

# The Challenge for the Philosophy of Education in a “Data-Driven Society”

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## **Abstract**

The world we live in is now a Cyber-Physical System (CPS), where the cyber and physical realms are interconnected. Human beings living in this system are constantly mobilising data simply by virtue of their existence and behaviour in the world. Can philosophy of education respond to this digital transformation in the view of humanity, which has the power to reconfigure the nature of human existence, leading to states such as the posthuman and the transhuman?

**Keywords:** Cyber-Physical System, Internet of Things, posthuman, transhuman, humanity

## **I. What a “data-driven society” brings**

Rapid development of information and communication technologies in recent years has spurred the expansion of the Internet of Things (IoT), in which computers embedded in objects work together, as well as digitalization and AI networking, in which artificial intelligence is connected to the web. This has led to an explosive increase in the amount of data being circulated, accelerating analysis of accumulated big data and use of AI for this purpose. In such a “data-driven society,” it is essential to effectively promote the collection, accumulation, analysis, and feedback of data to the real world, and expectations for innovation based on data are high (Minister of Internal Affairs and Communications -Japan 2018).

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characteristic feature of a data-driven society is that human existence and activity imply the production and accumulation of data, and its use or consumption.

A data-driven society contains data that in itself has the same value as land, labour, or capital. For example, data covering a person's lifetime create value. Such data range from maternity records to medical examinations, genetic information, and various learning and behavioural history data collected by schools and companies, etc. It is also necessary to decide in advance what will happen to such data at the end of life and what will happen to legacy data, for example whether the surviving family will redeem the data for cash or whether it will be made available to an institution. In addition, there is an urgent need to consider legal mechanisms to ensure that collected data is used appropriately for examinations or employment purposes. Individual optimisation is optimisation within a pre-conceived framework, and the increasing number of justifiable preventative interventions based on correlative predictions made by big-data analysis will emerge in a variety of settings in the future, including self-medication, nursing care, disaster prevention, and education.

Changes in industrial structure will once again call into question the value of public education. These include the convergence of information technology and manufacturing industries, the introduction of IoT into components, raw materials, products, and equipment, the networking of supply chains from raw material procurement to distribution and sales, factory automation, and mass customisation to enable mass production while meeting customer needs. In addition, new industries are emerging that make full use of information technology, such as fintech (IT and finance) and agritech (IT and agriculture). The reconfiguration of industrial structures and rapid changes in work styles make it difficult to predict changes in the labour market. It is also challenging to know what kinds of human resources will be required in the next stage and what minimum skills and competencies will be required.

People's lives are also undergoing major changes. The resistance to online forms of education and work that emerged during the COVID-19 pandemic was a stark reminder of how deeply ingrained social systems are in our habits; human lives have taken for granted the fostering of contact-based social experiences (Suzuki, 2022). The shift from a consumer lifestyle of owning things to a lifestyle of sharing things with others is likely to continue, even though the pandemic has temporarily stalled this trend. What do we own and what do we experience as we move back and forth between the cyber and physical worlds, and how do we perceive our position and self-consciousness through performances on the web, such as communicating anonymously or through avatars in the metaverse? These experiences in the CPS also transform one's view of life and death.

Today we access the storehouse of information, which can be called collective intelligence, as needed (on demand) and acquire a lot of information each time. This means that the processes of learning through memory and recall, feeding on experience, mastery through repeated practice, changing stages as things suddenly become clear to us, and so on, are all part of the process of learning from the earliest stages of life. It will mean a transformation of the intellect, the emotions, the will, and the body, and a change in human nature itself. Can philosophy of education respond to this digital transformation in the view of humanity, which has the power to reconfigure the nature of human existence, leading to states such as the posthuman and the transhuman? This is a question pertaining to the *raison d'être* of philosophy of education as an academic discipline.

## **II. Future challenges for pedagogy and philosophy of education**

From the perspective of the new technological civilization brought about by technologies such as artificial intelligence, I would like to point out three issues in the philosophy of education that I think we will confront in the future.

### **(1) New turn in science and technology ethics and redefinition of humanity**

Technological innovation, such as artificial intelligence, requires the wisdom to “fear rightly and use wisely” (Berberich/ Nishida/ Suzuki 2021). Technology will emerge as one of the most important issues for education in the future. The nature of ethics regarding the research, development, and use of science and technology is approaching a turning point. We require the kind of ethical thinking that predicts possible future situations and simulates how to deal with them. In other words, it has become necessary to anticipate situations that have not yet occurred, but may occur in the future as science and technology progress and spread, and to consider in advance how to deal ethically with such possible cases. While linking to certain kinds of strategic thinking and taking traditional ethics as its base, this thought process will also link to meta-ethics in the sense of requiring a new type of ethics that maintains an overview of ethics itself. At the same time, it will reinforce the aspect of providing suggestions for risk perception and situational judgment. Ethics education for the acquisition of ethical thinking and attitudes is also likely to change dramatically in the future.

Moreover, the development of AI technologies is enabling partial substitution for human intellect and physical functions. Such substitution carries the danger of weakening

functions that until now have been acquired by humans themselves, such as those relating to memory, recall, emotional cognition, and empathy. One example is increasing extrapolation of memory effects. We have already begun to take for granted the ability to acquire information by leaving it to external storage devices or accessing on-demand the encyclopaedic functions of so-called collective intelligence on the web. There is also a danger that “knowing,” which is based on the intertwining of various aspects of such “knowing,” such as retaining information, knowing things, and having a sense of reason, will be reduced to the act of acquiring data. We experience various things in the cyber world without activating our bodies. In the physical world, coordination between sensors and emotions activates our senses. Human beings have confirmed their nature as humans, in other word their humanity, by drawing a boundary between animals and machines.

Such boundaries often depend on stereotypes, preconceptions, and prejudices. From the point of view of contemporary post-colonialism, the definition of “humanity” based on a universal model of humanity, which can only be described as the Western view of humanity based on white male supremacy, has begun to show various discrepancies. When the human intellect, emotions, and body are altered by highly invasive technologies, for example, psychic avatars developed through combination of artificial intelligence and genome technologies, it is time to redefine “humanity” (Bostrom 2014; Suzuki 2020).

## **(2) Reviewing the concept of competence and skills and the significance of learning in the school space**

At the same time, the question of “humanity” implies a rethinking of abilities and skills. Today, when we are constantly connected to a variety of information devices and use them in our daily lives, is it sufficient to think of human abilities and skills in the same way as before? In past school education, ability was generally regarded as the ability to perform a certain task, based on the ability to perform it visibly. In an age of digital transformation, when people are closely connected to one another and to objects, simply regarding abilities and skills as attributable to individuals may no longer be seen as adequate. If we are to adopt a world-view of human beings as actors in a so-called environmental intelligence made up of data and information, it will be necessary to grasp human abilities and skills from a new viewpoint.

In a sense, online learning, which has seen rapidly growing demand triggered by the COVID-19 pandemic, may offer suggestions for a new form of education. On the other hand, this is also an opportunity to reassess the significance of face-to-face learning,

where people share the same place and time. From a viewpoint of historical anthropology, the classroom can be seen as a stage where communication between teachers and students takes place, resonating through the interplay of various performances to form a shared “place” of learning. Field research and interviews in families and schools in Japan and Germany has clearly shown that through such communication and performances, rituals that are performed repeatedly and have become a kind of custom are passed on through mutual imitation by those who share the space. Schooling can be regarded as a process of updating, modifying, and editing according to individual circumstances. In this sense, school is a space in which students can experience diverse ways of learning.

Bearing in mind guidelines for learning, whether you study on your own at home or online with a teacher in the form of individualised learning, the path to understanding something is limited only to the process by which you come to know it. However, in the classroom, students have opportunities to see how other students have different ways of understanding the content of the class. We help our fellow students who seem to understand more slowly than we do, explaining things to them and asking them where they are stuck. Sometimes you think you understand something, but find a completely different way of thinking about it. It is no simple matter to identify what kind of abilities and skills are developed by experiencing these different ways of understanding. Elements deeply related to the fields of non-verbal and non-cognitive capabilities, such as physical and tacit knowledge, play an important role. These include non-verbal communication, anticipating others’ intentions, mutual gestures, facial and bodily expressions, and tone of voice. The significance of such face-to-face learning, which could be called theatrical learning, or the significance of learning through practice, needs to be further elucidated in the future (Suzuki 2021; Wulf 2013).

### **III. The impact of the “data-driven society” on education and educational philosophy research**

Big-data analysis and other new research methods are showing signs of a major transformation not only in the natural sciences, but also in the humanities and social sciences. There are high hopes for the potential of digital humanities, a field which introduces new technologies to research subjects in the humanities, such as old maps and documents. As the accuracy of predicting the future through data analysis improves, we can expect to see significant progress in correlation-based research in education-related fields. In this context, educational research will inevitably undergo a paradigm shift as a

result of digital transformation, with changes in the focus of research and the development of joint projects with other related disciplines, including the natural sciences. In this paradigm shift, researchers will increasingly be called upon to search for new paths to renewal of educational research while questioning the *raison d'être* of the philosophy of education.

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