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# DATAFICATION WITHIN EDUCATION

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A PAPER BY REBECCA MACE  
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## **Rebecca Mace**

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Having spent 15 years teaching philosophy and ethics in both state and independent schools, running two academics departments in the process, Rebecca is currently undertaking PhD study at UCL Institute of Education, Knowledge Lab .

She has also been appointed as Head of Digital Character Education at Cheltenham College. Prior to this her interest in the philosophy of education and digital pedagogy led her to spend a year as Research Associate in the Digital Ethics Lab, the University of Oxford, Internet Institute.

Over her time as a teacher, she has been interested to see the infiltration of technology into every area of life noting the way society's relationship with knowledge and self expression has rapidly changed and developed.

Her PhD study considers the possibility of the Socratic injunction to “Know Thyself” in a technological age saturated by social media; asking questions of the different expression and development of self in an online world. Her role at Cheltenham College dovetails with this, combining Character Education and the digital world – seeking ways to develop young people’s “character” when making positive decisions online.

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## Datafication Within Education

The Department for Education Technology Strategy, unveiled by the Education Secretary on April 3rd 2019, set out plans to “support innovation and raise the bar in schools, colleges and universities across England”. It aimed to “harness the power of technology to reduce teacher workload, boost student outcome and help level the playing field for those with special needs and disabilities”. This is fantastic news, but it is important that the relational aspect of the educational process is not lost, and that the tools to help teachers facilitate an enriched student-teacher relationship.

Most teachers will remember the names Foucault and Piaget from their PGCE years, and given they were not developing their educational philosophies within the context of our technological culture is it interesting to see how their thinking can be re-framed now; for example, the educational philosopher, Foucault, called classrooms ‘Learning Machines’, articulating how children could be counted in terms of their development, knowledge, behaviour, progress, age, social class, character and so on in order that they could be ranked, supervised and disciplined more effectively. And, Piaget, taking a different stance, stated quite carefully that cognitive development can only be achieved in the context of cooperation with others. Bearing these things in mind the recent tweet from Michael Rosen resonates;



**Micheal Rosen**

@MichealRosenYes

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**First they said they needed data about the children to find out what they're learning. Then they said they needed data about the children to make sure they are learning. Then the children only learnt what could be turned into data. Then the children became data.**

12:57 AM - 8 Feb 2018

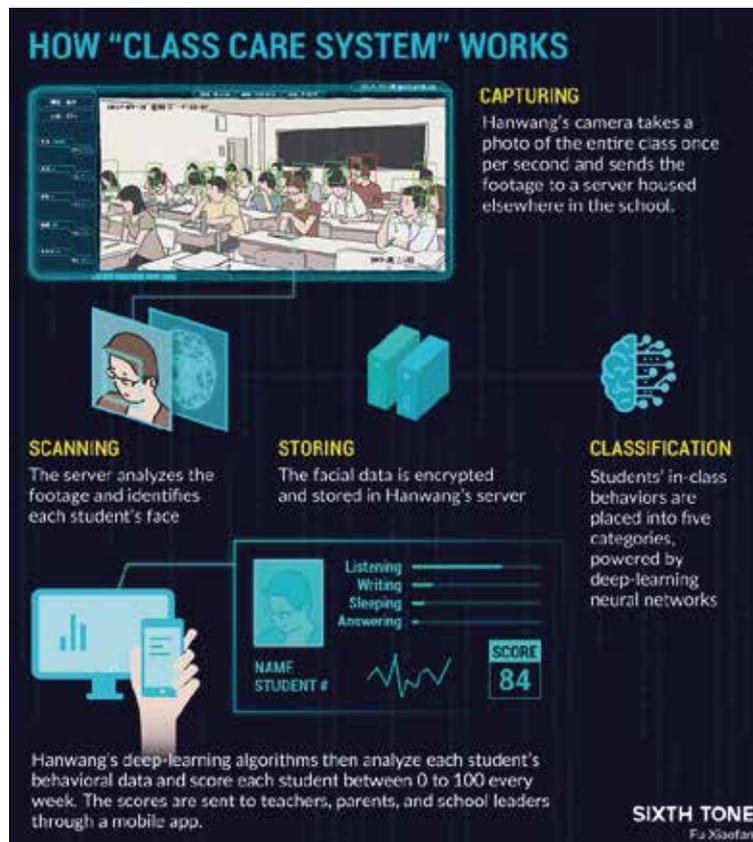
5,172 Retweets 8,682 Likes



It is interesting to note that increasingly over time education has come to be approached from the perspective of an attention economy and a culture of acceleration. However, the recent tendency to / interest in reducing pedagogical interactions to a series of datafiable transactions of information is concerning, especially if it is approached from the perspective of data replacing a relational pedagogical space.

In July 2017, China’s highest governmental body, the State Council, released an ambitious policy initiative called the Next Generation Artificial Intelligence Development Plan (NGAIDP). The 20,000-word blueprint outlines China’s strategy to become the leading AI power in both research and deployment by 2030 by building a domestic AI industry worth nearly \$150 billion. It advocates incorporating AI in virtually all aspects of life, including medicine, law, transportation, environmental protection, and what it calls “intelligent education”.

Following the NGAIDP’s release, Chinese tech companies have rushed to secure government support and investor funding for various AI projects, several of which are being tested in Chinese schools. While advocates claim that using facial recognition to monitor students’ in-class behaviour can accurately assess attention levels and help them learn more efficiently, most students I spoke with had a different opinion. They showed concern that the school never asked for their consent before harvesting their facial data. One student expressed anxiety at the idea that the times he was



caught slacking off in class would eventually be used to determine his chances of attending his dream university. Other students disconnected the cameras at their school before final exams in protest. A white, dome-shaped camera is installed above the blackboard at the front of each classroom. Once per second, it takes a photo of the entire class and sends the footage to a server where deep-learning algorithms identify each student’s face and classify their behaviour into five categories: listening, answering questions, writing, interacting with other students, or sleeping. The algorithms then analyse each student’s behavioural data and give them a weekly score, which is accessible through a mobile app. A green down arrow appears next to the student’s score when it decreases, and a red up arrow when it increases. A bar graph shows how many minutes the student spent concentrating, sleeping, or talking in class .

Much of our thinking regarding data rests on the assumption that datasets inherently produce meaningful and objective knowledge about complex phenomena, providing a ‘view from nowhere’, free of human bias or framing. There is a tendency to assume that the ‘data speak for themselves’ but this is not the case as data does not represent a reality of the

world independent from human thought but has been constructed. As such, it is important to note that data is always framed, it is not simply essential elements abstracted from the world in a neutral and objective fashion to be accepted at face value.

There are a variety of things that shape what may be seen or known;

- 1) Algorithms and databases are formed on existing data which may already have bias or historical prejudice written into its code.
- 2) Scientific methods used – datafication is a process of employing certain data scientific methods in order to produce, analyse and circulate data. These methods have their own social origins and derive from or reproduce the particular assumptions of the expert groups that created them.
- 3) The materialities of datafication – all of the material infrastructure, software, hardware, servers, cables and so on affect how data is generated and how fine grain/ large grain that data is.
- 4) The ways in which a test has been put together in order for the data to be analysed impacts upon the data collected, eg the ways the questions are framed in order that the technology can translate the answers into ‘information’; whether they are short answers or multiple choice for example.

Furthermore, once generated, data has consequences and can shape individual actions, experiences, decisions and choices. In a sense data can go on to change reality or partake in making up reality. Within the school context, for example, a student may perceive their ability to paint as entirely summed up in a grade on their report card, this will then impact upon their GCE options choices and ultimately impact upon their future in one way or another.

They may be left with the impression that they “are rubbish at art” due to a low grade, but the grade/ data may have been flawed or have been based on one teacher’s assessment of their work, or the student may have been prevented from achieving a higher grade for reasons beyond their control, eg. illness / absence from school.

Therefore, the data does not reflect their ability but it has affected the individuals experience of the subject, and their future decisions / choices. So, although data is a product of the social world and of specific practices is also acts upon the world and this can be problematic for those in an educational context in other ways too. Take for example the research that suggesting low stakes testing is the most effective way for students to learn, by frequently revisiting content, learning from their errors and so on students are able to learn more, more effectively. This research is well respected, and it is a strategy that many teachers use frequently and successfully.

But weekly testing produces data and this is often used to inform upon Reports grades, Predicted grades and so on. The low stakes emphasis when this data was collected has

been altered by the way in which the data was used. Likewise, if this data is also analysed by senior members of staff and used to assess Heads of Department and /or teachers, then, again, the stakes of the data is altered, causing potential problems. This is where the data gathered and the uses that it is put to can be at odds, ultimately impacting upon the outcome.

Likewise, the quality of the data that is collected within schools can range hugely in its granular contexts – for example, the grading data that is collected within the context of Art is more likely to be based upon a project, or an entire piece, whereas in Languages the data sets may involve vocab tests and smaller grain data. This is where schools need to be careful comparing one set of data with another.

On top of this, children's data traces are often used to identify behavioural patterns, to make assumptions about preferences, behavioural tendencies, and even psychological characteristics and future attainment. These then form narratives about who they are, often based in the social context in which they grew up. Technologies sort and profile based on group rather than individual and children run the risk of being profiled on the basis of families and social groups with which they no longer identify.

These classifications may well go on to follow them throughout their life span in ways we are only just beginning to predict. They have the potential to impact upon a young person's right to self-define, or it could affect their sense of moral autonomy. There is a danger that 'datafied' children are understood from an essentialist perspective in which the normal messiness, inaccuracy and unpredictability of adolescence is ignored or downplayed.

In this way then it is vitally important that teachers, heads of department, and school leaders all need to be sure that they are closely in touch with the human element behind the data. One of the dangers is that as a society we believe that it is possible to draw conclusions about people solely on the basis of data.

Therefore, rather than being beholden to data, teachers should see it as empowering and useful, but not something to which they are tied. There will always be an individual who bucks the trend and it is part of our role as educationalists to be able to explain why this is the case, but it is equally as important that teachers have such a handle on their students they are able to explain the trends in the first place.

Whilst teacher work load increases, and technology offers potential to reduce workload, we must ensure that the relational aspects of teaching are not lost, but increasingly facilitated by the technology available.

After all, education in its purest sense is not about factual recall, or knowledge retention, it is about inspiring people to love learning and develop as individuals.

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