

Contemporary administrative law challenges: education by AI instruments

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ABSTRACT

In recent years, analyses and debates on Artificial Intelligence (AI) have reached a significant percentage in the realm of universities and education in general. The reason is not hard to understand, as the educational field is one of the most affected – or, more accurately, one of the most influenced – in its practices by the emergence of these technological tools. It is also easily noticeable that governments – as well as relevant ministries – are not fully prepared for what AI has brought, and even less so for what the future will offer us. Perhaps certain types of appointments to leadership positions – based on something other than professional competence – create even more problems in education, because a legal (administrative) system cannot function if those who enact regulations do not practically encounter a part of the challenges of reality.

In this perspective, I have chosen for this study a specific AI tool – named social robot, which will play an important role in the future of education, akin to that of teachers. Therefore, an initial perspective on education and its development with the help of these AI tools is essential to consider, in the light of a wave of changes affecting the human mind and its learning capabilities. Since education is an aspect of the public institutions system, regulated by administrative law norms, it is important to better understand the challenges posed by the new regulations on learning that will emerge in this decade, in relation to technologies and changes in the types of studies offered by educational units.

KEYWORDS: *Artificial Intelligence, Education, Regulation, Social Robots, Personalised Learning.*

1. Introduction

The issue of education in the age of Artificial Intelligence (AI) becomes more important than ever, if we compare it with other historical eras, and in this regard, we can also note the announcement from June 2024 stating that by 2026, Chat GPT-5 will have the intelligence of a person with a doctorate¹.

Artificial Intelligence is defined by OECD as a machine-based system that, for explicit or implicit objectives, infers from input it receives, how to generate outputs such as predictions, content, recommendations, or decisions that can influence physical or virtual environments;

¹ S. Dunn, *OpenAI's GPT-5: Set to Achieve Ph.D.-Level Intelligence by 2026, Says CTO Mira Murati*, available at <https://www.ccn.com/news/technology/openai-gpt-5-phd-level-intelligence-2026-cto-mira-murati>.



different AI systems vary in their levels of autonomy and adaptiveness after deployment². These new technologies has led to changes in the entire education system, and the Covid-19 pandemic forced governments and individuals to further implement new technological methods in education, transforming the traditional style of knowledge providing to young people.

The development of algorithms and devices using Artificial Intelligence has increased this pressure on everyone. In the field of education this translates into an increased pressure on students to learn continuously, to keep up to date with everything that is new, based on the information provided by the vast library of the Internet (after all, this is an essential feature of the Internet), and with the help that the various devices using AI provide. Obviously, this is an absurd and aberrant claim, which would turn a child or a teenager into a "learning machine", which would have the effect of destroying his or her psyche. However, without denying the positive role that these devices using AI have – for example, recent research underline its role in conspiracy theories diminishing³, we need to better understand the context in which education has evolved and is evolving, in relation to the aspirations of humanity, but also to the technological and scientific capabilities it has had throughout history.

Among the new tools that education is using are social robots. Not surprisingly, they are the expression of a logical question, derived from the ability of each human being to acquire goods that are useful to his personal life. Thus, if at first the great inventions are destined for companies and large commercial or governmental operators, later on they become miniaturised and cost-effective, making them accessible to a very large group of people. These social robots have therefore arrived in the sphere of education, and the changes they bring to it must be carefully analysed, because they also contribute to the general process of learning transformation in the 21st century. Benefiting from the substantial reduction in the cost of Internet terminals, the whole range of tools that can be used in education – including social robots – is also growing, with powerful effects for each user, even if it does not reach a uniform level of use in one country or continent.

In fact, the tools used in education – and social robots are among them – are constantly evolving. However, only those that are user-friendly and offer a favourable balance between their procurement cost and application range are truly essential. Over time, various tools have been imagined and developed to achieve specific goals; however, some were either challenging to use or too costly to mass-produce. The latter is crucial for establishing a profitable and sustainable long-term business.

2. Standardisation of education and its tools

Clearly, it's about standardizing education and the tools it uses. Social robots also fit into the general plan of educational standardization, even though their role is more individual, corresponding to a typology that has been the rule in education for centuries. Standardization is necessary because today's global population is large, and countries can only provide essential

² M. Grobelnik, K. Perset, K. and S. Russell, *What is AI? Can you make a clear distinction between AI and non-AI systems?*, <https://oecd.ai/en/wonk/definition>.

³ T.H. Costello, G. Pennycook, G., and D.G. Rand. *Durably reducing conspiracy beliefs through dialogues with AI*, in *Science*, Vol. 385, Issue 6714, 2024. DOI: <https://doi.org/adq1814>.

knowledge for training citizens in this way. Although there are hundreds of works emphasizing the idea of "adapting services provided to clients to their needs and work styles", the reality is harsher, primarily depending on national budgets and, especially, a specific factor in governmental policies: delivering a standard level of public service to all potential beneficiaries. This standard must, above all, not fall below a certain general threshold in practice.

Today, it is important to note that two billion people – a quarter of the world's population – are 25 years old or younger⁴. This age group marks the main phase in human education. Such a vast number of individuals can only be educated in a standardized manner within public schools. However, inherent differences among students will largely emerge from the personal efforts they put in, supported either by the school or their families. In this context, social robots will increasingly play a role, influenced by the demographic situation of each country and the world as a whole.

3. Social robots in a historical perspective of education

Analysing social robots, we can observe their purpose (first) and the capacity to adapt to a specific user – this second characteristic making a difference from the standardised educational system. Social robots are artificial intelligence platforms paired with sensors, cameras, microphones and other technology, like computer vision, so they can better interact and engage with humans or other robots. They come in many different shapes and sizes, from human-like faces on static pedestals to furry, tail-wagging puppies. Despite their lack of consciousness, social robots provide companionship and emotional and learning support to children and adults who play, talk and even snuggle with them like they would a pet. They also work together in warehouses and factories to transport goods, and are used as research and development platforms, allowing researchers to study how humans interact with robots and make even further advances in the field. Social robots are most often found working as companions and support tools for childhood development, specifically autism therapy and social-emotional learning. Social robot pets can even be an effective form of therapy for people with dementia. Social robots also work as concierges in hotels and other settings like malls, where they provide customer service. And depending on how loose one's definition of a robot is, social robots have become even more personal. When not living in our pockets, smartphones use built-in social artificial intelligence tools like Siri to help us avoid traffic jams, compose texts and add events and meetings to our calendars.

In recent decades, the countries that have developed most have been those that have created and implemented effective adult education policies (life-learning)⁵, as they too face many challenges throughout their working lives.

⁴ Worldometer, *World Population Clock*, available at <https://www.worldometers.info/world-population/world-population-by-year/>.

⁵ A. del Río, C.H. Knutsen, C. H., & P. M. Lutscher, *Education Policies and Systems Across Modern History: A Global Dataset*, in *Comparative Political Studies*, Volume 58, Issue 5, 2024. DOI: <https://doi.org/10.1177/00104140241252075>.



At the same time, why we need to do an appeal to educational history? The answer lies in the awareness of a fact, perhaps considered irrelevant in its simplicity: concretely, not all schoolchildren/students today can afford this kind of social robots, the differences in wealth between countries, as well as within each national community being real and having effects on the life chances of the younger generations. However, the history of education unabashedly points out that it has never been completely universal, both in terms of the set of tools that most young people lacked, but especially in terms of people's general wealth. Obviously, there was no equality in the educational process, because there was no single/unitarian pedagogy, or schools that effectively prepare teachers. At the same time, the fact that the pay for work was very different meant that people who knew how to write sought to work alongside kings, aristocrats or to join one of the forms in which the various religious cults were organised. Moreover, for a long time the largest percentage of educated people were those in the ranks of the priests, because they needed to know the various rituals, but also to have evidence of their own beliefs. There were no clear, standardized textbooks, and the learning of foreign languages was based on the circulation of goods and political skills, and in subsidiary cultural and religious aspects.

This inequality in education will begin to diminish – slowly – starting in the 15th century with the invention of the printing press. Over time, the number of books and literate people will increase, though not uniformly within each country and even less so across different continents. Religious needs, followed by commercial ones, will spur the printing of books, and religious denominations seeking greater unity among their followers will encourage the reading of religious texts. Nevertheless, like earlier times, books remained expensive, and it wasn't until the 18th century that mass print runs of various types of books became common, influencing the development of modern languages and contributing to national cohesion and strength. The invention of the printing press will also lead to an increase in the number of universities – particularly in Europe, as this continent maintained cultural and economic global supremacy until the 20th century, and European languages gained a unique and universal spread.

The generalization of printing and its accessibility will lead to an increased need for education. In the 18th and 19th centuries, most social movements will include in their demands the establishment of free education, which European states will implement first, followed by others according to their financial and professional means. However, decreeing mandatory education also means having teachers and buildings where schools can operate. Countries with limited budgets will face significant challenges in enforcing their own education legislation. Consequently, inequalities in access to quality education will persist and young people from wealthy families will often be sent to study abroad if their own countries' resources are insufficient.

The increase in the number of children in school made it necessary to standardize the educational process, with teachers being trained according to similar principles – transdisciplinary within each country – and often these principles were applied identically in several countries. This allowed governments to follow more closely the whole process of transforming children into adults, led to a standardization of minimum knowledge in most of the subjects taught (national literature, mathematics, physics, chemistry, etc.) and thus allowed for inter-country communication in the field of education.

4. Technological development and AI advent

People's desire to have an easier yet more productive work life has paved the way for numerous inventions, most of which will have civilian applications – although, in some contexts, they may initially serve political, and sometimes military, purposes. Thus, even Artificial Intelligence technology is intended for dual-use applications, which is not surprising given that all disruptive inventions have followed a similar path. The complexity of the 20th-century world expanded humanity's capacity for innovation, and the general process of educating young people could not remain unaffected. First, book production increased, making them more accessible in university, high school, and school libraries, as well as in private homes. The improvement in quality of life followed logical and rapid steps, so that the automobile became a commonly known and used object by large numbers of people, while television and radio successfully took the place of frequent visits to the cinema, opera, and theatre, also offering the opportunity to educate the public on various themes.

The widespread use of electronic devices in most people's homes has enabled the development of other tools that have improved everyday life (for example, in 1964 the first household videorecorder was sold). Suddenly, the average person gained almost instant access to information and entertainment that, until the early 20th century, even the wealthiest individuals couldn't easily obtain due to limited storage capabilities. Therefore, technological advancements had to consider the interests of the common person, who engages in a multitude of activities. Technological development in the second half of the 20th century gave everyone the possibility to use in a standardized way tools that made life easier, contributed to the increase of psychological well-being and thus increased life expectancy. The process of adapting the use of various tools and equipment to the practical capabilities of users must be governed by a special form of algorithms, which should increasingly align with human mental capacities. Consequently, the most logical way to define this set of "software capabilities" was related to what humans have more developed compared to other living beings, namely intelligence. Since this intelligence was not something produced through the love of two people, the term "artificial" had to be added.

The development of Artificial Intelligence has mainly a commercial purpose, and the steps taken by those who create it primarily serve pecuniary interests, perfectly normal and very honest. For this type of intelligence to exist, it is necessary to store huge amounts of data on facts and behaviours, which can be expressed more simply by the formula "a huge library", which includes human creations, but also typologies of thinking, so that this invention of the twentieth / twenty-first century to behave as a true form of thinking.

As Artificial Intelligence is still in the development process, with much to be done before reaching the researchers' anticipated optimal state, we will encounter the phenomenon typically associated with major inventions: uneven spread and usage on a global level. We will see that this phenomenon significantly impacts the entire educational process, especially in the realm of social robots. One of the consequences of this uneven advancement – technically, materially, and

financially unfeasible at its core – will be an increase in discrepancies regarding the intellectual capacity of future generations.

5. Artificial Intelligence in education

Developing to the situation of Artificial Intelligence in education and implicitly of social robots, they will be used predominantly in relation to the financial power of countries and families with children, which makes that where poverty is high (or where patrimonial progress is slow) these (AI technology and social robots) will be harder to reach, or at prohibitive costs for most possible users. As I said above, it is a logical, material matter that there is not the capacity to suddenly equip every pupil and student with AI tools as well as such robots. First of all, because they cannot be produced all at once in such quantities, and remain in the stocks of the manufacturers, and only later be sold to governments – the only ones that could organize a national distribution without discrimination – so that their use could be concomitant at the global level, or at least at the level of each country.

These technologies are constantly evolving, but the production of AI-powered tools – and thus of these social robots – is limited to the capacity of each individual factory, and hence the complications of distributing to retailers and selling to anyone interested. But it is clear to all that these technologies will first reach rich countries, which will then further strengthen their economic and educational strength, with consequences for decades to come.

From this moment on there will be the need for a new hierarchy of study programs, because there will no longer be equality between different types of students and especially students/universities. In recent decades, education metrics have dominated, leading to the increasing importance of university rankings in public funding allocations. However, it is impossible to have a fair competition between long-established universities with strong libraries and centuries-old reputations, and those created after 1950 or more recently, as budget discrepancies are rooted in the very reputations built over centuries. Furthermore, intellectual elites prefer to study at the most prestigious institutions available, which benefits these same prestigious universities – even though today, top professors are often "transferred" to different universities for money, much like in football, along with their CVs that were built at these prestigious institutions. In this broader context, the implementation of Artificial Intelligence will enable well-funded universities to advance more rapidly in this direction, making their scientific research and the training of their graduates superior to universities that cannot afford such expenses. Thus, the economic history rule will repeat itself: those with more money will be able to adopt the most expensive and best innovations, further developing and converting this advancement into larger sums of money, which can then be used to purchase new scientific inventions, perpetuating a profitable cycle repeatedly.

This differentiation in implementation between universities will logically lead to a differentiation among their graduates. Practically speaking, students educated through various AI devices will have to work exclusively in companies and public institutions that predominantly use this type of technology. They won't be trained to use the old operational systems of industry, public administration, scientific research, etc. For these individuals, it would be almost a psychological

downgrade – for which, as far as I know, there are no current solutions – to work in companies or institutions where AI usage is minimal or nearly non-existent. This is because they would essentially be forced to re-learn skills vastly different from what they studied and applied during their university years.

Obviously, future job postings will reflect this separation between types of education, and as long as certain countries cannot keep pace with the leading powers in the field, the logical consequence will be a brain drain, because only a certain percentage of existing companies will be able to pay for and fully utilize these types of graduates.

Moving forward, even at the level of promotions within various companies, there will eventually be a distinction between those educated in the "pre-AI" era and those who utilized this new technology during their university studies. However, this separation will certainly not be welcomed by those who lose out on promotion opportunities, as economic logic favors those educated according to the latest academic standards. Consequently, older generations are likely to develop various feelings, including frustration and resentment toward AI and its (much) younger users.

The tension within educational systems will certainly increase, as financial disparities will become evident in the realm of equipping with Artificial Intelligence tools, leading to hierarchical rankings of programs and budgetary funding strictly based on this criterion. At the same time, the status of teachers will differ, strictly in relation to the AI resources available at universities – and also at pre-university educational institutions – which will foster a sense of distrust among them (teachers), based on an objective element: most likely, new research positions and higher academic ranks will depend on the frequent use of AI tools, and where these tools are not extensively used, advancement will be more difficult, if not impossible.

All these rankings and distinctions between universities and graduates – and the issue will also extend to industrial sectors where the use of Artificial Intelligence will be less prevalent – will draw both tensions and fierce competition. This necessitates adopting a well-balanced and clearly articulated regulatory framework among the different types of educational institutions and professional qualifications that will exist. It will be the responsibility of governments to find and formulate with subtlety, but above all firmness, the regulations that will establish a real and functional balance between those who have not been educated with or do not use AI extensively in their professions, and those who rely heavily on these new technologies for education and work. In the absence of adequately proportioned legal norms, imbalances and disparities will arise, which will disrupt social cohesion, making it more prone to social unrest. In such a scenario, different categories of AI users may oppose those who do not use it, or those who have lost their jobs because they could not adapt to its requirements.

As mentioned earlier, the implementation of Artificial Intelligence will not happen automatically or all at once, not even at the level of a single country or company – see McDonald's failure to implement it in menu formulation⁶. Labor laws must take this context into account. Hence, it is possible that salary scales will vary depending on the AI tool proficiency of employees.

⁶ T. Gerken, *Bacon ice cream and nugget overload sees misfiring McDonald's AI withdrawn*, available at <https://www.bbc.com/news/articles/c722gne7qngo>.

This differentiation makes sense today because the technology is evolving. However, in the future, in countries where its use becomes widespread, such a measure (varying levels of work remuneration) should no longer be necessary. This aspect is very relevant for universities because graduates will aim for professions where this differentiation exists, and they will find it hard to accept that the advantage gained during their university studies will diminish as AI tool usage becomes more generalized.

6. Social robots in education: today and tomorrow

As mentioned above, social robots are continuously evolving, and their use is becoming increasingly personalized. Following an inexorable logic, these tools that utilize Artificial Intelligence are expected to become smaller in size, cheaper in terms of production, sales, and consumption costs, and more tailored to the end user. In essence, we find ourselves in what educational sciences refer to as "personalized learning", a concept that should be at the pinnacle of educational methods for children and young people – but, in fact, for anyone who wishes to learn.

While no established definition of personalized learning exists, many definitions envelop general principles that include customization, student agency, and flexibility of instruction. In many ways, the principles of personalized learning stand in stark contrast with traditional classrooms: students move at their own pace, pursue learning that aligns with their individual interests, and set goals to reach their potential⁷.

The presence of social robots in the educational process is therefore a logical consequence of the technological development of the last decades, and teachers and educational institutions should not be afraid per se of using them. However, it is necessary to establish some guidelines for understanding and, implicitly, appreciating their use, in order to avoid as many as possible of the dangers that could arise when educating young people with products using Artificial Intelligence.

First, and perhaps most important, is the amount of information that today's children and young people have to assimilate. In order to be clearer, we will formulate the question: how much did a domain in any scientific, economic, industrial, etc. field need to know in 1900, what was the amount of information needed to be known to be a specialist in 1960, and at what level of knowledge would the same specialist need to be in 2020? The number of hours in a day is still 24, but the amount of information is greater, and being a good student means therefore to work more, in the most objective way, because today the complexity of work – that is, of life after studies – is very high, and employers will logically look for people who bring profit to the company, and not increased costs.

Knowledge means many hours of study, at least in this century, and another, equally important thing: in many jobs considered to be highly skilled, there is a need to prove that you have passed certain exams that entitle you to practice those professions. In the absence of these

⁷ S. Johns and M. Wolking, *The Core Four of Personalized Learning: The Elements You Need to Succeed*, 2016, p. 5, available at https://www.edelements.com/hubfs/Core_Four/Education_Elements_Core_Four_White_Paper.pdf.

diplomas – these being the administrative act attesting to the fulfilment of the legal requirements for the completion of a form of education, as consequence of standardised education – a person cannot work in certain fields, and can only work in other areas, with flexibility of the study/employability regime.

In this situation, the role of social robots becomes important, but it must be formulated in relation to a fundamental question: are they an aid to learning, or are they a tool to help pass exams in different educational institutions? The answer is fundamental, being in fact the essence of the dilemma of contemporary education: do we learn to know, or do we learn to fulfil the standard requirements for occupying different positions in companies and public institutions?

More specifically: what do we want from social robots? To help children and students to do as correctly and as well as possible the written homework received for individual study, or to provide them with personalized learning keys for each subject, in order to deepen more easily the increasing amounts of information? Again, the answer is fundamental, because we all know that you cannot evolve intellectually without intense individual study; at the same time, study without a clear end – namely an exam, a diploma, a study threshold reached – is not motivating and will not usually be done.

In addition, we cannot demand of children the same behaviour that we demand of an adult, and the whole legislation of legal responsibility is to this effect: we cannot ask them to work (study, in view of their age) 10 or 12 hours a day, we cannot ask them to read 200 pages a day because physically this is impossible for them, and pushing the limits leads to serious mental problems.

Social robots do exist and will be used, but as personalized learning is something that is mostly done outside the classroom, it means that the student will use this tool, based on Artificial Intelligence as he/she wishes, being outside the control of the teacher. So, the student will recognize that he/she has homework to do, and that it needs to be submitted to the teacher's requested time. However, the desire to do homework as quickly as possible is both logical and normal, except that social robots change the whole paradigm of studying: before them – and especially before broadband Internet – the student had to read and work alone, and the help he received was either from a brother/sister, or from a parent, or from a teacher.

Practically, before the invention of the Internet, the library was the most reliable solution, along with the support of other people (parents, brothers, teachers etc.). But once the vast library that is the Internet emerged, a significant portion of the problem regarding bibliographies was alleviated, doing homework completion easier, much to the delight of superficial students. At the same time, as mentioned earlier, we cannot expect children – and young people in general – to behave like adults, since play is a defining element for their growth and understanding of the world. Therefore, the complexity of homework and the wealth of available bibliographic resources today nearly "threaten" childhood with the amount of information children have to go through. In this context, there is data about the effects on childhood trauma induced by intense studying in this century, particularly in some Asian countries⁸.

⁸ W. Yang, N. Morita, Z. Zuo, K. Kawaida, Y. Ogai, T. Saito, W. Hu, *Maladaptive Perfectionism and Internet Addiction among Chinese College Students: A Moderated Mediation Model of Depression and Gender*, in *International Journal of Environmental Research and Public Health*. Mart 9; 18(5):2748, 2021. DOI: 10.3390/ijerph18052748.



7. Social robots and personalised learning

We emphasize once more that the adoption and use of social robots will not be uniform, even within a single country. What will be the impact on the overall evaluation of students in relation to the assistance these AI tools provide? On one hand, it stands to reason that homework completed with the help of social robots will be better, as some language deficiencies of the child who does not use them will be highlighted – these AI tools are programmed with adult language in mind. However, will there still be the same level of learning among students of the same age? This question is crucial, as the habitual use of social robots will eventually occur, and it is uncertain whether this will reduce the level of attention and dedication to studying among individuals who, it must be emphasized again, are not adults and do not have the same level of determination. When a child sees how useful social robots can be for completing homework, there will be a risk of "delegating" most of the homework to them, leaving more time for play and entertainment, but this does not mean that learning will necessarily improve. Furthermore, if the use of these social robots increases, what will a child do when they break down or, in the spirit of modern geopolitical competition, the power system fails due to a cyberattack on the local power plant?

One issue to which many researchers have dedicated themselves in recent years is the ethics of studies conducted with the help of artificial intelligence. The scope of this study does not provide enough space to analyse this aspect of education in depth. However, we should note that no one is obligated to disclose what possessions they own, but this can be observed in the completion of assignments. From this, the possibility arises of having significant disparities between students, without teachers always understanding this – after all, teaching salaries are not very high, so teachers may not always have access to the latest AI techniques/tools. This leads to a problem in evaluation: will an assignment completed by social robots (AI, thus) be as good as those by other students? How should children in the same class be evaluated concerning the inherent wealth separation, i.e., those who use AI for assignments and study vs. those who do not have access/use these devices? Will two types of grade books need to be created for each category? This question is important because the two categories of children do not consider themselves equal – and in relation to the external support they have, the differences are significant.

Long-term consequences related to transitioning into higher education cycles are very important. Can we level the admission competition between children who have used social robots (AI) and those who have rarely used such devices? Would such an approach be ethical? Education legislation has yet to address this issue, but it is a matter of years, not decades, before governments and parliaments will need to provide solutions using the power of laws. They cannot leave this situation to be regulated solely by ethical codes, which lack the enforceable power of the state. If this aspect remains unregulated, it wouldn't be surprising if special sections are established in universities and high schools, depending on the previous scientific preparation using social robots and Artificial Intelligence.

We mentioned earlier that there is a difference between graduates of schools and universities who will use social robots – and Artificial Intelligence – more intensively and those

who will not have this capability (usually due to a more vulnerable financial situation). The fundamental question is: on a cognitive level, will this difference favour those who have not used social robots extensively, precisely because they were forced to rely more on their own brains, trying and sometimes failing, but ultimately acquiring more human intellectual skills?

In the case studies at the beginning of a subject, things go well, linear, and the student understands things in the logic of teaching. However, the end of the course brings more complicated case studies, which require broader thinking, encompassing knowledge from as many different spheres as possible. Life brings – obviously – more cases/situations similar to the "end of course", and complexity is the rule. The problem arises in the matter of education done mostly with AI tools, because the young people who will rely on it will be put in the situation where they have to deal with events that either unfold quickly, and the AI devices they have cannot give an adequate answer too quickly, or too clearly – offering several options, and a mind unlearned with the practical reasoning of life will not know which to choose first – or, in some situations, they will not work at all (for example, in a forest). Yes, with the help of social robots grades have been high in college exams, but life forces not once quick reactions, not once on the order of seconds, which implies that one cannot resort to any other intellectual support than what the human has in his own brain.

Knowing this, an employer will prefer an education graduate who has predominantly used Artificial Intelligence and social robots, or a person who has managed to obtain his or her education degrees more through the efforts of his or her own mind, with the only support provided by the vast library of the Internet?

The effects of using social robots on the psyche of young people are not yet totally documented⁹, but it is equally clear that the relationship young people will develop with these devices will be profound, as they will spend a significant amount of time together, and – more importantly – the social robot in the home will be a problem-solving factor, whereas the family and social environment, in general, do not have this capacity. However, electronic device dependency is already recognized by doctors as a major psychiatric issue, and its effects are numerous, with the most important appearing to be a significant decrease in the ability to concentrate¹⁰. Concentration ability is key to maturity and wisdom, and social robots, through their capacity to eliminate much of the study, reduce a person's ability to endure, which is fundamental to long-term concentration.

⁹ A. Scoglio, E.D. Reilly, J.A. Gorman, Ch.E. Drebing, *Use of Social Robots in Mental Health and Well-Being Research: Systematic Review*, in *Journal of Medical Internet Research*, 21(7):e13322, 2019. DOI: <http://dx.doi.org/10.2196/13322>.

¹⁰ J. Torous, S. Bucci, I.H. Bell, L.V. Kessing, M. Faurholt-Jepsen, P. Whelan, A.F. Carvalho, M. Keshavan, J. Linardon, J. Firth, *The growing field of digital psychiatry: current evidence and the future of apps, social media, chatbots, and virtual reality*, in *World Psychiatry*. 2021 Oct; 20(3):318-335. DOI: 10.1002/wps.20883.

8. Rules for AI tools regulation

The use of AI tools (social robots) in educational system should be subject to several principles, which over time will be adapted to the general factual situations that will arise:

A) AI tools (social robots) must be used in such a way as to help the development of children/human intelligence, increasing its thinking abilities. They must not be used for the purpose of the human mind capabilities replacing, nor for the purpose of facilitating its work to the level where the most complex operations are performed exclusively through social robots. Let us not forget that the purpose of education is to form responsible adults, able to solve problems and factual situations of any kind, including unexpected ones, even when the available tools for solving them are reduced or even absent.

B) Clear principles should be formulated for the evaluation of students' activity, which should include both the obligations to report the use of social robots in homework and the sanctions to be applied in case of failure to report this way of working. Student assessment is actually the key to standardized learning, which makes the role of AI tools (social robots) primarily to make it easier to pass exams of any kind. However, because not all students will have access to the same type of social robot from the outset, clear evidence of their existence is needed so that assessments can be honest and the extra support that their users get "mechanically" does not mean a handicap for those who study without their help.

C) The use of AI tools (social robots) must be done without reaching levels where there are negative psychological effects. In this regard, rules should be formulated at the level of educational units, so that when there are signs of this type of problem, the student should be sent for an examination of attention. This is the most difficult problem to solve, because the use of social robots in one's own home cannot be regulated by law, as it would violate citizens' freedoms. However, as the psychological risks are high, it is necessary to provide specialized medical assistance in educational establishments to prevent and/or reduce the impact of these problems.

D) It is necessary to have clear regulations in labour legislation that differentiate access for different types of graduates based on how much they utilized Artificial intelligence tools in their training. Employers could also provide general support by establishing a set of access rules for various professions to ensure no discrimination against those who have extensively used social robots, or those who were not supported by such devices.

9. Conclusions

Education is never equal for teachers, and even less so for students and their families. Different access to resources, the standard of living of families, ease of engaging in conversations, and verbal responsiveness are all factors that influence a child's years of study. We will never have perfectly uniform classes, except where selection is top-tier, which makes the entire educational ensemble – teachers and students – artificial and impossible to replicate on a large scale. The emergence and development of tools provided by Artificial Intelligence represent the greatest challenge for the education system, given their capability to offer solutions or quicker ways to handle various tasks assigned in schools and universities.

Social robots manage to suddenly change the perspective of education because they allow for greater personalization of schooling, in which a specific algorithm can be developed for each child's thinking style. This way, learning and comprehension abilities will increase, leading to better academic performance.

While this image holds a significant degree of truth, there is also the flip side to consider, where several vulnerabilities need to be acknowledged with the widespread use of social robots. From decreased attention spans to long-term reductions in cognitive abilities, social robots could significantly undermine the intellectual development of future adults, who might start overly relying on AI algorithms to complete educational tasks. This situation won't be a rare occurrence in practice, as children inherently lack the concentration capacity of adults. Dominance of the educational process by social robots will render young people vulnerable in moments when AI-powered devices are unavailable.

Clearly, the coming years will show how well we anticipated the new landscape of education, as well as how important and useful these social robots are.

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