DEVELOPING CRITICAL THINKING SKILLS FOR UNIVERSITY SUCCESS IN THE AGE OF DIGITAL TECHNOLOGY

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Abstract

The article deals with the problem that the modern world labor market again challenges education: familiar professions are losing relevance, while specialists with developed systems thinking, which is impossible without creativity and the ability to critically evaluate information, are becoming very popular, and developed soft skills are even valued. more than professional skills. It is also analyzed that the degree of formation of critical thinking in any situation depends on personal and social success, including the competitiveness of the future specialist in the professional field. At the same time, much attention is paid to the methods and advice of the famous British scientist Tom Chatfield about how to improve the understanding of digital technologies and their use in education. It has been established that the preparation of good professionals in schools, universities and companies, as well as the use and creation of online courses for both academic institutions and businesses for success in the 21st century, depends on well-developed critical thinking skills.

Keywords: personality, critical thinking, higher education, digital age, 21st century skills, methods, tips.

Introduction

We live in a world of rapid and unpredictable change, with the pace of change accelerating and uncertainty becoming the mark of an era. The labor market is transforming all over the world: the digital age is transforming all aspects of life and the economy. The material, intellectual and technological gap between people, organizations and entire countries is growing. Researchers predict that up to 50% of all current jobs could be automated There is a transition to a different type of work, where not specialized knowledge and skills are necessary, but general "competences of the 21st century" – cognitive, socio-emotional and digital are important. The most important component of the new idea of human capital is the activity of a person, his transforming power in relation to circumstances. Of particular value are adaptability to change, the ability to learn and relearn. The stability of society and the formation of a progressive culture depend on the formation of a new literacy - financial, civil, legal, communicative, medical, etc. [1].

It is not surprising that today the question of the new content of education is at the center of the agenda around the world. In 2005, under the auspices of the Economic Cooperation Organization and development (OECD / OECD) launched the international interdisciplinary program "Definition and selection of competencies: theoretical and conceptual foundations – DeSeCo". Currently, experiments on the formation of competencies of the 21st century are actively developing in different countries.

As we mentioned above, indeed, the digital revolution has greatly impacted both our personal and professional lives. And it doesn't look like it's going to slow down anytime soon. The advent of 5G, advances in artificial intelligence, and the proliferation of innovative digital platforms designed to

reshape business models are just the beginning of this exponential growth. How, in a world of such unprecedented progress, how can you take the reins of power, make changes and succeed? Humans have an amazing ability to think critically, which allows us to look at things and analyze them objectively. Skepticism also plays a role. Through critical thinking, we refuse to take things at face value and study and test anything before declaring it to be true. It also helps us to go beyond our first impressions of any particular object and form rational, unbiased judgments.

We are still probably in the early stages of this crisis. Nobody knows exactly when this will end or what the post-COVID-19 world will look like. Many of the fifth and sixth order effects are still unclear, both in terms of the virus itself and the economic and psychological impact of the social distancing and isolation measures that have been put in place. However, there are already a few lessons to be learned from these passed years.

Materials and Methods

First, what is critical thinking, anyway? Critical thinking is the ability to doubt incoming information and one's beliefs, to think clearly and rationally, to look for a logical connection between facts, and to formulate strong arguments. The basis of critical thinking is the ability to reason. Critical thinkers ask questions, question ideas and statements, rather than accepting them as truth.

The modern information flow is an endless feed of messages that mixes news, advertising, useful content, and propaganda. If you believe everything that is written and said, you can be deceived. For example, in the news they write that, according to an anonymous source, the shares of such a company will soon fall in price. If the news turns out to be unreliable, and you sell shares, you will lose money. All information may not be true. Critical thinking helps to recognize lies, separate facts and opinions [3].

Technology complicates things. Algorithms and content personalization put us in information bubbles. This is a state in which the user sees only the content that he likes. Algorithms of social networks, search engines and applications analyze preferences, search history, location and other user data. A bubble of content appears around us that does not contradict our point of view. This is how we get into intellectual isolation.

So, journalists from the Canadian newspaper Toronto Star in the summer of 2018 checked 1.3 million words publicly spoken and written by former President of the USA, Donald Trump in the first year and a half of his presidency. The newspaper staff found 1,972 false statements and 68,928 untruthful words. In 2017, Donald Trump made an average of three false claims per day. Such statements help politicians to get votes, but the choice of the people will be unconscious and unreasonable. If voters are not satisfied with something, they will have to deal with the consequences of the choice themselves [4].

One notable aspect is that critical thinking has become a high-rate affair. In recent weeks, many of us have had to make really difficult decisions: close or reopen our business? Should we all wear a mask when going out? Should we come to work even in the absence of basic sanitary and hygienic conditions? Should we go back to work because our employer is asking us to?

Critical thinking can be broadly defined as the rational and impartial analysis of information in order to form a judgment and direct action. This is what we use to answer the above questions. The Organization for Economic Co-operation and Development, and the World Economic Forum and others state that critical thinking is one of the most important skills to focus on in order to prepare students for today's

and tomorrow's jobs – it's one of the "skills of the 21st century". The only problem we face is that our education systems are not designed to actively develop critical thinking skills [5].

Over the past decades, many individuals and organizations have sought to undermine education. For example, since massive open online courses, like Khan Academy, Coursera and FutureLearn have changed learning and teaching systems. And many other educational enterprises have provided the best experiences and opportunities for people all over the world.

However, there is still so much to be done. Consider how much phones, computers and cars have changed in the last 100 years. Now think about how the classes have changed. This crisis represents an opportunity to finally undermine the "system".

As Khan Academy founder Salman Khan argued, "The balance between in-person and online learning can be the silver lining of this crisis." Indeed, we have the opportunity to rethink how people learn and generally build a new model of education. One that combines online/remote and in-person experiences. One that allows students to learn at their own pace, values individuality, and promotes student learning. One that puts critical and creative thinking at the heart of their learning experience so that students actually learn to think, not what to think.

How to develop critical thinking? Learning critical thinking is not easy. It's like learning a foreign language – at first everything seems complicated and incomprehensible, but when you understand the logic, it becomes easier.

To learn a foreign language, we are immersed in the language environment as much as possible. For example, with games, learning a language seems like an exciting adventure rather than hard work. With critical thinking techniques, the situation is more advantageous – we are already immersed in an environment in which it is extremely important to apply them. It remains to take the second step – to come up with your own algorithm for developing critical thinking skills. It can be micro-studies looking for primary sources or games to find more euphemisms in political texts and jargons in TV news. Your task is to take one aspect or technique of critical thinking and work with it in different contexts, trying to understand all its possibilities.

To develop critical thinking, one should practice the skills on specific cases. Question the abstracts and arguments of this article, check references to studies or the competence of experts. Then learn how to work with critical thinking tools:

- to use information verification techniques;
- to take into account cognitive distortions;
- to not to fall for errors of argumentation;
- to get out of information bubbles.

Critical Thinking Checklist. To distinguish the truthful and important from "white noise", information must be approached critically. ***"5W+H"*** question system is the basic technique for checking new data. This is a system of questions with which you should check all incoming information. The answers will help you understand how much you can trust the source and what decisions you should make based on this data [6].

Who...

will benefit?
suffers?
makes a key decision?

will be affected the most?

have you thought about it too?

What are...

advantages and disadvantages?

other points of view?

counterarguments?

best/worst possible scenarios?

most important/minor options?

Where...

can you experience this in real life?

do you encounter similar concepts and situations?

may be found more information?

do you get help?

will this work?

When...

is this acceptable/unacceptable?

will it benefit society?

will this cause problems?

is the best time to act?

will the result be visible?

How...

does it correlate with similar data?

did we get this information?

to find a safe approach?

does it harm us/others?

it might look like in the future?

Why...

is it important to me/others?

is this the best/worst case scenario?

should people know about it?

has it been unchanged for so long?

did we let it happen?

Cognitive Distortions. Cognitive distortions are subconscious thought patterns based on faulty reasoning. Such reasoning prevents us from making informed rational decisions. For example, under the influence of cognitive bias, we may choose a new smartphone based on our memories of the presentation and commercial, rather than objective technical characteristics. Cognitive distortions are argumentative errors in our "inner speech".

The systematic error of attention is the dependence of our perception on repetitive thoughts. We often notice what we have seen or remembered before, ignoring other options.

Example. If you have been thinking about changing jobs for a long time, then you will be more willing to pay attention to the incompetence of colleagues and the shortcomings of the company. Although in reality, performance indicators may be higher, and customers may be happier.

Emotion matching is the ability to recall facts and events while experiencing certain emotions. Emotional patterns evoke different meaningful associations related to our previous experiences.

Example. In the evening with a hot cup of tea, you feel calm, cozy and warm. This mood alone can evoke memories of family reunions and nights out with best friends.

Underestimation of inaction is the tendency to underestimate the consequences of inaction, comparing it with the result of action. When choosing between action and inaction with similar consequences, people are more likely to choose inaction.

Example. Some parents refuse to vaccinate their children. They prefer the risk of a complication in case of illness (inaction - do not vaccinate) the risk of a complication of vaccination (action - to vaccinate a child). At the same time, the risk of getting sick is much higher than the risk of getting complications from vaccination.

Analysis and Results

According to the World Economic Forum, critical thinking will be one of the ten most important and in-demand skills by 2025. To solve complex ethical, economic and environmental problems in the future, you need to learn how to work with information and your own thinking now [7,8].

However, critical thinking is not a panacea. Not a one-stop-shop against fake news, disinformation, and fallacies of reasoning. Critical thinking creates a framework for reflection that will help you deal with uncertainty in the future.

Tom Chatfield, famous British writer and philosopher specializing in new technologies is interested in improving our understanding of digital technology, and its uses in policy, education and engagement. He's particularly interested in the teaching and practice of critical thinking skills, and has worked with schools, universities and companies around their development, as well as creating award-winning online courses for both academic institutions and businesses. His best-known works, such as "Critical Thinking" (2017) and "Live This Book" (2015) have been translated into over thirty languages. An Oxford professor, also works as a consultant for major technology companies. He firmly believes that the key to success in the 21st century depends on well-developed critical thinking skills [10].

According to Tom Chatfield, honing your writing skills is a great way to succeed in a world that has gone digital. Good writing and good thinking are closely related. Writing helps us clarify our thinking and allows us to think about how best to engage our audience. Providing short, concise thoughts is a priority in today's world. However, it is also necessary to spend time researching, analyzing and structuring ideas properly. This will make the message more effective. Technical and polished writing is more likely to gain reader support. Ultimately, by focusing on our readers rather than ourselves, we make the most of them. Also, he mentions that success in the digital age depends on critical thinking. This is for two reasons.

Firstly, critical thinking is what separates us from machines. Technological tools are becoming more powerful and have already surpassed us in many ways. But with these skills, we have something they will never have. We dominate machines through our critical thinking. Secondly, these skills are important because they allow us to select the right information from the constant flow that we receive. Machines drown us in data, but we must analyze, evaluate and judge their applicability. Thus, critical thinking helps us avoid manipulation.

And the good news is that, according to Tom Chatfield, these skills can be expanded and developed. A critical thinking expert has highlighted some good habits and tips that are easy to implement. For example, time management is critical due to the pace of our digital society. Refusing to succumb to the hectic rhythm of various digital distractions helps us maintain our analytical skills and therefore control our environment. Another tip? Stop multitasking. This behavior has become common with the advent of screens. We are constantly moving from one application to another. At work, we also tend to multitask at the same time. Because of this, we lose the ability to be efficient and accurate. Focusing on one task at a time frees us from the tyranny of new technologies [2].

But Tom Chatfield goes even further and relies on philosophy. Since ancient times, philosophers have speculated about how the human mind can understand truth. They have come up with tools and methods that have proven to be very useful in today's digital world, which has distorted our views of reality and reason.

Tom Chatfield recommends, for example:

- Beware of our subconscious biases. We tend to believe in our vision of reality, although it is often much deeper and more complex than we think. Pay attention to deeply rooted beliefs!

- It is important that we examine our beliefs from different angles in order to fully understand what is true. The best way to do this is to refute our beliefs, not defend them. Do not focus on what seems to be true, but on what cannot be proven to be false.

- Clear out preconceived notions from our reasoning. What concepts are hidden in our logical sequence of thoughts? If we dismiss certain beliefs as false, we will find that our reasoning is also.

Also, Tom Chatfield's "Sharpen Your Critical Thinking" course explores with specific examples how to effectively develop and work in the digital world.

Discussion

All in all, I would like to emphasize once again that technology has, for the most part, led to increased efficiency in almost all aspects of our daily lives. The 19th and 20th centuries saw the Industrial Revolution, with the creation of machines that replaced human labor and made mass production possible. Similarly, the 21st century has ushered in the era of digital technology and the Internet of Things (IoT), where society relies on silicon chips, microprocessors, and digital circuits to communicate, learn, and work. However, while the Industrial Revolution helped ease tedious manual labor, the rise of the digital age and artificial intelligence threaten to reduce our ability to think critically.

Every day, we experience part of our lives through a computer, whether it is reading the news on a tablet, chatting on social media, or trying to complete a project. Our experiences are defined by software and algorithms that try to shape how we perceive the world around us and the information we receive. Biomedical researchers often try to use technology, especially when it helps create great life-saving innovations. The conundrum our society faces is how we can harness all the digital tools around us while boosting our ability to think critically.

Critical thinking seems to be on the decline these days, too, at the expense of tools like the infamous Google search. In today's society, if an answer or solution to a problem is needed, the procedure involves using a search engine and the Internet, rather than stimulating the imagination or using previously acquired skills to solve it. The point is that computers are, for the most part, much better at processing large amounts of information and applying algorithms with clinical precision. When this is combined

with the emerging field of "big data", which deals with extremely large amounts of data to identify patterns and trends, then we have an ideal tool for decision-making through critical thinking. In fact, companies like Google are investing billions of dollars in artificial intelligence, they understand the power of using complex algorithms and large datasets to think for us [13].

There was a time when the ability to process large amounts of information and apply critical thinking was the obvious path to a great education and career. The development of these new technologies means that this will no longer be the case, as I mentioned in a previous blog, computers and automation have already made jobs that require repetitive tasks obsolete. People in highly skilled professions, such as lawyers, accountants, teachers, and even doctors, are likely to find the idea of a computer doing most of their tasks absurd.

Traditionally, these areas are just a few of many that require a high level of cognitive ability. However, if the world's Googles and Amazons get their way, we will soon see artificial intelligence capable of performing highly skilled tasks better than humans. Imagine software that scans medical images and makes predictions much faster and more accurately than a radiologist or algorithms that can determine the outcome of a lawsuit based on thousands and thousands of previous lawsuits. Humans will no longer have to engage in analysis, discussion and critical thinking, the fundamental traits that make humans "human", we will simply be an extension of the decision-making algorithms used to execute commands in the real world [14].

Conclusion

1) Generally, the visible evidence and result of the effective critical thinking of a university teacher is his fruitful scientific and methodological work on the creation and reprinting of textbooks in readable disciplines (including using current digital technologies), the student is his own speech product (for example, the discipline "Foreign language") or a project, term paper, diploma work. Creativity, individual or collective, and its fruits, in our opinion, are the most significant process and result of the purposeful formation of critical thinking in a university, since not only the discovery of a fundamentally new and unexplored, which in itself is not possible without the participation of critical thought, but also a unique the combination of critically comprehended already known knowledge, united by an original idea, is the driving force behind higher education and science in general.

2) In addition to critical thinking, digital thinking provides one of the key benefits for career development – a wider range of opportunities. If the company or organization provides a favorable environment, employees can realize something more than just a career, moving not only vertically, but also acquiring new roles, working in different teams, on different projects. By creating conditions for the development of digital thinking, the company solves several problems at once. Firstly, it attracts new qualified and motivated specialists who are interested and important to work in a digital reality. Secondly, it strengthens the loyalty of existing employees who see that their new way of working leads to productive cooperation and benefits everyone.

3) Finally, we must consider artificial intelligence and the digital resources around us not as tools but as a medium, and we must undergo a cultural shift that promotes creativity and critical thinking so that future generations will not only be consumers of information, but also have cognitive abilities to shape your world.

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