's leading and helping role in modern films as well. This role can be realized with interested elite college students, by forming the Dead Poets Society (Weir, 1989), but even among disinterested and disadvantaged teenagers by connecting basketball and learning (Carter, 2005). In the former case, the professor strengthens the interest, in the latter, the coach strengthens the motivation and thus leads his students to success. The main character of his film (Radler, 1999) shows the teaching power of personal example. The Dead Poets Society has another message: sticking to traditions is one of the main obstacles to development. The work of art therefore contains the same message that Schwab and Samans (2016 p.3) formulated for the WEF in their report mentioned in the introduction.

Learning environment (ergonomics, proxemics, architecture)

The next examined area is the learning environment. The spread of distance education, the transformation of the teacher's and student's role and the change in the relationship between the two parties made it essential to reorganize the educational environment. The project work theory was based on the transformation of the workspace of the offices into a common atmosphere in the workplaces. This was the lack of a fixed own work desk, in technical terms the idea of a hot desk. However, the years that have passed have proven that this change did not achieve the hoped-for increase in efficiency, and actually resulted in a decrease (Bernstein & Waber, 2019; Növekedes, 2019). A domestic survey conducted by the organizers of the Big Office Day on November 20, 2019, with almost 1,000 respondents, shows that only 10 percent of office workers are satisfied with the open office, while 90 percent reject it. Every fourth respondent accepts the hotdesk, but only if most of

their tasks are done at home it is carried out within the framework of the office. The strength of the objections is clearly indicated by the fact that the workers would even give up financial benefits for a better working environment: one third of them would accept a 5 percent, and one in ten would accept a 10 percent pay cut in exchange for one more day of home work per week, and they would part with similar amounts in exchange for a better boss. Additional complaints have been received about work performance monitoring software, which are considered a gross intrusion into the private sphere (Femina, 2019).

More important than the common space was the area functionally designed for learning purposes, which may be imagined as an experience space (Darian-Smith & Willis, 2016; Hughes & Morrison, 2020; Réti, 2011). When designing the space, care must also be taken to provide adequate personal and interpersonal space for both students and teachers. The science of architecture has been dealing with this question for nearly seventy years. Humphry must definitely be mentioned in relation to the spatial theory of architecture Fortescue Osmond (1917–2004). Although he is known primarily as a doctor (his creation is the word "psychedelic"), that is not why this article remembers him now. Osmond was a typical scientific traveler. He created something more lasting in the field of architecture than his own science, medicine. He was the creator of socio-architecture, thereby contributing to environmental psychology (Osmond, 1957). Osmond distinguished two types of spaces. He observed that certain interior spaces (for example, coffee house tables) "bring" people together, while other spaces (for example, railway waiting rooms) create a distance between them. He named the former – by transforming the terms centrifugal and centripetal, borrowed from physics (so he winked again into a non-medical science!) – sociopetal, and the latter sociofugal spaces. The environmental psychologist Robert Sommer (1970) investigated the effect of spatial arrangement on human conversations and established that the sociopetal / sociofugal nature of a given space is not absolute, but culture-dependent. It also proved that the sociofugal space is not a clearly negative thing either, and can be useful in certain cases.

The science of proxemics was created as an intersection of socio-architecture and environmental psychology, which examines the spatial location of people and their distance from each other (Hall, 1987). The issue of school spaces forms a separate research area within the topic. The literature often links the issue of spaces with reform pedagogic trends, such as the Waldorf or Montessori trends. They developed a number of special interior design solutions, for example the school castle, castle, ring, living space school (Hercz & Sántha, 2009). Regardless of the layout, basically all architectures belong to sociopetal spaces, because it is a general opinion in the literature that sociopetal (enhancing group cohesion) spaces help, while sociofugal (destroying group cohesion) spaces hinder communication. So the former is a positive, the latter a negative feature of the space. However, Hercz and Sántha also state that in 2009, knowledge about school spaces is almost purely theoretical, without practical experience. Therefore, they cannot say, for example, why the new space does not always have the expected effect. So there is still a lot to learn in this area as well.

Learning contents (from the point of view of business strategy, communication methodology and art)

The aforementioned Blue Ocean strategy is based on the value of information, or more precisely, its time value. The age of solitary inventors and polymaths is now over. Only well-equipped research groups with money and technology are capable of substantial innovation. A good example of this is the case of the telephone company Nortel. When the company went bankrupt, it auctioned off the patent rights to satisfy creditors' claims. Big companies such as Google and Apple competed for these patents, because these giants also knew exactly that by acquiring ready-made knowledge, they would save time and money, which would give them a significant competitive advantage (Arthur, 2011; Epstein, 2014).

It is illustrated even better by the Nokia- Daimler legal dispute, which erupted because the two companies could not agree on license fees for mobile technology to be installed in cars. In the end, the car manufacturer, which took the case to the European Court of Justice, withdrew the claim. They realized that there was no way they could win. If they win the lawsuit, Nokia will not renew

the contract with them, so they will be unable to produce new cars (Geradin, 2020; Mueller, 2020; Vary, 2020). Of course, the law does not only play a role in taxation and licensing issues. The evolution of the legal situation of employees is also a very important issue of era Industry 4.0 (Ogiyenko, 2021).

Based on the above thoughts, the future is based on project work and ready information. However, there is also a lot of evidence that project collaboration is not suitable for everyone (Cain, 2012). It is therefore an important task to introduce the benefits of project work to the children in practice, because they will thrive in the labour market of the future only with this ability. The role of ready-made information was discussed not only in the previous cases, in connection with the tech giants. This is also the basis of nearly seventy years of programmed learning. The organization of information must be placed on a modular basis and it must be done with an appropriate modality. The issue of modalities is an old topic of pedagogy (Walling, 2006; Willingham, 2005). The essence of the concept, which is still believed by many today, is that each student has a leading modality (visual, auditory, kinesthetic), therefore teaching is effective if it is "personalized", i.e. it shall teach each student through his own dominant modality. However, this theory turned out to be one of the "urban legends" and myths of pedagogy. Rohrer and Pashler (2012) proved the untenability of this idea just a decade ago. Furey (2020) thinks similarly. Their arguments can be perfectly clarified with a simple question (is it possible to teach a child with an auditory modality to do a ring exercise with an audio book). According to Rohrer and Pashler, it is not the audience, but the teaching content that determines the modality of the curriculum. In other words, physical education must be taught kinesthetically, anatomy visually – it does not work the other way around.

Not only the content, but also the way it is delivered is important. This is about the science of communication. Communicating in education is a necessity. If teachers don't do this verbally or at least non-verbally and leave the children to themselves, then it will take place the process is described by Golding (2015) in his book first published in 1954. According to to majotiry of researches , most teachers handle problems with an authoritarian attitude (Burger et al., 2015). This is generally correct, since pedagogical communication is first and foremost a "short-term therapy": the problem must be prevented from escalating. At that point, however sometimes an authoritarian attitude is particularly harmful. it must to change change, before the result will be an apparent trend of increasing subsurface tension, which, is always explosive. Zimbardo (2012) reveals the consequences of commanding, dictatorial communication. Sometimes unorthodox communication brings quick results. This is exemplified by the indirect communication method of a psychologist -psychiatrist and the pantomime technique he developed at this level (Erickson, 1964).

Words of Albert Szent-Györgyi quoted as a motto: "Let's look at the "established" methods of today's schools and ask ourselves: Will today's students meet the requirements that await them at work and in other areas of life after completing their studies"? Certainly, a significant reform of public and higher education is necessary. Fortunately, the process has already begun. This is indicated by the renewed competence system of the 2020 reform of the National Core Curriculum (NAT) (Government of Hungary, 2020), the close cooperation between industry and universities, or the reality that is increasingly appearing in education (e.g. case studies, annual reports, analysis of statistics) and virtual reality.

Today's fast-paced world demands completely different educational methods than anyone could have imagined a decade ago. For example, many professions have appeared that no one could have predicted ten years ago (Digital Marketing Institute, 2014), and even today it is not known in advance what the next years will bring (Belli, 2017; Tencer, 2017). Another change is that until now the education system worked by training people based on a pre-planned curriculum, who then "learned" the practice of their profession at their workplace. Today, the situation has changed: the modern machines of a modern factory can no longer be entrusted to untrained workers. Therefore, today's students must complete their training in such a way that they are immediately ready to handle and use modern technology. That is, modern education system has to prepare them for requirements that are often not even foreseeable.

CONCLUSIONS

The educational paradigm always, in any historical era, acts as a paradigmatic idea of the development of innovations and the economic development of society as a whole. The trajectory of society's development and the saturation of the labor market with high-quality specialists will depend on the correct interaction of the subjects of the educational process, including the management of educational institutions and guarantors of educational programs, with employers. Such interaction will influence the formation of the correct system of competencies in future specialists, which must be adapted to new challenges and market needs. Properly chosen communication approaches establish the priority of knowledge, cause the need to improve the quality of this knowledge and understand the consequences of their impact on society and, in particular, on the innovative development of society. Based on the survey results, the transformation of the teacher's role is one of the most important changes compared to traditional education. However, the renewal of the curriculum and the application of modern methods in education also play a significant role. There is no need to give students instruction manuals, but knowledge and skills that enable them to learn new knowledge. Survey results show that educational paradigm shift can be a result of developing the modern educational content and methods and lead to the qualitative development of innovative society.

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ЗМІНА ОСВІТНЬОЇ ПАРАДИГМИ ІННОВАЦІЙНОГО СУСПІЛЬСТВА

Анотація. Взаємозв›язок між Індустрією 4.0 та освітою є поширеною темою досліджень сьогодні. Зазвичай його вивчення здійснюється або з економічного боку, або з боку освіти. Однак цей взаємозв›язок також впливає на багато інших сфер життя, тому варто проаналізувати його і з точки зору інших наук. Погляд зі сторони може привернути увагу до деталей, які не виділяються із загальної картини ні для дослідників галузі, ні для дослідників освіти, і метою цього дослідження є привернення уваги до таких точок зору. Для цього автори проаналізували анкети пілотного тестування старих запланованих досліджень за допомогою методу текстового аналізу.

Освітня парадигма завжди в будь-яку історичну епоху виступає парадигмальною ідеєю розвитку інновацій та економічного розвитку суспільства в цілому. Від правильної взаємодії суб›єктів освітнього процесу, зокрема керівництва навчальних закладів та гарантів освітніх програм, з роботодавцями буде залежати траєкторія розвитку суспільства та насичення ринку праці якісними фахівцями. Така взаємодія впливатиме на формування правильної системи компетентностей у майбутніх фахівців, яка має бути адаптована до нових викликів та потреб ринку. Правильно обрані комунікаційні підходи встановлюють пріоритет знань, викликають необхідність підвищення якості цих знань та розуміння наслідків їх впливу на суспільство і, зокрема, на інноваційний розвиток суспільства. Виходячи з результатів опитування, трансформація ролі викладача є однією з найважливіших змін порівняно з традиційною освітою. Однак оновлення навчальної програми та застосування сучасних методів в освіті також відіграють значну роль. Потрібно давати учням не інструкції, а знання та навички, які дозволять їм засвоювати нові знання. Результати опитування показують, що зміна освітньої парадигми може стати результатом розвитку сучасного змісту та методів освіти і призвести до якісного розвитку інноваційного суспільства.

Ключові слова: освіта, Індустрія 4.0, зміна парадигми, нестандартність, точки зору.

EDUCATIONAL PARADIGM SHIFT OF INNOVATIVE SOCIETY

Abstract. The relationship between Industry 4.0 and education is a common research topic these days. Its examination is usually carried out either from the economic side or from the education side. However, this relationship also affects many other areas of life, so it is worth analysing from the perspective of other sciences

as well. An outsider's point of view can draw attention to details that do not stand out from the overall picture for either industry or education researchers the purpose of this study is to draw attention to such points of view. For this purpose, authors examined the questionnaires of the pilot test of older planned research using the method of text analysis.

The educational paradigm always, in any historical era, acts as a paradigmatic idea of the development of innovations and the economic development of society as a whole. The trajectory of society's development and the saturation of the labor market with high-quality specialists will depend on the correct interaction of the subjects of the educational process, including the management of educational institutions and guarantors of educational programs, with employers. Such interaction will influence the formation of the correct system of competencies in future specialists, which must be adapted to new challenges and market needs. Properly chosen communication approaches establish the priority of knowledge, cause the need to improve the quality of this knowledge and understand the consequences of their impact on society and, in particular, on the innovative development of society. Based on the survey results, the transformation of the teacher's role is one of the most important changes compared to traditional education. However, the renewal of the curriculum and the application of modern methods in education also play a significant role. There is no need to give students instruction manuals, but knowledge and skills that enable them to learn new knowledge. Survey results show that educational paradigm shift can be a result of developing the modern educational content and methods and lead to the qualitative development of innovative society.

Keywords: education, Industry 4.0, paradigm shift, out-of-the-box, viewpoints.

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