

The Five Ps of Datafication

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A. Examples of Datafication

Datafication is a process that affects all areas of education. My research mainly focuses on early years education and primary schools, and I am going to begin with some examples from this sector. First, I want to share how a company which runs a chain of nurseries in the UK advertises its data production system. Alongside a photo of a practitioner taking a picture with a tablet, the explanation gives details of how the software enables practitioners to capture what children are doing 'at the touch of a button', so that they do not need to take time away from the child. It also explains how the parent-facing part of the software allows parents to see their child's observations and comment. This use of tablets is now common in early years settings, as practitioners seek to record what children are doing and compare it to the government's statements of development for 0-5s.

I also want to share some observations made by staff at my children's nursery, as examples. In one example, my 18-month-old daughter is photographed doing an activity with paint and toy dinosaurs. The observation explains what she is doing and the communication with an adult. Underneath the photos and explanation, the software allows the practitioner to tick statements which show Characteristics of Effective Learning (in this case, 'Engaging in an open-ended activity' and 'Showing particular interests'), again from government guidance, and also to tick statements under the EYFS Curriculum. These statements are labelled as 'Commencing' (red), 'Developing' (orange) and 'Secure' (green); they relate to different age phases in the schema also. For example, my daughter is labelled as 'Secure' in 'Uses single words', which relates to 8-20 months, but as 'Commencing' at 'Expresses own preferences and interests', which is 22-36 months. What I find interesting about this process is that the observation-based data is translated into effectively numerical data, in order to track the child's progress through the developmental stages. The relation between the observation and the judgements is not always clear.

In the second example, the photograph shows my daughter drinking milk from a bottle at the age of eleven months, just as she started attending nursery. This is interesting as an example of how this attempt to label every-day activities using the developmental stages can become farcical. After an

explanation of how the baby took her own milk bottle from the practitioner and drank it herself, she is labelled as having a 'can do' attitude, under the Characteristics of Effective Learning.

But datafication does not only happen in primary and early years, of course. I also want to share a series of tweets by a physics teacher called Matthew Benyohai, which he calls his 'gallery of progress nonsense'. These illustrations show the complexity of data tracking in secondary schools in England, where the Progress 8 measure produces a 'flight path' for each child based on their results at age 11 in primary school. As Benyohai's collection shows, these trajectories are used to detail children's attainment as above or below where they should be, with a range of colour-coded graphs.

The idea of measuring progress is also apparent with much younger children, as shown in these quotes from a research project conducted with with my colleague Guy Roberts-Holmes (see Bradbury and Roberts-Holmes 2017).

We record **how the children enter when they are two**, so we have a baseline and then throughout the year we do 3 assessments with the children at set points and then compare them with each other **to check that they are on track are making progress**. You have to show that you have made 'value added' by the time they reach end of Reception. **The Local Authority are using that information to predict how 2 year olds are going to do at the end of FS, KS1, and KS2.** (Head, Hopetown Children's Centre)

The tracking begins from Nursery in the Prime Areas and right through to Year 6. If you are 'exceeding' at the end of Reception you have to show that you are 'exceeding' at the end of KS1 and **if not then we are not doing our job.** (Teacher, Easthorne Primary School)

Here we see the idea of tracking progress being used to justify the existence of the Children's Centre, as children are tracked from age two to age eleven, and in the second quotation, the idea that a standardised trajectory between two assessment points is evidence of a teacher 'doing our job'.

These examples illustrate the extremes of datafication, but it is also an every-day normalised process. I am going to use further quotes from research projects done with my colleague Guy Roberts-Holmes to examine in more detail the process of datafication in early years and primary education in England. I have begun to use a framing to discuss the impact of datafication which is based on 5 Ps: pedagogy, practice, priorities, people and power, also in my forthcoming book. I shall return to these through this paper.

B: The drivers of datafication and the impact

I begin by thinking about the question of how datafication operates in Early Years and Primary Education in England. First, it operates through policy. There are a number of statutory assessments

which require schools to collect data, but also encourage monitoring of particular skills or areas of the curriculum in-between statutory assessments:

- EYFS Curriculum age 0-5
- National Primary Curriculum 5-11
- Key Stage tests at age 6/7 and 10/11
- Phonics test at age 5/6
- Multiplication test at age 8/9
- Baseline Assessment at age 4/5

I am particularly interested in this last assessment, which was introduced in 2015 but then abandoned in 2016, and has since been attempted again in 2019, and now postponed till 2021 (BBC News 2020). Baseline assessment aimed to calculate a score for each child on entry, which could then be compared to their score in the Key Stage 2 SATs at age 11. This was to be used to measure the success of the primary school. I conducted some research on this assessment in 2015, and a further project on SATs in 2019 included some discussion of Baseline (Bradbury 2019a; Bradbury and Roberts-Holmes 2016). My colleague Guy and others also researched the pilot stage of the new Baseline in the autumn of 2019 (Roberts-Holmes *et al.* 2020). Some of the examples I am going to use today of datafication are drawn from this first project, which we used in our book on datafication; others are drawn from a smaller exploratory project with early years settings looking at the impact of policy change.

Datafication also works through the private sector, in tandem with policy in some cases, such as the use of three private companies for the delivery of Baseline in 2015 – Early Excellence, NFER and CEM. Other commercial software such as Target Tracker, 4Matrix and Tapestry drive the collection of numerical and observational data. Data management companies such as Sig+ offer themselves as ‘your emergency data service’, and promise to ‘help you understand your school’s data better than anyone else and to ensure there are no surprises’ (Sig+ 2017).

The combination of policy change and commercial interests together further hasten the process of datafication. This headteacher explained:

I feel extremely concerned about the increased use of private companies in the entire education world, but also within assessment at the moment. I feel that by removing and taking away all the known assessments [...] what has happened is we have been opened up to a completely free market and we are being bombarded with sales pitches. And actually that is very hard when what you are trying to do is focus in on what you are doing for children. [...] **I think that the companies at the moment can really capitalise on the fear factor in schools** and with head teachers and it is not healthy really. (Head, Cedar)

For school leaders caught up in the huge amount of school reform in England in the 2010s – what I have termed the ‘policy storm’ (Bradbury 2018) – the temptation to use private companies to resolve the new issues presented is obvious. This ‘fear’ is largely based on being given a failing Ofsted rating. Other respondents have commented on the importance of data:

You’re only as good as your last year’s results across the whole school. **Get the data right and you buy five years of freedom.** (Head, Northside Primary School)

We’re totally data driven. **If the data is good Ofsted leave us alone** but if the data is poor they drill right down into everything. **We’ll be punished if we have poor data**, so obviously it’s a huge huge pressure to get the data looking good. (Deputy Head, Eastside Primary School)

Thinking then about teacher subjectivities – the *people* of the 5 Ps – we can see that data are part of a high stakes system in England. These school leaders’ descriptions of the ‘freedom’ bought by ‘good data’ show how central data have become to thinking about success as a headteacher. This also relates to *priorities*, as the school is reoriented towards ‘getting the data right’. I will return to *people*, or subjectivities, in a moment.

A further example of the shift in priorities is shown by this quote from a headteacher about the impact of needing to collect observational data for Baseline:

If you have got 60 young people coming in through the door and in six weeks’ time you have got to tick 47 boxes about all of them, of course your mind is going to be on that rather than on talking to them about their nice shiny shoes and about their pet rabbit at home and all those things that give young people a sound, secure start to learning. (Head, Beech Primary)

This headteacher creates a division between the data collection process and the building of relationships with children (this problem was commonly brought up by teachers in the first Baseline study). The former has become the priority, as the assessment has to be conducted within a set timeframe.

A further example of a shift in priorities came from an interview with an early years adviser, who explained how teachers organise their classrooms based on prioritising those who might achieve the benchmark of Good Level of Development (GLD) in their assessment at age five:

It’s about who’s going to achieve the GLD. So we say ‘they’re easily gonna make it, thank you very much’. And we say ‘they’re never going to make it so go over there and have a nice time’ and we look to the middle group. We target these children because they are the ones who may make it. It’s the same as Year 6 Sats. So you put all your effort and intervention into those that are just below and it’s a very unfair system. (Early Years Local Authority Advisor)

Here the prioritization of 'borderline' children, in a system of 'educational triage' (Gillborn and Youdell 2000), reveals a shift also in *practice*. Grouping systems are determined by the data already collected and the need to improve future data.

As well as practice, there is an impact on *pedagogy* too:

I am now pushing information into three-year-olds rather than developing meaningful relationships. Even in the nursery I now feel that pressure. If a child doesn't recognize a number or a letter I go "aggghhh" and hold my breath. I have to remind myself the child is three and not yet ready for it. (Teacher, Easthorne)

There were also examples in the Baseline project of teachers setting up activities so that they could collect evidence of a particular skill listed on the assessment.

C: Datafied subjectivities and resistance

I want to return to the issue of subjectivities, and think in a bit more detail about the impact of datafication of the teacher. As I have argued previously, 'the process described is not simply a change to what is done and how, but also a change to *who people are*, or who they are expected to be' (Bradbury and Roberts-Holmes 2017, p. 7 emphasis in original). Thompson and Cook describe the *dividuated* teacher, based on Deleuze's concept of *dividuals* in societies of control (Deleuze 1995):

...the statistically derived product of students' test scores represents a new, more intense, virtual (and fragmented) logic of schooling and teaching. When tests are fed into a machine that converts them to data-points aggregated via a computer program a pattern of data-points emerges that tells a story that is more powerful than that concerning how well this teacher enforces the timetable or uniform policy. [...] **These teachers are rewarded or punished for the patterns they produce; not for anything they do in the classroom.** (2014, p. 133, my emphasis)

In our 2017 book, Guy and I used this to examine the role of the teacher as data collector, and the impact on their professionalism. Since then, I have also examined the relationship between teacher professionalism and resistance to datafication more, and discussed how early years teachers in particular have a complex relationship to data based on their own ethos of early years professionalism. I am interested in what Maguire *et al.* (2018) describe as 'thin' resistance - everyday mundane forms of resistance rather than 'thick' resistance, which is an overt challenge to structures. Though, as an aside, there are forms of 'thick' resistance occurring, such as the More than a Score campaign, which was instrumental in ensuring that Baseline was abandoned in autumn 2020. But, most of the resistance to datafication and broader accountability systems I have seen is the 'thin' kind. What I have not seen is the 'post-performative' teacher, who is neither compliant nor resistant, and is content with accountability mechanisms which are seen as effective (Wilkins 2011). Bearing in mind the lower status of early years teachers in the UK, which further limits their ability to

resist in more fundamental ways, I have characterised resistance in past research as ‘cynical compliance’, described as ‘tokenistic, half-hearted and tactical adherence of some teachers to the requirements [...] undertaken in a situation where teachers feel they have very little power to resist’ (Bradbury 2012, p. 183).

There were of course some examples of outright rejection of the assessment in the Baseline study:

Appalling form of unnecessary assessment. Goes against the principles of ethical and purposeful assessment in the EYFS. Serves no other purpose than to give the government another tool with which to bash teachers. (Written comment)

We deserve to be trusted as professionals to do what is best for our children's development ensuring their wellbeing is high and their love for learning is nurtured. (Written comment)

Further examples of this kind of extreme rejection were also apparent in more recent research on the new Baseline (Bradbury 2019a). There were also examples of what I call, after Selwyn *et al.* (2015), ‘begrudging acceptance’:

I can tell you, we head teachers just sighed, we just kind of had a group hug at the meeting, rolled our eyes, and thought here we go again. (Head, Alder)

I have always taken the philosophy that as a teacher you know you have to do things you don't necessarily want to do or you might not see a purpose for but it is just one of those things that you have to do. (Teacher 2, Alder)

These quotes indicate a degree of acceptance but not the level of acquiescence suggested by Wilkins’ ‘post-performative’ teacher. Instead, there was a sense of cynical compliance among many. This teacher is describing the meetings she has with a senior teacher to look at her class’s assessment data:

I used to enjoy my pupil progress meetings when we used to talk about the children. Now you come in, **all your data in your hands and literally we get names reeled off, these are the children who are not on track on a thingy**, “I want to know what you're doing”. It literally is a list of intervention, any intervention. There's no thought. You don't talk about the child, it's just occasionally even said in meetings. And again, I don't blame them for this because they're panicking: **“Even if you think it's not going to have an impact, we have to have something on this bit of paper so that when it doesn't, we can show that we at least did something”**. It's like a parallel universe. (Focus Group teacher)

Here, the intervention has to be listed, even if it is not seen as having an impact. The teachers are playing the game, but have no belief in it. Similarly, this teacher is cynical about the idea that meeting more often will improve attainment:

The other thing we started doing because of the fear of Ofsted... so we do three pupil progress meetings a year, then we do three midpoint ones in between each of them where we go back and we reassess any child that wasn't at the right point and any child who is on the pupil premium list. We reassessed them so their data has to go up in between. Then when you come to the pupil progress meeting, it has to have gone up again. **The idea almost being that you can double their rate of progress by meeting more often.** (Focus group teacher)

The form of resistance that is most interesting, however, is what I call 'compliant resistance', that is acts of resistance which ultimately have the effect of compliance (Bradbury 2019b). When Baseline was first introduced, one of the three commercial providers, Early Excellence, produced an observation-based assessment which was far more familiar to early years teachers than the others, and this was taken up by a majority of schools (Bradbury and Roberts-Holmes 2016). This was seen as the 'early yearsy' choice, and as a rejection of the government's plans:

Early Excellence is the only provider I would consider as all others contradict with the EYFS ethos. It has added workload as we still have to conduct our own on entry assessments to gain an accurate starting point for planning and tracking from. (W)

However, by accepting this provider and conducting the assessment (unlike the schools who refused to take part when it was not statutory), these teachers also smoothed the path of the policy. When it was mooted to return in 2018, the idea of assessing on entry was already far more familiar. There is a 'policy ratchet' effect (Ball 2008).

To return to the impact on people, I want to conclude that the impact on subjectivities is important and powerful. To quote Ball on this:

The regime of numbers hails us in its terms, and to the extent we turn, acknowledge and engage, we are made recognizable and subject. (Ball 2017, p. 44)

Datafication makes us subject to numbers, but also recognisable – as a good teacher, but also – as I haven't had time to discuss today – as a good student.

D: The Five Ps of datafication

As mentioned, I have begun to frame the impact of datafication using five areas: pedagogy, practice, priorities, people and power. Of these, I have discussed the first four, at least briefly, thus far. The final area, power, relates to the shifting dynamic which arise due to datafication. There [more]

The five areas and some examples are summarised below:

pedagogy	<ul style="list-style-type: none"> • Changing activities to collect more or the 'right' data • Teaching particular areas to improve the data, based on data already collected • Spending time in the classroom or setting taking photos or noting observations, rather than interacting
practice	<ul style="list-style-type: none"> • Grouping pupils based on data, or for the purposes of improving data (e.g. triage) • Spending time out of class inputting data or analysing data • Using interventions to 'plug gaps' based on data
priorities	<ul style="list-style-type: none"> • Adjusting the curriculum to meet the need to produce data • Reducing time spent on building relationships • Spending time previously spent on planning processing data
people	<ul style="list-style-type: none"> • New roles: understanding the teacher as collector/producer of data; the child as data point, or a data double; school leaders as monitoring data • Seeing success as a teacher or child as defined by the data • New stakeholders such as professional data analyst
power	<ul style="list-style-type: none"> • Data make education governable at state level, through accountability • Increased visibility of professionals, subject to control through data • Powerful new actors, e.g. data analyst becomes a key interpreter and translator of a school's data; private companies control huge datasets • Power of the algorithm to determine who passes or fails

There are of course other areas we could think about in terms of datafication. We could add in two further Ps - policy and profit/private companies – as the drivers of datafication, rather than areas of impact. However, I wish to focus on the effects and I think the majority of the impact of datafication comes under these headings, but I am willing to be challenged on this. What I hope this framing does is to encourage thinking about datafication to always bear in mind the less obvious impacts of this process, particularly critical thinking about who we become in a data-obsessed education system, and how data relate to power. I look forward to further conversations.

Finally, it would be remiss at this time not to mention a final P in relation to datafication – the pandemic. Obviously, we have seen an increased use of digital means of education as schools have been closed, and the analysis of how this is operating and the long-term effects is just beginning (Grimaldi *et al.* 2020; Williamson *et al.* 2020). The use of digital platforms to monitor children and parents through measures of engagement is clearly one area to explore. One effect I have noted is the increased use of early years-style observation data being used by parents to show home learning. There is some emerging evidence that digital forms of communication may work better for some groups of parents, such as young parents, who find it easier to post pictures than to speak to the teacher or practitioner (Bradbury 2020; Wyse *et al.* 2020). Overall, however, much of the public

debate about the impact of the pandemic in the UK has been based on the idea of 'learning loss', a calculable deficit in the attainment data (EEF 2020), which is a further indication of how important data have become in understanding what education is.

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