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Moral Paradoxes of Emerging Technologies in the Education Sector

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The authors formulated and answered the question, "Can emerging technologies in education be evaluated from the point of view of morality?" The authors used the methods and tools of normative ethics and cognitive psychology, i.e., the comparative-analytical method, axiological method, as well as tests, questionnaires, correlation research, observation method, and bibliographic method. The essence of the concepts "moral worth" and "disclosedness of arete" as the supreme moral value, were investigated. A universal and defining criterion for moral evaluation was established, i.e., the actions disclosing arete are of the supreme value from the point of view of morality. The authors found that the influence of emerging technologies on the disclosure of arete creates moral paradoxes. Moral paradoxes exclude the possibility of developing objective and sustainable criteria for evaluating emerging technologies and, accordingly, their acceptance/prohibition in the education sector. Uncertainty is asserted as a criterion for evaluating emerging technologies.

Keywords: moral paradox, education sector, emerging technologies, cognitive psychology, normative ethics, moral worth, arete

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Introduction

At present, emerging technologies are being effectively integrated into teaching and learning practices. It is assumed that emerging technologies are able to bring maximum benefits to students and teachers. Emerging technologies differ from new educational technologies in five key ways. "These are (i) radical novelty, (ii) relatively fast growth, (iii) coherence, (iv) prominent impact, and (v) uncertainty and ambiguity" (Rotolo et al., 2015).

In modern education, emerging technologies are promoting digital content as a replacement for textbooks and artificial intelligence as highly accurate feedback between a student and a teacher. A study by Charles Dziuban et al. draws attention to the fact that students' evaluation of the course they have taken is biased and dependent on three key learning characteristics. "The characteristics they view as important relate to clear establishment and progress toward course objectives, creating an effective learning environment and the instructors' effective communication. If, in their view, those three elements of a course are satisfied, they are virtually guaranteed to evaluate their educational experience as excellent irrespective of most other considerations" (Dziuban et al., 2018). Therefore, among other advantages, it is assumed that emerging technologies will ensure the effectiveness of evaluating the impact of educational technologies on the student and will help to select and use individual training programs with greater efficiency.

However, the essence of emerging educational technologies is changing, and they can change the status quo. Therefore, the impact evaluations of emerging technologies in education come to the fore. Educators, students, parents, and policymakers all need robust emerging technologies evaluation methodologies. This is about the impact on the developing psyche of the students, which, ultimately, creates a stable focus and limitations of individual self-actualization (Bazaluk, 2020).

Traditional impact evaluations in education cannot be applied to emerging technologies. Evaluating emerging technologies becomes more difficult for at least three reasons:

1. The party's influence that dictates the financial ability to pay for technology in the educational sector is decisive.
2. The results of traditional evaluation of emerging technologies are presented as a bias towards innovation in the education sector.
3. Evaluation of emerging technologies is based on facts, but at the same time, allows for uncertainties. The peculiarity of the nature of emerging technologies allows their developers to promote the idea that measuring emerging technologies in education policy, planning and practice allows significant correlations and, accordingly, excludes categorical evaluation. Uncertainty is approved as a criterion for evaluating emerging technologies.

In fact, a comprehensive evaluation of emerging technologies in education sector is necessary for at least two reasons:

1. The education sector provides safe, inclusive and effective learning environments focused on sustainable development and global citizenship (Work, 2017). Pay attention to the keyword "safe." The nature of emerging technologies provides for uncertainty and ambiguity in the present, as it is future-oriented. In the education sector, emerging technologies pose a particular danger for the reason that the impact on the psychological development of the child does not provide for changes in the future. The psyche easily lends itself to the influence of educational

technologies over the first twenty years of ontogenesis. However, in subsequent years, the direction and limitations of its self-actualization become sustainable.

2. An objective evaluation of emerging technologies in education contributes to the development and effective use of technologies themselves.

In modern scientific literature, different approaches are proposed to measuring the impact of emerging technologies in education. This can be exemplified by a pragmatic approach presented by Mutlu Cukurova and Rose Luckin (Cukurova & Luckin, 2018). Elaine Unterhalter studies the notion of negative capability in order "to depict some limits of what is measurable, and portray aspects of the process of education, associated with uncertainty and public scrutiny of complexity" (Unterhalter, 2017). Unterhalter researches and answers four overarching questions – what, when, why and how. Namely, "What are we measuring when we try to measure the unmeasurable in education and what are we not measuring? When have attempts been made to measure the unmeasurable in education, what metrics have been adopted in which contexts, and with what outcomes? Why have measures been adopted as indicators of the unmeasurable, such as human rights? How have particular historically located organisations approached the problem of measuring the apparently unmeasurable in education, with what epistemological, normative and conceptual resources, and consequences?" (Unterhalter, 2017).

In the proposed study, the authors consider the moral paradox of emerging technologies and the features of its impact on evaluating emerging technologies in the education sector.

Evaluation of emerging technologies in the education sector

The book *10 Moral Paradoxes* by Saul Smilansky makes us rethink the criteria for evaluating emerging technologies in the education sector (Smilansky, 2008). In order to objectively evaluate emerging technologies in education, it is necessary to establish evaluation criteria.

Emerging technologies are the technologies that have the potential to disrupt the status quo and promote revolutionary changes, not evolutionary ones. Emerging technologies are future-oriented. Therefore, they remain somewhat vague and ambiguous at the stage of their emergence. Uncertainty and ambiguity, especially in the education sector of the younger generations, is an area of research in Moral philosophy, or rather normative ethics. Normative ethics is sometimes called *prescriptive* because it provides an explanation of why this particular uncertainty and ambiguity should be paid attention and evaluated from the point of view of morality only (Pedersen, 2019). Normative ethics explains the morality of emerging technologies, thereby evaluating them. Moral evaluation provides an access of this or that emerging technology to the education sector or prohibits its use in education. Therefore, moral worth is defining and decisive for the promotion of emerging technology in the education sector.

In chapter 8, "Morality and Moral Worth," Smilansky considers an important issue for our study (Smilansky, 2008). Namely, is there something of value in morality? Suppose we project Smilansky's research on the subject of our study. In that case, we can formulate the following question: "Can emerging technologies in education be evaluated from the point of view of morality?". It must be emphasized that we are not discussing the moral value of emerging technologies in general. The question posed directs us to investigate a specific area of application. Namely, we are researching the possibility of moral evaluation of emerging technologies in the education sector only, which is distinguished by one important feature.

The education sector is a safe, inclusive and effective learning environment that guarantees sustainable development of the psyche.

The answer to the question posed will solve the main problem. If emerging technologies in education can be evaluated from the point of view of morality, then, in fact, uncertainty and ambiguity in the evaluation of emerging technologies, promoted by its creators, disappear. In this case, an opportunity opens up for the development of criteria for evaluating emerging technologies and the possibility of their measuring according to the methodology of normative ethics. We will receive an effective tool for an objective evaluation of emerging technologies and, accordingly, their acceptance/prohibition in the education sector. If emerging technologies in education cannot be evaluated from the point of view of morality, then uncertainty and ambiguity are asserted as the evaluation criteria.

Moral Worth

When we talk about emerging technologies in education, we do not mean any emerging technologies, but specific ones. These technologies provide a consistent transition of the neural structures of the human brain from childhood to adolescence and then, to the period of early maturity. The first 21 years of ontogenesis is the period of formation of the human psyche, i.e., a set of thinking processes and phenomena (sensations, perceptions, emotions, memory, etc.) that provide a full-fledged human interaction with the environment. The study of the psyche is the subject of cognitive psychology. Cognitive psychology specializes in the study of mental processes such as attention, language use, memory, perception, problem solving, creativity and reasoning.

Thus, the answer to the question, "Can emerging technologies in education be evaluated from the point of view of morality?" is an interdisciplinary study. We use the methods and tools of normative ethics and cognitive psychology to explore uncertainty as a criterion for evaluating emerging technologies in education.

The first step in our research is to refine emerging technologies that we will evaluate. Top Emerging Technologies in Education Sector include (Top Emerging Technologies, 2019):

1. Augmented Reality/Virtual Reality.
2. Artificial Intelligence.
3. Machine Learning.
4. Cloud computing. It means delivery of computing resources over the internet.
5. STEM. STEM stands for Science, Technology, Engineering, and Mathematics.
6. The Internet of Things (IoT).
7. Smart Interactive Display Solutions.
8. Learning Management System. Learning management systems are also known as Course Management Systems (CMS), Personal learning Environment (PLE), e-learning courseware and Virtual learning Environments (VLE).
9. Learning Apps.
10. Assessment Solutions, i.e., tools to help teachers and students better understand the steps needed to improve the learning outcomes.
11. Gamification (a game-based learning) is about crafting the content around game-story.
12. Payment Gateway.

The second step is to define methods and research tools for evaluating the above emerging technologies. To evaluate them, the methods and tools of normative ethics and cognitive

psychology are used. Namely, the comparative-analytical method, contextual method, typological method, axiological method, as well as tests, questionnaires, correlation research, observation method, and bibliographic method.

The third step of our research. The question "Can emerging technologies in education be evaluated from the point of view of morality?" directs us to research the concept of "moral worth." Before discussing the moral worth of emerging technologies in education, i.e., evaluating them from the point of view of morality, it is necessary to reveal the essence of the concept of "moral worth."

The main essence of the concept of "moral value" was laid down in the book of Immanuel Kant *Foundations of the Metaphysics of Morals* (1785) (Kant, 1989). Central to this work is a concept that Kant called "the categorical imperative." According to this concept, a person must only act in accordance with the prescription that he or she would like to become a universal law. Kant advanced the argument, pioneering for his time, that the correctness of action is determined by the principle according to which a person chooses a way of life. Moreover, this principle does not change depending on the characteristics of the agents or their circumstances. They must "carry with it absolute necessity" (Kant, 1989).

Kant developed pure (a priori) ethics that locates what Kant calls the "supreme principle of morality" (Kant, 1989). In modern normative ethics, the "supreme principle of morality" is regarded as "the philosophical process to create and defend the moral principles of virtue" (Hessick, 2021). Thus, modern studies of moral values correlate with "the process to create and defend the moral principles of virtue." The actions of people and human-made technologies are morally valuable if they are aimed at revealing and protecting virtue.

Particular attention must be paid to the research "The Revival of the Notion of Arete in Contemporary Philosophy" by Oleg Bazaluk. Bazaluk considers two aspects that are important for our research (Bazaluk, 2019):

1. The need to revive the term "arete" instead of the Latin synonym "virtue." This replacement actualizes the Greek essence, which in fact was more *prescriptive* and mandatory than the essence contained in the modern term "virtue."
2. The Greek term "arete" implies exclusively rational actions, while the replacing term "virtue" presuppose ready-made and already approved evaluative essence provoking debate. The essence of the term "arete" is more in line with Kant's pure (a priori) ethics. This allowed Bazaluk to rethink the Greek essence of "arete" based on modern knowledge of neurophilosophy, Heidegger's fundamental ontology and philosophy of the cosmos. Bazaluk researches arete as the basis of Dasein-psyche (Bazaluk, 2019).

Thus, the moral worth of any action is determined by the correspondence with arete, the essence of which is developed by modern neurophilosophy, fundamental ontology and philosophy of the cosmos.

The disclosedness of arete as the supreme moral worth

Explore the relationship between moral worth and arete (virtue). Revealing this connection is much easier when instead of "virtue," the term "arete" is used. In ancient Greece, the term "arete" corresponded to the supreme value (Bazaluk, 2019, 2020). When the ancient Greeks spoke about the openness (alitea) of the arete, they meant achieving the supreme human moral worth.

The main feature of this value was that it was of a purely applied nature and was revealed by paideia, a synonym for the modern term "education." Arete was possessed by every

person. The man was born with it and it was revealed during their life. The supreme worth was disclosed arete, or, in modern terms, the actualization of personal qualities.

Pay attention to an important feature of the arete. Arete is revealed exclusively by individual training programs. When discussing the disclosedness of arete, we mean developing the processes of acquiring, representing, storing, transforming, and using information, knowledge, and experience. Bazaluk wrote about anthropologization of Dasein-psyche's being, implying the process of continuous movement towards disclosedness of arete, which resembles Plato's "know yourself" or Heidegger's "search for the source of meaningful presence" (Bazaluk, 2020). The methods and tools of cognitive psychology are involved in the disclosedness of arete. However, in the end, each disclosed arete reveals a general focus and limitations of self-actualization, allowing us to speak about the evolution of civilization, but not individuals. The disclosedness of arete reveals the universal nature of evolution. Bernardo Kastrup asserted the universal nature of the mind as a new paradigm, according to which "a form of universal mind will be viewed as nature's sole fundamental entity" (Kastrup, 2018). Oleg Bazaluk wrote that arete, disclosed by individual training programs, ultimately reveals the focus and limitations of collective self-actualization, the evolution of cosmic civilization (Bazaluk, 2020).

The connection between the disclosed arete, as the supreme worth, and the evolution of cosmic civilization is based on heredity. However, we are interested in another aspect – the moral one. The connection between the disclosed arete and the evaluation of this action (way of life) as the supreme value allows us to speak about the universality of this value and, accordingly, about the universality of the evaluation itself. Namely, disclosedness of arete as the supreme worth becomes an objective evaluation of the correctness/incorrectness of any action aimed at disclosure. The way of life chosen by a person or the effects of technology are valuable from the point of view of morality only if they are aimed at disclosing arete.

Heidi Maria Westerlund conducted a substantive analysis of the history of music education theory using psychoanalytic methods and tools to determine if there is a tendency toward value indifference and moral blindness in terms of who the "we" want to be in hyper-diverse societies (Westerlund, 2019). Westerlund proved that it is enough to go beyond the narrow boundaries of a particular scientific discipline (in its case, music theory), as behind every national program (theory) a collective the "we" is found (Westerlund, 2019). "Post Second World War music education theorisation shunned the idea of schools as spaces of education fostering a 'common culture', an idea seen as characteristic of nationalistic music education. The cognitive turn towards individual knowledge construction, first manifested in the aesthetic approach and then followed by the 'practice turn' and rights-based multiculturalism, has focused on individual cognition and identities in relation to diverse musical practices" (Westerlund, 2019). However, as Westerlund claimed, "the increasing diversity, polarisation, and consequential policy demands for social integration now require that music education needs to return to moral questions about how we as a profession potentially construct 'our life' and 'our values' in educational contexts" (Westerlund, 2019).

Thus, we come to understand the relationship between moral worth and disclosed arete. Actions aimed at disclosing arete, i.e., revealing the qualities inherent in a person at birth, are morally valuable. Moreover, given that the individual qualities of a person are revealed under the influence of the external environment and as a result of independent activity, the essence of moral worth applies to emerging and other technologies influencing a person, as well as to the actions of the person themselves, initiated by individual self-actualization.

Moral Paradoxes

We have established a universal and defining criterion for moral evaluation. Any action that discloses arete is morally valuable. This brings us back to the question "Can emerging technologies in education be morally evaluated?" and suggests an answer to the question posed. We have established a universal evaluation criterion through which we can claim that emerging technologies in education can be evaluated from the point of view of morality. Those emerging technologies disclosing arete have moral worth. Such technologies can and must be used in the education sector. Emerging technologies that do not disclose arete cannot be accepted in the education sector.

However, when we turn to Saul Smilansky's research again, it can be emphasized that Smilansky came to two conclusions (Smilansky, 2008):

1. Moral worth depends on the conditions that morality tries to eliminate. The goal of true morality is to eliminate certain conditions (suffering, grave offense, etc.). In our case, it is necessary to eliminate the closeness of arete.
2. Only the presence of these "certain conditions" can cause moral actions that unambiguously attach moral worth. Paradoxically, morality is the enemy of moral worth.

Compare Smilansky's findings with our answer to the question "Can emerging technologies in education be evaluated from the point of view of morality?" Such comparison reveals uncertainty in the evaluation of emerging technologies rather than the categoricity one would expect. Consider the identified uncertainties.

First, in our study, "certain conditions" that morality must eliminate is the transformation of the closeness of arete into openness. However, Catherine Elizabeth Hessick draws attention to the following (Hessick, 2021). *Arete is disclosed sequentially*. Hessick developed a scale "that models virtue ethics, deontological, and consequentialist ethics perspectives as higher-order constructs from the lower order constructs of character, empathy, fairness, outcomes, responsibilities, and rights" (Hessick, 2021). The Hessick scale proves that disclosing arete is the process that, on the one hand, is determined by normative ethics predispositions or perspectives. On the other hand, this process determines "the relationship between ethics perspectives and unethical behavioral intentions." Finally, but then again, it creates conditions for "the moderating role of ethics training on moral disengagement" (Hessick, 2021). "The findings indicate moral disengagement and Ethics behavioral intentions are positively associated as well as moral disengagement fully mediates the relationship between deontological ethics perspectives and unethical behavioral intentions" (Hessick, 2021).

Hessick's research suggests that:

1. There is a real connection between education and unethical activity, which depends on a person's knowledge of their ethical point of view. Social media and the shifts in the educational system lead to different individual evaluations of events and, accordingly, the choice of different behavioral models. As a consequence, ethics training, i.e., the quality of the use of individual training programs, increases the objectivity of moral evaluation and excludes unethical behavior (Hessick, 2021).
2. Disclosing arete is a sequential process based on neuroevolution. Therefore, separately taken emerging technologies in one period of ontogenesis can transform the closeness of arete into openness, therefore, be morally valuable. The sequence of the arete disclosure process involves the use of different methods, technologies and tools of influence. The sequence of arete disclosing eliminates universality in

the evaluation of emerging technologies and asserts uncertainty as an evaluation criterion.

Second, the transformation of the closeness of arete into openness, i.e., an action that is morally valuable takes place in a particular social environment that creates "certain conditions" causing moral action. Until the age of 21, arete is disclosed in a special education environment by specially trained specialists. Numerous studies indicate that the nature of this environment, training of specialists (teachers) and the interactions between teachers and students are diverse and unbalanced. The social and cultural diversity of "certain conditions," about which Smilansky wrote, causes a variety of moral actions and, accordingly, uncertainty in their evaluation. For example,

a) The article "Tutored within an inch of their life": morality and "old" and "new" middle-class identities in Australian schools" records "the self-positioning of a segment of middle-class parents, whom we call 'community-minded', as they distinguish themselves from pedagogies and parenting practices for education often associated with 'tiger parenting' and 'Asian' practices in Australia" (Butler et al., 2017). The authors investigate the peculiarities of the struggle between the "old" and the "new" middle class fundamentally rejects certain educational strategies and technologies, because they do not correspond to the morality of the 'community-minded' citizens. In fact, the moral worth of the technologies used in the education sector is determined by the social and cultural views of local elites. A subjective approach to evaluating the educational technologies prevails and even negates objective factors, namely the worth of technologies that have proven their effectiveness in Asian education systems (Butler et al., 2017).
b) Andrea Mary Taberner conducted a study that proved the diversity of "certain conditions" even within the same culture (Taberner, 2018). An interview with Academics of six English university types (ancient, old and new civics, plate-glass, technological and post-1992) revealed that "Six key themes emerged regarding the impact on academic staff and their work: efficiency and quantity over effectiveness; autocratic, managerialist ideology over academic democracy and debate; instrumentalism over intellectualism; de-professionalization and fragmentation of the academy; increased incidence of performativity, bullying and workplace aggression; and work intensification" (Taberner, 2018). Taberner's research reveals the heterogeneity of the education sector generates uncertainty in the evaluation of emerging technologies, since the format of their use does not depend on the characteristics of the technology itself, but on (a) the social and cultural predisposition of the environment to the use of technologies and (b) the characteristics of the ethical education and performers.
c) Disclosure of arete occurs as a result of individual efforts and collaboration. Collaboration as "a modern mantra of the neoliberal university and part of a discourse allied to research performativity quantitatively" was researched by Bruce Macfarlane (Macfarlane, 2017). Macfarlane established that collaboration is in fact, a complex and paradoxical concept. "Academic staff is exhorted to collaborate, particularly in respect to research activities, but their career and promotion prospects depend on evaluations of their individual achievements in developing an independent body of work and in obtaining research funding" (Macfarlane, 2017). This creates a moral paradox between individual and collective

goals that collide with the measurement of academic performance. "At one end of a moral continuum are other-regarding interpretations of collaboration involving the free sharing of ideas for the common good of scientific advance (collaboration-as-intellectual generosity), nurturing the development of less experienced colleagues (collaboration-as-mentoring) and disseminating knowledge claims via a range of scholarly platforms (collaboration-as-communication). However, other forms of collaboration are essentially self-regarding, illustrating the pressures of performativity via increased research output (collaboration-as-performativity), through practices that reinforce the power of established networks (collaboration-as-cronyism) and the exploitation of junior researchers by those in positions of power and seniority (collaboration-as-parasitism)" (Macfarlane, 2017).

d) Another example of heterogeneity of conditions that morality tries to eliminate is discussed in the article "The Whistleblower as the Personification of a Moral and Managerial Paradox" (Cailleba & Petit, 2018). Patrice Cailleba and Sandra Charreire Petit study the feedback between informants and managers. Often, the attitude of top managers to informants who provide an objective judgement of "certain conditions" and the specifics of their overcoming is subjective and biased. Cailleba and Petit call it a "managerial paradox," because, on the one hand, managers must listen to the judgement of informants and make their own moral judgement accordingly. However, on the other hand, the morality of informants' judgement is not unambiguous for top managers, and, above all, because it is provided by an informant (Cailleba & Petit, 2018). The bias against any judgement obtained from an informant compromises the quality of feedback between performers and decision-makers. Any prejudice promotes the assertion of uncertainty as a criterion for evaluating moral actions.

Third, John Sullins outlined some of the results from the moral paradox of Information technologies (Sullins, 2021). Technology users want the information to be quickly accessible and easy to use and delivered at the lowest cost possible. At the same time, users also want important and confidential information to be secure, stable and reliable. "Maximizing our value of quick and low cost minimizes our ability to provide secure and high-quality information and the reverse is true also" (Sullins, 2021). Thus, information technology developers are faced with uncomfortable compromises that, according to Sullins, are likely to continue to be at the heart of moral debates in the use and design of information technologies for the foreseeable future (Sullins, 2021).

Conclusions

Thus, we managed to answer the question, "Can emerging technologies in education be evaluated from the point of view of morality?" Emerging technologies in education can be morally evaluated. We have established a universal and defining criterion for the moral evaluation of emerging technologies in the education sector. Namely, emerging technologies disclosing arete are of moral worth, and therefore must be introduced into the education sector.

However, it was found in the course of our study that the influence of emerging technologies on disclosedness of arete creates moral paradoxes that assert uncertainty in the evaluation of emerging technologies, rather than categoricity that one would expect. Moral paradoxes are caused primarily by:

1. The sequence of arete disclosure, which provides for the use of different emerging technologies in education sector in different periods of ontogenesis.
2. The social and cultural diversity of the educational environment, teacher training and interaction between teachers and students.
3. The moral paradox of emerging technologies themselves, from which, on the one hand, effectiveness and significance of changes are required, however, on the other hand, set a specific direction and limitations of use.

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