

CRITICAL THINKING IN TECHNICAL ISSUES OF ECOLOGICAL EDUCATION

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Starting points: The term "Industrie 4.0" (I4) originated in 2011 from a project in the high-tech strategy of the German government, which promotes the IT progress related to the Internet of Things (IoT), artificial intelligence (AI) in computerization of manufacturing and production, the circulation of "gigadata" (big data). I4 is part of the global changes called to as the Fourth Industrial Revolution (4IR). The 4th industrial revolution encompasses non-industrial areas, such as smart cities, block chains, high frequency trading, but also pattern recognition and machine learning. Automation and AI Automation can replace many of the tasks that we have previously done, optimize material and energy use, revise communication and transport grids, reduce carbon emissions, generate clean energy, etc. Therefore it will have a significant impact on the environment. However, today the economic benefits of the Fourth Industrial Revolution are becoming more concentrated among a small group. This increasing inequality can lead to political polarization, social fragmentation, and lack of trust in institutions. Schwab K. and Davis N. (2018) argue that the 4IR is only in its early stages and it is important not to lose the opportunities. This creates new challenges for formal and non-formal education and changing teaching priorities. For example, AI can solve our most difficult scientific problems but think differently from humans. The ability of human critical thinking means that the new technology will not be an uncontrollable exogenous force. Critical thinking reaches a consensus by recognizing positions, arguments and conclusions. Also effectively recognizing manipulation used by techniques human or dehumanized systems and succumbing to him. The ability to engage in reflective and independent thinking allows skillfully assess conflicting arguments and evidence. Problems can be considered using logic (Cottrell, 2011), but also by understanding individual people or social groups.

Aims: Critical thinking as a component of cognitive processes, isolated from the so-called creative thinking, can to be a source of ignorance. The beliefs of many teachers about the nature of extermination may neglect the important role of critical thinking due to innovative pressure on educational systems. Development of critical thinking is limited by didactic methods, mathematical skills, the abstract and logical ability. This requires assessing the education system according to the new educational goals, especially mathematics and science.

Methods: We start from the general assumptions of the neo-positivism concept to the qualitative text analyze in conjunction with observation and examination of documents. Internet sources of information were used to analyze the phenomena presented in social media and develop conclusions.

Results: Critical thinking is the method which improves the quality of thinking through skillful analysis, assessment and reconstruction (Bono, 1982). The thinker is able to observe and draw conclusion independently and methodologically. We owe this method of thinking to learning of mathematics and science subjects. Contrary to „thinking in the cloud“ that is the reflective thinking. In face of multi-threaded and dispersed distribution of online content, critical thinking helps to focus on selected issues. It not determine the fitting of new information into common patterns, has not to eliminate lateral thinking and can be constructive complement to it.

Conclusion: Due to the huge increase in importance of informal education and the widespread acquisition of (not always verified) digital information, critical thinking can be kind of barrier that protects knowledge based on scientific paradigms. It can help an individual understand and adapt to automatically regulated processes and let him find his place in 4IR society while maintaining his individual identity. The participation of the individual in virtual reality, interactions in this environment, require the acquisition of new competences that will not be obtained as a result of virtual experience. New methods of teaching creative and critical thinking are required to connect knowledge from maths, physics, chemistry with experience acquired in the environmental education.

Bibliography:

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