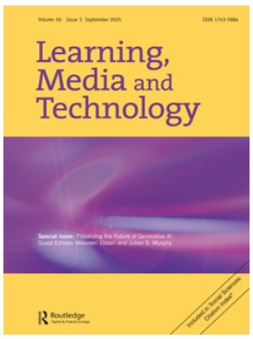

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How 'much' engaged are you? A case-study of the datafication of student engagement

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ABSTRACT

Teachers are increasingly reliant on data dashboards developed by EdTech companies to interpret their students' learning and behaviour. This article presents the findings of a walkthrough of the engagement dashboard and Live Feed of *Education Perfect*, a popular learning platform in Australian and New Zealand schools. Using the poststructuralist idea of *logics*, I will demonstrate how the platform closes off certain understandings of engagement and how this fits an overarching paradigm of neoliberal governance in education. *Education Perfect* rewrites engagement into something that is measurable, quantifiable and something that can (and should be) used for surveillance and accountability purposes. This puts an imperative on teachers to maximise their students' engagement metrics. The logics of engagement data that underpin *Education Perfect,* and learning platforms alike, not only legitimate the increased dataveillance of students, they also gradually erase less measurable aspects of engagement.

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Student engagement; datafication; learning platforms; engagement data

Introduction

The spread of digital platforms in K-12 education means that teachers must deal with an increase in student data in both number and type. Today, schools are not only collecting 'traditional' data pertaining to students' attendance and performances (Selwyn, Pangrazio, and Cumbo 2022) but also data pertaining to their emotional well-being (Bates 2023) and their behaviour (Manolev, Sullivan, and Slee 2019). These data are often generated and curated by commercial platforms. According to Selwyn and colleagues (2022) there is an imperative for school staff to engage with data measured and collected by third-party platforms based on the prevailing discourse that teachers can know their students better through data. This creates a form of *dataveillance* in which the student is both continuously monitored and calculated (Williamson 2017). However, as Williamson argues, *dataveillance* creates merely 'statistical knowledge about children which is rendered in seemingly "meaningful" graphical and numerical displays and then used as the basis for making decisions about their differential treatment' (55). Kerssens (2023) refers to this as 'teaching by dashboard', as teachers' decisions are increasingly based on data that has been measured, aggregated, and visualised by dashboards developed by EdTech companies.

While attendance and assessment data have been widely discussed in the academic literature (e.g., Lewis and Holloway 2019; Selwyn, Pangrazio, and Cumbo 2021, 2022), little attention has been paid to the phenomenon of *engagement data*. Engagement data is part of a wider trend in learning analytics; they are not learning outcomes (such as assessment data) but peripheral information that are deemed to either increase learning outcomes or are predictive of them (see: Jarke

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and Macgilchrist 2021). While student engagement has previously only been measured by researchers with a specific interest in the topic, today individual students' engagement can be consulted by any teacher with access to an educational platform or application that calculates, measures, and visualises engagement automatically and in real-time. Engagement has become datafied.

Engagement data charters a new territory of educational datafication. They are increasingly common on educational platforms, both to monitor students' on-task behaviour or to predict learning outcomes. Engagement data in educational applications are often presented on teacher-facing dashboard with seemingly easily interpretable graphs and visuals (Jarke and Macgilchrist 2021). New technologies of measuring and collecting these data are promoted by influential global players such as the OECD (D'Mello 2021). If educators (and potentially also policymakers) are making decisions based on engagement data, it is important to understand how these data work. This does not only involve investigating the mechanics of engagement data (i.e., how are they measured and calculated) but also decisions about what counts as 'valid' engagement data and what ideas underpin these very decisions. As Selwyn and colleagues (2022) argue, data are not neutral but 'convey specific sets of values, logics, interests and agendas' (348).

In this article, I will present the findings of a walkthrough of the engagement dashboard and the focus tracking functionality of *Education Perfect*, a gamified learning platform. The aim of the walkthrough was to identify the logics, or rationale, that inform the visualisations and calculations of engagement data provided by the platform. More broadly, I am trying to shed light on the *discursive field* in which engagement data operate (Glynos and Howarth 2008). Using the poststructural concepts of social, political and phantasmatic logics, I will tease out the discursive entanglements of engagement data (both historical and contemporary) and I will explain where engagement data derive their discursive power from.

From engagement to engagement data

Student engagement is a relatively new construct to understand student behaviour and performance. One of the few archaeologies of student engagement has been written by Kuh (2009), who argues that the foundations of thinking about engagement can be traced back to the work of educational psychologist Ralph Tyler with his investigation on students' time-on-task behaviour in the 1930s. However, the term *engagement* only gets traction in the academic literature from the late 1970s onwards, where it is indeed used to measure variables such as 'academic engaged time' (Rosenshine and Berliner 1978) but also the quality of this time has been investigated, such as if students were cooperating, competing or being helped by a teacher (Peterson and Fennema 1985).

From the late 1980s onwards engagement becomes increasingly embedded into a political context of improving standards and a general concern about minority groups falling behind (J. D. Finn 1989; Newmann 1989). In a report commissioned by the US Department of Education (Newmann 1992), engagement is proposed as another way to understand students' success beyond mere learning outcomes. Engagement is defined as an 'active involvement, commitment, and concentrated attention, in contrast to superficial participation, apathy, or lack of interest' (Lamborn, Newmann, and Wehlage 1992, 11). It involves measurable elements such as drop-out rates, extracurricular activities and advanced coursework.

Since the publication of the Newmann report many different conceptualisations of engagement have been proposed. Fredricks and colleagues (2004) distinguish three different dimensions of engagement which inform many of the current theories: emotional, cognitive, and behavioural. Most theories combine some of these dimensions, i.e., they are not mutually exclusive. Engagement has been linked to a variety of motivational theories, such as Self-Determination Theory (Ryan and Deci 2009) and Flow Theory (Shernoff et al. 2003), which the brevity of this article prevents me from discussing any further. What all these different theories illustrate, though, is that student engagement has become increasingly psychologised. This is reflected not only in the different theory used to conceptualise engagement, but also in research practice, where the most common way of

measuring engagement is through the use of questionaries aimed at understanding students' beliefs, attitudes and feelings (Appleton et al. 2006).

Today, however, student engagement is not merely the domain of researchers, but has become part of a datafied educational system, which is increasingly shaped by commercial platforms using algorithms to perform analytics on data collected on students (Jarke and Breiter 2019; Pangrazio et al. 2024). Most of these data relate to student achievements, but they often also contain *engagement data*. These are 'standardised metrics, calculations and visualisations that are deemed to reveal something about students on-task behaviour, their participation, their perceived capacity to pay attention, or their (technical) interactions with an educational platform' (Zomer 2024). Learning Management Systems, such as *Brightspace* and *Moodle*, offer exactly these data visualised in elaborate dashboards compiled of graphs and tables allowing teachers to see what activities students have completed and how much time was spent on these activities. This is presented (and marketed) by developers as insightful, accessible and easily interpretable by teachers (Jarke and Macgilchrist 2021).

So far little critical work has been conducted on the phenomenon of engagement data and the engagement dashboards that populate these dashboards. Apps and colleagues (2022) briefly touch upon the concept of engagement data in their walkthrough of a reading platform used in Australian schools and argue that such data reduce the concept of engagement to mere time-on-task, something which was not always useful for teachers in assessing their students on-task behaviour. Jarke and Macgilchrist (2021) investigate the engagement data of LMS Brightspace and argue that engagement was framed as a 'story' of risk that had to be managed accordingly and where teachers are positioned as data managers tasked with improving efficiency. Scott and Nichols (2017) show how an engagement dashboard – in which metrics such as views, likes and comments, could be decided on and weighted by the educators – was part of a 'socio-technical assemblage' where engagement was 'constructed' in the context of a specific course both by social actors (such as students trying to 'game' these very metrics) and the technological affordances of the system.

What is currently missing in the scholarly debate around engagement data is a more discursive and contextual approach. For instance, where do engagement data derive their discursive power from and how do they fit into the larger trend of datafication in education? But also how do they align with techno-capitalist practices that are increasingly colonising education, such as ubiquitous surveillance and the use of algorithms and design-elements to influence human behaviour (Arantes and Buchanan 2023)?

It must be noted that the term *engagement* is common in the digital economy often preceded by the suffix *user*. User-engagement has been used to measure and conceptualise how audiences interact with graphic user interfaces aimed at providing an optimal experience and creating a state of flow in which users are invited to spend more time with the interface (O'Brien and Toms 2008). Engagement is also a term used in the online media industry for measuring the popularity of content with metrics such as *ClickDepth* (the number of page view per visit) and *DwellTime* (the time per visit) (Lehmann et al. 2012). These engagement data are consequently incorporated into algorithms aimed at selling online advertisement space (Zuboff 2015). In digital learning platforms, these techno-conceptualisation of engagement are merged with more educational understandings of engagement. In this article, I will demonstrate what this hybridisation means for the concept of engagement.

Walking through *Education Perfect's* engagement dashboard

To investigate the logics of engagement data I will use the digital learning platform *Education Perfect* as a case-study. *Education Perfect* is widely used in secondary schools throughout Australia and New Zealand. I used the learning platform in 2021 with my Year 7 students in a private girls' school in Melbourne, where I undertook the fieldwork for my doctoral thesis, and where I had a small allocation as a teacher of French. My analysis of *Education Perfect* was conducted during this time. The

platform has since changed slightly, as is common in the dynamic world of EdTech which relies on continuous innovation and updates. However, at the time of writing, the main elements I analysed are still present on the platform. Since I conducted my analysis, *Education Perfect* has even increased its focus on analytics, with the acquisition of *EdPotential*, now offering a schoolwide solution for the predictive analysis of student data.

My analysis of *Education Perfect*'s engagement data is inspired by the walkthrough method, which was originally designed to study mobile phone apps (Light, Burgess, and Duguay 2018), but it has also been used for educational applications (Apps, Beckman, and Howard 2022; Decuypere 2019). I performed a *technical walkthrough* of *Education Perfect*'s engagement dashboard, and I studied the *environment of expected use*.

For the technical analysis, I focussed specifically on *textual representation and tone* which have 'discursive power to shape us' (Light, Burgess, and Duguay 2018, 892) and on *symbolic representations*, or the semiotics of the visual elements. I went through all the menus that are accessible with my teacher account and I collected a total of 96 screenshots. I consequently searched the screenshots for the terms 'engagement', or 'focus', 'attention', 'on-task' and 'off-task' (which are sometimes used interchangeably). I then indexed all the icons or images that were related to or used in lieu of 'engagement'. In this paper, I will discuss the Insight Menu, the Focus Tracking functionality, and the Task Setup menu, as these are the elements of the platform where engagement becomes salient.

Besides this technical walkthrough, I analysed the *environment of expected use* which involves not only the developer's expectations on how the application will be used but also how the developer sanctions user activity (Light, Burgess, and Duguay 2018). For this purpose, I searched company's website for the word engagement and related concepts. I collected a total of 11 screenshots of marketing texts and online tutorials. I also downloaded one GIF image and one promotional video. The latter two will not be included in the analysis.

The onto-epistemological roots of the walkthrough method lie in Actor-Network Theory and Cultural Studies (Light, Burgess, and Duguay 2018). In this paper, I combine the walkthrough method with a more poststructuralist onto-epistemological framework: the logics approach, developed by Glynos and Howarth (2008). The idea is to not only analyse the semiotics and the representations of the engagement data on the dashboard but also to understand why specific metrics are used in lieu of others (i.e., why they count as 'valid' knowledge) and where they derive their power from (i.e., their discursive roots).

The logics of engagement data

The logics approach was first introduced by Glynos and Howarth (2008) building upon the poststructuralist ideas of discourse proposed by Laclau and Mouffe (1985). Using the Marxist concept of hegemony, Laclau and Mouffe look at the relational qualities of discourse and how some players (people, institutions, etc.) can 'partially' and temporarily fix discourse to pre-empt specific meaning from a theoretically unlimited field of meaning. Discourse is, then, always historically created and recreated, informed by relations of power. It is important to note here that for Laclau and Mouffe practices are also part of discourse. We should thus understand the practice of collecting and visualising engagement data on dashboards as discursive.

Glynos and Howarth (2008) have developed an analytical vocabulary to look at how discursive practices can become stabilised: logics. Logics do not refer to a positivist notion of causality, as the authors explain, but 'capture the purposes, rules and ontological presuppositions that render a practice or regime possible, intelligible, and vulnerable' or, in other words, that what makes it '"work" or "tick"' (11). Discourse is both vulnerable and powerful. Discourse can always be contested, however some discourses can be powerful and persistent and (at least temporarily) eliminate other possible ways of knowing and doing, as I will demonstrate in this paper with the case of engagement data.

Glynos and Howarth (2008) describe three different, but interrelated logics: *social*, *political* and *phantasmatic logics*. The difference between them should be seen more as analytical foci than as distinct phenomena to be discovered. While social logics offer detailed descriptions of a certain regime or a social practice, the political logics explain the why behind these logics and how they came to be, but also the alternative discourses pushing against these logics. As such political logics constitute a more diachronic form of analysis. Phantasmatic logics explain the relative sustainability of certain practices, or, as Glynos and Howarth put it, they try to 'conceal or "close off" the radical contingency of social relations' (12). After all, the purpose of discourse, in poststructuralist discourse theory, is to create partial fixity or the idea of a natural unity (Howarth 2000). With the idea of phantasmatic logic, Glynos and Howarth more explicitly lean on Lacan and his idea of the symbolic order which can only be sustained through fantasy; a core belief that holds the discourse together. Political logics would help me explain why certain ideas and measurements of engagement are more prevalent than others. Phantasmatic logics, on the other hand, explain where engagement data derive their discursive power from.

The logics approach is also unequivocally critical. Pangrazio and colleagues (2022) point out the 'deliberately obfuscated nature of … processes of datafication' (31). The first step of critique is thus making explicit the social logics of these opaque processes, exposing them as something which is by no means natural or unbiased. Political and phantasmatic logics have critical explanatory power in the sense that they demonstrate 'the non-necessary character of social logics and the practices they sustain and animate' (Glynos and Howarth 2008, 162). As I will argue in this paper, the social logics of engagement data often rely on different traditions and beliefs which find a culmination in EdTech but do not necessarily originate from EdTech.

The logics approach offers an analytical framework to make sense of the walkthrough data I collected. It allows me to contextualise representations of engagement (manifested in graphs, icons and text) in the discursive field of education and neo-liberal governance. In this paper, I will argue that the representation of engagement in *Education Perfect* is informed by four different logics, that are not necessarily unique to *Education Perfect* (or to similar EdTech products) but that are symptomatic of the datafication of education and the neo-liberalisation of education more broadly. These distinct, but interrelated logics, are: (i) the logic of measurability, (ii) the logic of output maximisation, (iii) the logic of accountability, and the (iv) logic of surveillance.

The four logics of *Education Perfect*'s engagement data

The logics of measurability

Education Perfect employs several measures for student engagement which can be consulted on the engagement dashboard, or 'Usage report', where both class and individual student data are displayed. The *Usage Report* shows a line graph or a bar chart (depending on the time frame selected by the user) depicting how much time students have spent online across a selected period (see Figure 1). Hours are displayed on the y-axis and dates are displayed on the x-axis. Next to the graph is a summary of the hours students spent online, the total number of logins, the number of different activities performed by the students and the total number of questions answered. Below the graph, the teacher can view the 'Student Engagement' for each individual student. The variables used to represent student engagement are: 'Time Spent' (the total time spent on tasks); 'Questions' (the numbers of individual items completed); 'Activities' (the sets of questions that have been completed); 'Logins' (the number of logins); and 'Last login' (the last time a student logged in).

The rationale implicit in this framing is that engagement is indeed measurable and can be expressed by a number of discrete variables which together make up a picture of either an individual student's engagement or of the engagement of a group of students. Data from different students can be added up suggesting that one student's engagement is exactly the same as another student's

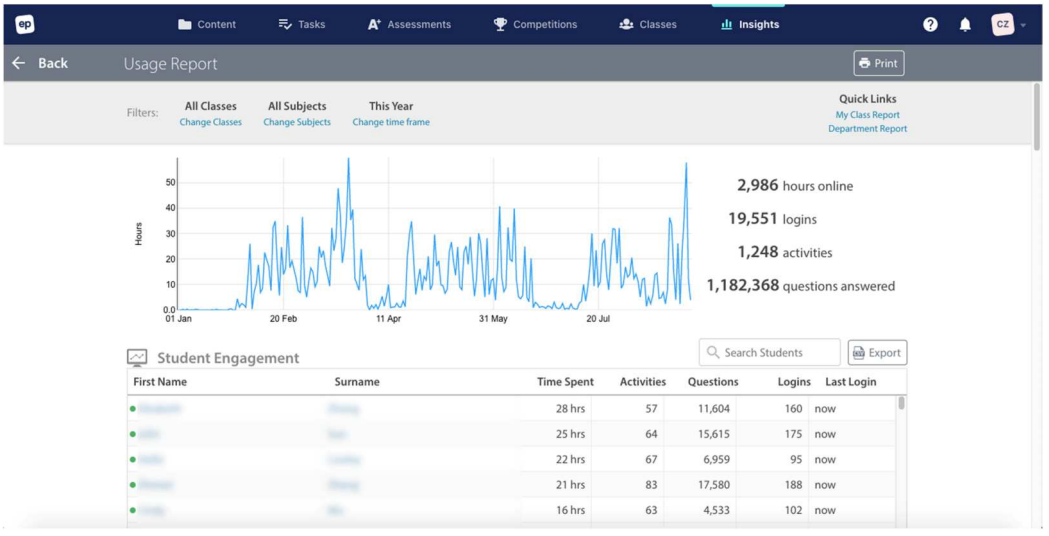

Figure 1. A screenshot of Usage Report in *Education Perfect* showing the different metrics for student engagement.

engagement – and that these calculations are somehow insightful and meaningful. I will elaborate on this further below when I discuss the logic of output maximisation. Abstraction and reduction are typical of datafication (Pangrazio et al. 2022) but it means that contextual information will get lost in translation. Arguably, having completed a specific number of activities means something different for a high-achieving student than for a student who struggles to stay afloat. Beer (2016) argues that metrics are 'stripping and creating narratives' (80). Contextual factors, which cannot be conveyed through data, will get stripped, but instead new stories will arise based on the data and how they are visualised. What this story is about will become clear in this article.

The logic of measurability is not a product of EdTech per se. In his *book Metric Power*, Beer (2016) argues that numbers have increasingly gained discursive power since statistics were introduced to manage populations in the eighteenth century. Biesta (2010) has identified a turning point in education in the 1990s in which policy became increasingly centred around what can be measured. This resulted in policy discourses imbued with positivist language such as 'evidence-based'. In the hierarchy of this paradigm, randomised controlled trials are taken to produce more valuable knowledge than any other kind of research methodology, especially qualitative work. This, according to Biesta results in a focus on 'what works' ignoring equally important questions such as the why behind what we do in education. Discourses around 'clinical teaching' (McKnight and Morgan 2020) and 'visible learning' (McKnight and Whitburn 2020) further establish teaching as an evidence-based profession which should be based on quantifiable (read: measurable) data. *Education Perfect*'s engagement dashboard fits this very language, as the platform claims to 'provide[…] great insight into your students' learning' (Education Perfect n.d.-b).

The idea that engagement can be made visible and measured accordingly, however, is a fantasy, or a phantasmatic logic that narrows down engagement to what can be measured by technological means. Phantasmatic logics legitimise and are essential to the discourses they invoke; without the very belief in measurability, the whole practice of collecting engagement data is rendered useless. The fantasy of measurability, however, can easily be deconstructed by following the same positivist logic that *Education Perfect* tries to impose by using the equally positivist notion of validity. The indicator of 'Time spent' does not actually reflect how much time students have spent on the task, but merely indicates the amount of time a student has had a task window open. Similarly, the number of logins does not reveal anything about the students' actual work or learning. The number of questions answered, or activities completed might be a more 'reliable' way of measuring

what students have done, but this narrows down engagement to mere task completion, in which more tasks completed indicates higher engagement.

The logic of output maximisation

Because engagement needs to be measurable, all the data provided by *Education Perfect* is quantifiable and, hence, potentially indefinite; students can always spend more time on the platform or complete more tasks either by redoing previously completed activities, or by completing the personalised remedial activities generated by the platform (this can be enabled by a teacher). With both visual and textual means *Education Perfect* tells a story of output maximation: i.e., it is implied that higher values are an indicator of higher engagement, whereas lower values signify (comparatively) a lack of engagement.

This logic of output maximisation is accentuated by the way the data are presented on the dashboard (Figure 1). In the table displaying individual engagement, teachers can choose to sort their students based on the five metrics proposed, with the student with the highest output displayed on top. Different metrics may provide a different picture. For instance, a student who has spent a lot of time on the platform without having completed many activities, surely indicates a problem. However, *Education Perfect* does not take into account the interrelatedness of the different variables. Instead, it follows a rationale of ranking in which the student with the highest score ends up on top of the list, suggesting that higher numbers indicate more engagement, regardless of the other variables.

Another compelling example of output maximisation can be found on the homepage of the Insight Menu (from which the Engagement Dashboard can be accessed). This page shows the combined data of all students per subject over the period of a year (see Figure 2). It implies not only that individual students' metrics of engagement can be added up, as if they have any value independent of the individual students they refer too, but also that this cumulative data can provide valuable information to those who consult the dashboard, especially since this information is foregrounded. This notion of value is framed in the heading 'Here's how your school is tracking'. The heading provides information to teachers on how the graph should be read. While there is no information about other schools in the graph, the current year is juxtaposed against previous years (the screenshot was taken in 2021). There is an implicit imperative for teachers to produce at least equal growth compared to these previous years. Indeed, if the growth in the graph would be lower, comparatively,

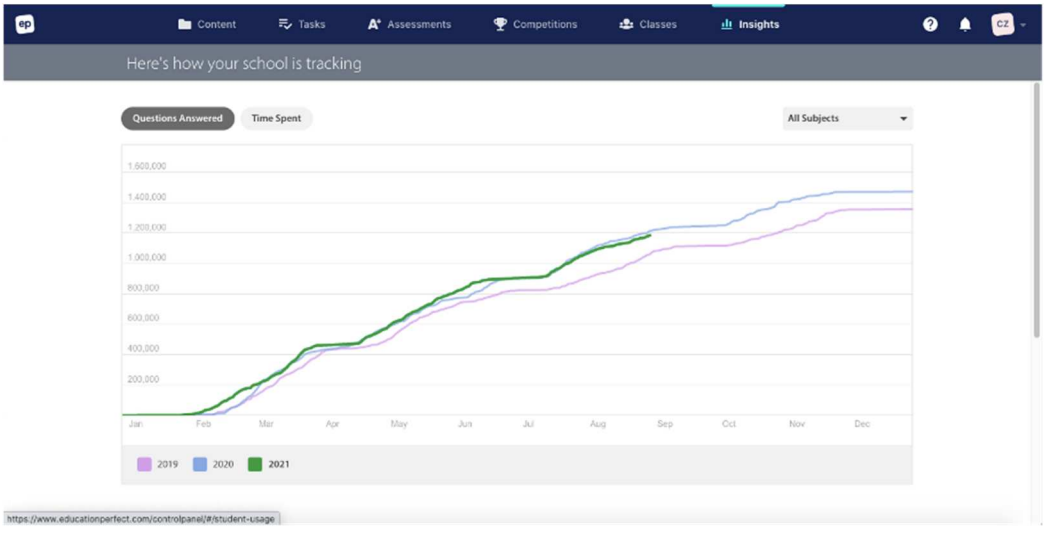

Figure 2. A screenshot of the first page of *Education Perfect*'s Insight Menu with the caption 'Here is how your school is tracking'.

the school would not be 'tracking' so well. The data provided in the graph puts increasing pressure on teachers – and by extension their students – to be performative with engagement data.

The logic of output maximisation promoted by *Education Perfect* is not merely symptomatic of digital learning platforms, it is a core phantasmatic logic of neoliberalism which assumes that competition is inherently good and results in continuous growth. Indeed, the educational field has been increasingly affected by this neoliberal rationale, as illustrated by the relentless competition between schools on the basis of their various 'scores' (Angus 2015). There are many scores that schools must maximise in order to be competitive and bring in prospective students, all under the guise of parental choice. In Australia, the Australian Tertiary Admission Rank (ATAR) is used to determine university admission for secondary school graduates. At the same time, however, the average ATAR of every school is published in unofficial rankings provided by some media outlets as a tool to help inform parents choosing the 'best' school for their children (Blyth 2014). While engagement scores are currently not part of this competitive neoliberal framework of educational free-market competition, the vocabulary used in *Education Perfect* ('this is how your school is tracking') fits this language game of neo-liberal competition and the ever-present push to 'improve' numbers.

The logic of accountability

Education Perfect does not only put an imperative on teachers to maximise their students' engagement (or that of the school as a whole) it also puts an imperative on teachers to perform accountability. This logic of accountability is best illustrated by a text in one of the online tutorials on the developer's website that stipulates the expected use of the engagement data provided by the platform:

> Education Perfect provides great insight into your students' learning. Our in depth [*sic*] Student Usage Report gives you the ability to track individual student progress, and identify key strengths and development areas. This information is valuable for parent-teacher interviews and can be included in student reports. (Education Perfect n.d.-b)

In the extract above data are framed as 'valuable' specifically because they provide 'great insight'. The quote from the website explicitly states that the value of the data lies in that they can be used in parent–teacher interviews and in student reports. In this sense, the main purpose of the data is to give an 'account' to parents of how their child is faring, including whether they are sufficiently engaged. It is a way for teachers to provide 'proof' to support any claims about student's performance and behaviour in class with actual 'hard' data. The wording on *Education Perfect*'s website is illustrative of what Ball (2003) has called 'the terrors of performativity' in which teachers must continuously deal with 'outputs' and use them to account for the performance of the school, their students and their own practice.

The logic of accountability is very much informed by the logic of output maximisation and the logic of measurability. First of all, the logic of accountability is supported by the idea that quantifiable data can represent an unbiased truth and as such represent a form of evidence. Secondly, it follows a rationale of output maximisation in which higher numbers signify higher student engagement. In the neoliberal school, teachers need to continuously account for their practice which does not only include their students' learning outcomes but also (potentially) their students' engagement. *Education Perfect* offers data to prove how engaged their students are; or rather how 'much' engaged they are, because engagement is only expressed as a number.

The logic of surveillance

Another logic of engagement can be found in the functionality of the Live Feed, which can be seen as an extension of the logics underpinning the engagement dashboard. If the Live Feed is enabled, teachers can see real-time information on students' on-task behaviour. The hint above the focus

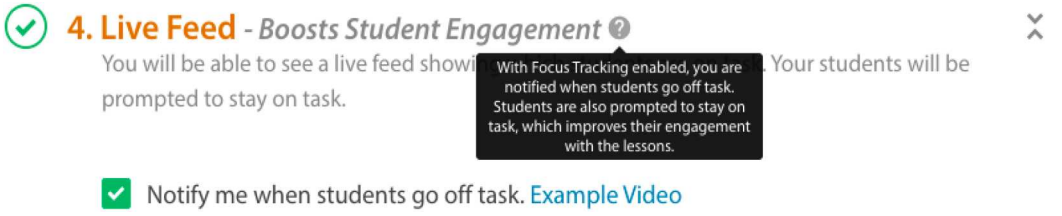

Figure 3. Screenshot of the Live Feed option in the task-setup menu on Education Perfect (September 2021).

tracking option in the set-up menu explains that engagement will be improved if this functionality has been selected (Figure 3). Now, the platform does not specify how this engagement is calculated but based on my analysis of the engagement dashboard above, it could only be derived from a selected number of parameters, such as time spent online, activities completed, and the number of logins.

In the Live Feed teachers can see if students have the right browser window or tab open ('focus on the task window') or if they are 'idle', meaning no keyboard input is provided. This is displayed on a feed either for the whole class or for an individual student with the duration of the 'event' expressed in seconds precise (see Figure 4). Time is an essential element of how student's focus or engagement is represented. Being off-task (either by not having the task-window open or by not providing any input) indicates distraction and being off-task for a considerable amount of time can be interpreted as an issue. The lack of focus is visually represented by a Big Brotheresque yellow eye. The idle status is reported in similar fashion but with three superimposed z's, which is commonly used in popular culture to signify someone sleeping. It is a somewhat hyperbolic representation of students not providing keyboard input, which can have different reasons (e.g., lack of understanding, thinking more deeply about a question, etc.), yet this is framed by the platform as a lack of focus, which affects students' engagement metrics.[1]

Education Perfect's Live Feed, much like its engagement dashboard, provides a decontextualised understanding of engagement, based on students' technical interactions with the platform. This is

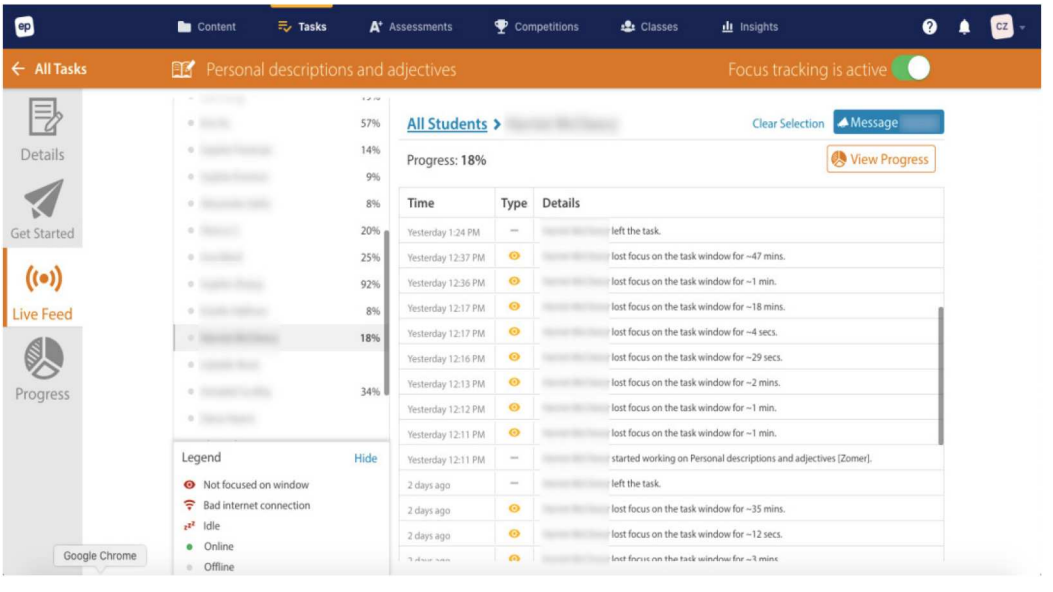

Figure 4. Screenshot of the Live Feed of an individual student in Education Perfect (September 2021).

firmly embedded in bodily iconography, almost as if the platform aims to humanise the techno-linguistic metrics used, thereby concealing that the representation of focus is purely technological. Haggerty and Ericson (2000) have introduced the idea of a data double, a 'decorpo-realized body … of pure virtuality' (611). Different flows 'break down' the body and are consequently reassembled as a digital double. A student's Live Feed data – comprised of a variety of metrics – will be stored and can be consulted at any point in time thereby creating a technological copy of a particular student's attentional process. This body double is underpinned by a logic of surveillance, of always 'on', where every time not spent productively becomes a marker of disengagement, appropriately marked by bright warning colours.

Now, it must be noted that one of the most important aspects of a teacher's job is to make sure that students are on-task. However, in *Education Perfect*, on-task behaviour is datafied and embedded in a language of techno-surveillance. It relies on a premise, or fantasy, that through data we can effectively track, measure, and control human populations (Beer 2016). It is a rationale that can similarly be found in surveillance capitalism which is based on the extraction of 'behavioural surplus' to create profiles of individuals for targeted advertising (Zuboff 2015). The engagement data provided by *Education Perfect* are not used for advertising purposes, but they are turned into another kind of behavioural profiles that can be used for accountability purposes, as I explained in the previous section.

Discussion

Conceptualising engagement data as underpinned by logics, helps to not only expose these data – or its specific manifestations – as a discursive construct, but it also allows for a critical analysis of a discursive field which is trying to stabilise meaning (Howarth 2000). While I have identified four different logics, this distinction is mostly analytical. The logics of measurability, output maximisation, accountability and surveillance are intrinsically linked. The idea (or fantasy) of measurability, for instance, underpins or constrains the other logics of *Education Perfect*'s engagement data. The belief in measurability results in quantification (i.e., that what can be technologically measured), which implies an imperative to maximise outputs, which can consequently be used for accountability purposes. All this is embedded in an overarching discourse of techno-surveillance, which legitimises the continuous collection and storage of behavioural data (Zuboff 2015). At the same time, the normalised practice of dataveillance, or surveillance through data (Williamson 2017), legitimises the practice of collecting engagement data in the first place.

Engagement data can be seen as an instance of *metric power*. David Beer (2016) sees metric power as a new form of Foucauldian power/knowledge, which shapes human subjects. Although we can 'play' with metrics, we 'are more often played by them' (3). Metric power is a way to make judgements about the world and about people. The engagement data provided by *Education Perfect* incites teachers to make judgements about their students' level of engagement through easily interpretable visual dashboards (Jarke and Macgilchrist 2021). These judgements are facilitated by graphs, warning colours, and rankings. Judgements work through continuous comparisons, which Beer (2016) sees as the quintessential element of neo-liberalism, which pervades education today (Davies and Bansel 2007; McKnight and Whitburn 2020). On a local scale, school data is used by parents of prospective students to make informed decisions about school choice (Angus 2015), on an international scale; the Program for International Student Assessment (PISA) is deemed to give an insight into how competitive countries are based on educational standards (Uljens 2007). The maximisation of student engagement fits this neo-liberal discourse of improving efficiency and raising standards.

Indeed, the logics of engagement data are not singularly promoted by EdTech companies, but rather exist in a political economy of internet capitalism in which data is the new 'capital' (Sadowski 2019). Big Tech companies like Alphabet (Google) and Meta (Facebook) have business models that are predominantly based on the collection and monetisation of their users' data (Zuboff 2019).

While student data is rarely commercialised in the same way, these data are presented as both valuable and necessary, at least, such is the marketing discourse of EdTech (Selwyn 2016).

The idea, or fantasy, that data can reveal an unbiased truth is common in the discourse of Big Tech (Williamson 2017) and is informed by EdTech's *solutionism*, or the idea that any social problem can be solved by technological means (Morozov 2013). The problem that *Education Perfect* is trying to solve is the alleged lack of engagement among today's students, especially, as is assumed, that of the generation that grew up with computer games (Oblinger 2004). The solution that is being offered is the extensive measuring and tracking of individual students by collecting data on their engagement. This works in tandem with the gamified elements of the platform which are claimed to increase student engagement (Education Perfect n.d.-a). In doing so, however, *Education Perfect* also *rewrites* engagement into something that is measurable, quantifiable and something that can (and should be) used for surveillance and accountability purposes.

The quantification of engagement – and the implied maximisation of it – can be linked to an idea of *performativity* that is symptomatic of the digital. Lyotard (1984) provocatively stated that in the 'computerized society', which was then still in its infancy, '[t]he performativity of an utterance, be it denotative or prescriptive, increases proportionally to the amount of information about its referent one has at its disposal' (47). The more data is provided by the students, through their interaction with *Education Perfect*, the clearer the picture of their engagement is alleged to be. Having different proxies for engagement, as well as different functionalities, purportedly gives teachers a more 'performative' picture of an individual student's engagement. Indeed, performativity, in Lyotard's conception, is not so much about the link between the signifier and the signified, but more about a language game of 'efficiency', in which higher numbers and different signifiers referring to the same signified make for 'stronger', 'truer' and more 'useful' statements.

In this context, engagement risks becoming a simulacrum – if it isn't already (see also Hope 2016). Baudrillard (1994) explains the concept of simulacrum using a short story by the hand of writer Jorge Luis Borges. In this story, cartographers create a map that has the same scale as the territory it represents to cover it in its entirety. As the map degrades over the years, only its ruins remain. According to Baudrillard we live in an era where the map *precedes* the territory. Artificially created metrics become the basis of performances of engagement, turning engagement into a language game of repeated simulations. Based on these simulacrum data teachers are then supposed to makeinferences about students' while any discussion of what it means to be engaged in the classroom is stymied.

Conclusion

In this article, I have made the argument that the way engagement is measured and visualised in *Education Perfect* is based on logics of output maximisation, measurability accountability, and surveillance. These logics (re)define or try to close off the language in which engagement can be talked about and understood (Glynos and Howarth 2008). I have taken *Education Perfect* as a case study; however, educational platforms have different but similar ways of measuring, visualising, and defining engagement. Output maximisation and measurability are arguably logics that underpin most of these platforms, although they might be manifested differently and to different effects.

The datafication of engagement has implications for how teaching is done and how students are understood by teachers and parents. I addressed the imperative on teachers to 'perform' accountability using student data, increasing the already high workload that teachers face today. The extent to which engagement data are currently operationalised and dealt with in schools is yet to be explored in more detail. However, with the advent of new engagement tracking technologies based on biometric data currently promoted by influential organisation such as the OECD (D'Mello 2021), the imperative to make use of these data will only increase. All these engagement data provide yet another dimension in which students can be tracked and monitored, adding to all the other data that is already being collected on students (Selwyn, Pangrazio, and Cumbo 2022). Students are

increasingly turned into calculable entities that are calculated upon and who learn to understand themselves in terms of calculation (Williamson 2017).

EdTech providers, educators and school leaders may argue that engagement data provide important insights on students which could then be used to make appropriate pedagogical decisions. Kerssens (2023) has called this 'teaching by dashboard' in which teachers are becoming increasingly reliant on data collected and visualised by commercial parties to underpin their pedagogical decision-making. However, as argued in this article, these platform data – at least when it comes to engagement – are biased in a way that foregrounds certain assumptions about engagement at the expense of others. Engagement is narrowed down to what is technological measurable, ignoring more psychological dimensions (or understandings) of engagement (e.g., Munns and Martin 2005).

Engagement data has the potential to fundamentally reshape what teachers, school leaders and policy makers think student engagement is or should be about. While teachers' understandings of engagement have been discussed in the academic literature (Harris 2008, 2011), it is unclear to what extent EdTech platforms shape the way teachers think about engagement. It is worth investigating teachers' uses and understanding of the engagement data provided by EdTech platforms in more detail. More ethnographic work would allow us to investigate how the discursive arrangements of engagement data are taken up, adopted, rejected, contested, felt, and negotiated in educational practice, in line with other scholarly work on student data (e.g., Czerniewicz and Feldman 2024; M. Finn 2016; Lewis and Holloway 2019).

This is especially relevant with the advent of new technologies used to measure and track engagement with biometric data D'Mello 2021). Technologies such as facial recognition and brainwave monitoring are promoting new ways of thinking about engagement, that are equally measurable, quantifiable, and accountable. They raise questions to what extent engagement can be measured. They also exacerbate the monitoring and dataveillance that students are increasingly subjected to. Our job as critical scholars is to keep an eye on these developments and their social and epistemological implications, and to involve educators and policymakers in these discussions. In the end, a student can only be engaged so 'much'.

Note

1. The ability to pay attention, or to focus, is often seen as an essential element of engagement, from early definitions (Rosenshine 1978) to more recent conceptualisations of engagement as a state of flow (Shernoff et al. 2003).

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