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The role of platforms in diffracting education professionalities

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Abstract

This paper examines the effect of data management platforms on professional educators. The ways in which platforms re-shape new professional patterns of school leaders and education bureaucrats is presented through the data management platform, OneSchool. OneSchool is used across 1,258 public schools in Queensland, Australia. Empirical data were gathered from interviews with senior bureaucrats, policy officers, and school leaders from Queensland's public schooling system. Thematic analysis identified shifts in educational practitioners' professional roles as they performed their tasks through OneSchool. Analysis of traditional school roles and tasks on the one hand and demands of online security and information privacy legislations on the other were brought together in an access assemblage. Access was provided by the authorized allocation of 'roles' embedded into the platform's technical code. A dual perspective of the development and use of the OneSchool platform is used to show how educational behaviors, skills and qualities are mutually constitutive of platformized professionalities. To make sense of these platformized professionalities, a diffraction lens is employed, derived from Barad's (2007) considerations within new feminist materialism and physics. Recalling Foucault's (1983) adage that everything is dangerous rather than bad, this paper provides insight into the positive and negative ways platforms disrupt and re-shape educational practitioners and their professionalities.

1. Introduction

Platforms enable data's reign of supremacy within the digital governance of education by providing the foundation technology to manage data's escalating volume, reach and flow. In doing so, platforms alter the work of educational practitioners and their ways of work (Williamson, 2016). This paper focuses on the lesser explored phenomenon of platforms' effect on the educators themselves. Specifically, the altering of their professional qualities – their 'professionalities' (see editorial of this special issue). The lived experiences of school leaders, policymakers, and bureau-

crats are used to show how educators' professional qualities (professionalities) that is, their abilities, expertise and virtuosity became 'platformized' as they engaged with the platform OneSchool. OneSchool is unique to the state education system in Queensland, Australia, where it has been used for over a decade to manage the data of more than 570,000 students across 1,258 public schools. It was not purchased from the now extensive edu-business market, but rather it was designed and created by members of the government education department. The way the OneSchool platform alters education practices and practitioners is theorized through a diffraction lens (Barad, 2007; Haraway, 2004).

Diffraction is a phenomenon that occurs when waves, usually of light or sound, progress through a gap in an obstacle, to 'diffract' creating patterns similar but different from their previous behavior. I use Haraway's (2004) concept of diffraction as a "mapping of interference" (p. 73), to show where the effects of those resulting different patterns materialize in educators. Barad (2007), who as a physicist considers diffraction as more than just a metaphor, presents the seductive concept of diffraction as showing the "entangled structure of the changing and contingent ontology of the world" (p. 73). As this paper argues, diffraction offers a fruitful conceptual lens to explain the effects of platforms on the 'being' of education practitioner. Education practitioners in schools and governing centers are shown to re-shape as they entangle with the development and use of platforms. The effects created by interference from platforms, materialize in educators' new abilities (technical development), altered expertise (information analytics) and increased virtuosity that led early technical adopters to become education leaders and influencers.

The aim of this paper is to provide critical insights into the ways educational practitioners' professionalities are re-shaped as they become increasingly entangled with educational platforms, and equally, the digital policy that surrounds platformization. I position this paper firstly within the burgeoning literature that exams the datafication of education through an array of education technologies, data infrastructures, and the policies and practices that maintain them (Hardy, 2021; Holloway & La Londe, 2020; Lewis & Hartong, 2021; Selwyn, Pangrazio & Cumbo, 2021b; Williamson, 2021a). This article adds to the body of work examining platforms/data infrastructures used in school systems through empirical data gathered from multiple education actors to provide a macro and micro perspective, examining schools' platforms from an institution-wide and individual educators' perspectives.

The social, political, and technical positionality of OneSchool within the state schooling system of Queensland, Australia, is introduced in the next step, before presenting the theoretical and methodological underpinnings of the empirical study. Building on that framework, two empirical cases are presented: first, key moments and decisions in the *development* of OneSchool. The fundamental model of

OneSchool's development relied not on commercial providers, but on close consultation with educators. These 'subject matter experts' (SMEs) from schools can be regarded as particularly interesting since, on the one hand, they mark an active incorporation of traditional pedagogical professionality into the development of OneSchool. On the other hand, the analysis shows how these professions became simultaneously re-shaped through working on technical platform development, that is, working within a logic of platformization.

The second part of the analysis shifts the focus to when OneSchool became *embedded in the daily practices* of educators within schools. Here, the analytical emphasis lies on platformization as the allocation of platform specific 'roles,' which not only means specific platform actions made possible for different users, but also authorization for data access. The effects of this role allocation process for educators' professionality will be discussed. Finally, the entanglements between education professionals and the OneSchool platform are theorized through a diffraction lens to show the ways and means that platforms re-shape and are themselves shaped by the diffracted patterns of platformized professionalities.

2. Positioning platforms within the capaciousness of educational technology

Educational practitioners globally are experiencing significant changes from the ever-increasing capaciousness of educational technology (Williamson, 2021b). The role of digital technologies in the unrelenting drive to improve education through the datafication of schooling is increasing discussed in the literature (Grek, Maroy & Verger, 2020; Hardy, 2021; Lewis & Hartong, 2021; Williamson, 2021b). Current literature hereby recognizes the challenges arising from the datafication of education in governing systems (Hartong, 2019; Takayama & Lingard, 2019), schools (Hartong & Piattoeva, 2021; Nemorin, 2017; Selwyn, Pangrazio & Cumbo, 2021a), teachers (Holloway & La Londe, 2020) and students (Clutterbuck, Hardy & Creagh, 2021; Daliri-Ngametua, 2021; Lupton & Williamson, 2017; Selwyn et al., 2021b). As well as educational actors and the places of education, governance by data permeates the continuum of education from early childhood (Bradbury & Roberts-Holmes, 2018) to higher education (Selwyn, Henderson & Chao, 2018; van de Oudeweetering & Decuypere, 2019; Williamson, 2021a).

Furthermore, the intensifying demand for data-evidenced accountability constituted by the pervasiveness of digital educational governance is sustained within the globalized and increasingly commercialized education landscape (Grek et al., 2020; Hardy, 2021; Williamson, 2021a).

Within this broader literature context, the representation of education professionals and students through current education data, has been found as an imbrication of challenges; surveillance challenges transparency, data flow and accountability challenge privacy and data security, and power and control challenge inequitable representation (D'Ignazio & Klein, 2020; Jarke & Breiter, 2019; Zuboff, 2019).

A comprehensive view of the datafication of education is unfolding as the ways in which data infrastructures themselves are complicit in these challenges is brought into the spotlight (Decuypere, Grimaldi & Landri, 2021; Hartong, 2021; Pangrazio, Selwyn & Cumbo, 2022; Williamson, 2021a). As Pangrazio et al. (2022) explain, the "datafication of education is reliant on the data infrastructures" (p. 3). Recognizing infrastructures and digital platforms not only as useful tools, but as 'actor' and 'key participant' in educational reforms (Williamson, 2021a, p. 50) enables platforms to be understood as mutually constitutive of the professional educators who engage with them. With educational technology recognized as being key in the global focus on reforming education (Popkewitz, 2018) it is perhaps "unnecessary (or even impossible)" (Lewis & Hartong, 2021, p. 4) to separate the roles of human and non-human participants as they re-shape within the discourse of contemporary education and schooling.

Despite this growing interest in how educational technology and human professionality relate to one another, at least so far, research still lacks empirical insights into the symbiotic relationships of platforms and educational professionals, that is, *how* and through which mechanisms platforms alter those who engage with them (Lewis & Hartong, 2021; Selwyn, 2021).

This paper adds to the literature to show how platforms alter the professionalities of teachers, school leaders, policymakers, bureaucrats (that is, high level administrators and decision makers). Put differently, as this paper seeks to show, the professional qualities being demanded of these education practitioners as they engage with data, data infrastructures, and digital platforms are shifting, yet in multiple ways and differently depending on the stage of platform development/implementation.

3. Situating OneSchool in the education landscape

Schooling in Australia is constitutionally the responsibility of state and territory jurisdictions and operates within a blend of mandated requirements and autonomous structures that exist between jurisdictions and the Australian federal Department of Education (Australian Government, Department of Education, Skills and Employment, 2022). Federal funding is linked to a variety of federal-state agreements based on the provision of a range of mandated information such as enrolment, behavior

data, and national assessment data (Australian Government, Department of Education, Skills and Employment, 2021).

Accurate and efficient sharing of information between State and Federal education information management systems relies on agreed to interoperability frameworks. Australia's State and Federal Ministers for education endorsed the National Schools Interoperability Program (NSIP), a government and edu-businesses collaboration, in 2009 to govern the use of standardized data categories (Lingard, 2019). The development of OneSchool predated this agreement and the endorsed categories that facilitated data sharing were applied in updates.

In 2003, Queensland's education department commenced a project to purchase networked school information management systems. The previous school information management system (SMS) had operated in each school as a separate program, with school information provided to Central Office through manually activated data downloads. Direct access to the SMS program was limited to school leaders, finance and clerical staff physically based within each schools' administration building.

From 2003 to 2006, unproductive assessment and trials of commercial programs, exploration of private-public partnerships, and an unsuccessful international tender process, indicated that the edu-business field was yet not developed to a stage where it could supply a solution to manage student data across the state of Queensland (Clutterbuck, 2022). Queensland's decision to create their own online school management platform indeed was very different to how other Australian jurisdictions platformized their management of schooling a decade later through government-commercial partnerships.

Dominating the digital governance of Queensland's state schooling system, OneSchool's purpose is predominantly as a school-based, student data management platform. OneSchool is used to manage students' data in primary (elementary), secondary (high school), and special-purpose schools (special education).

Individual student's data such as name, age, emergency contact, health, year level, are entered on their first enrolment at a state school and are used throughout the platform's multiple modules without the need for re-entry. Little human action beyond initial data entry is required to aggregate all student data through state-wide data collection processes. Prior to OneSchool, school leaders would fax student enrolment numbers into Central Office in the beginning of the school year to establish state enrolment numbers. At present, however, school leaders now act merely as 'confirmers' of data, prior to the data's automatic retrieval and aggregation (Queensland Government, Department of Education, 2021).

While available in all state schools, central and regional offices, OneSchool is restricted to state employees who have been authorized and allocated specific roles

within the platform (Queensland Government, Department of Education, n.d.). Authorized access and use is controlled by a range of information privacy and security legislations, state-mandates and school-autonomous decisions (Queensland Government, Department of Education, 2022). As will be shown later in the paper, this access authorization can be regarded as a key mechanism in the re-shaping of educational professionality. The technical coding of policy into OneSchool is used to direct the actions of teachers and school leaders as they manage a range of administrative, pedagogical and curriculum tasks including student enrolment, attendance, behavior records, and assessment and reporting. At the same time, schools retain the ability to configure aspects of even these mandated functions to reflect their own environment and situation. For example, schools *must* use OneSchool to provide academic achievement reports for parents twice a year, however they *may* choose to report more frequently, and they *may* choose to use OneSchool to record all, some or none of their curriculum and assessment records.

Aggregated data from mandated functions (enrolment, academic achievement, student absences) are available to governing authorities at regional and state levels and are frequently used to inform school reviews and policy cycles. Selected aggregated and anonymized data (enrolment, attendance and behavior) are also made available for national and public access (Australian Curriculum Assessment and Reporting Authority, 2017; Queensland Government, n.d.).

As school leaders and policymakers and technical developers bring policy, technical functions and data together through platforms they become a "relational assemblage of social and material actors" (Decuypere et al., 2021, p. 9), governing educational practitioners and their practices. It is that relational assemblage which this study focused on when tracing how educational professionality became re-shaped through platformization.

4. Methodological approach

The methodological approach used to identify and make sense of education professions and their practices in relation to OneSchool, drew on the ethnographic perspective of my insider positioning. For my study, I could build on an insider positioning regarding OneSchool, which resulted from different professional roles I experienced through the years of 2005–2019, including roles as a classroom teacher, principal, business analyst, and policy officer. These roles moved me between schools, Central Office, OneSchool project and Regional Office. As an active research participant, the research of my own lived experiences indicated how these (my) different professionalities were re-shaped throughout my entanglement with the OneSchool platform. My long-term personal engagement, experiences, and self-reflections within

the physical and social structures of Central Office, Regional Office, project teams and schools provides a participant's view of what transpires day to day in the complex structures of Queensland's educational system. A broad ethnographic perspective utilizing my own knowledges and experiences and those of research participants, many of whom were past colleagues, provides a view of how real people deal with real situations, within real communities (Blommaert, 2018).

4.1 Methods

Empirical data were gathered from schools, governing policy centers (Central and Regional offices) and technical development projects through ethnographic field notes, policy documents and interviews. Interviews were conducted with 68 participants from three of the five organizational divisions within Central Office, a single Regional Office and four primary schools. The organizational structure of Central Office – Queensland's state education authority's administrative center – is based on a complex categorization of tasks, which are periodically rearranged to maintain alignment with government ministers' areas of responsibility and priorities. The second level of governance in Queensland's state education system is provided by seven geographically determined regions. It was from within a single contributing Regional Office that the four participating schools were located. All schools were regional city primary schools and varied in size from 600 to 1,000 students. School leaders were members of locally determined teams and included school-based combinations of the traditional roles of Principal, Deputy Principal, Head of Curriculum, Head of Special Education Services, and Head of Department. The 'School Leader' participant category reflected each school's leadership organization while maintaining anonymity of individuals. The collected data were thematically analyzed to identify the ways in which the OneSchool platform effected educational practitioners and their practices.

Including perspectives from throughout the hierarchical geographies of Central Office, Regional Office, project teams and schools, created an uncommon and distinct view of the various educational actors' roles and, hence, professional understanding. The term hierarchical geographies (Clutterbuck, 2022) describes the entanglement of human activities conducted through a hierarchy of authorized governance within diverse physical spaces.

5. The (re-)shaping of educational professionality in the development of OneSchool

Around the early 2000s, a government decision was made in Queensland to appoint a Chief Information Officer (CIO) to the education department. The appointment of a CIO was considered

> a key lynchpin … Education had never had a CIO, they had a director of IT [Information Technology], who did the network and desktop and a few IT type things, but nothing to do with education. (Roger, senior bureaucrat)

Before the CIO role, the IT division within Central Office had little connection or communication with the pedagogical bureaucrats and policy leaders within the department's Teaching and Learning division. As people realized now, however, this focus on IT infrastructure rather than pedagogy had led to

> a decade of putting in infrastructure, capturing some data, but now we have oceans of data and very little insight. We've had a decade of 'let's worry about the data!' Well, we should be worrying about the kids! (Roger, senior bureaucrat)

Put differently, the enactment of the CIO was perceived as a desired "cultural change" (Preston, senior bureaucrat) of IT being integral to the pedagogical approaches used in classrooms, but equally of pedagogy being integral to IT development. However, when looking at the rationales of the senior bureaucrats around that time, it is particularly the former which was emphasized. For example, Preston (senior bureaucrat) recalled the need

> to get the people in education more responsive [toward the use of technology]. That included teachers, it also included the education department and it also included all of the stakeholders […] including students.

Regarding governmental investments in hardware, IT-focused voluntary professional development opportunities,[1] as well as so-called VRs [voluntary redundancy[2] packages], the same senior bureaucrat stated:

> We found a lot of teachers for example, didn't really want to get across the latest in computers and quite a lot of them were comfortable in their career and didn't want to change. I don't want to overstate this because there were a lot of really good teachers and there were sections of the teachers' union who were enthusiastic about it. But we actually did get resistance to change. I found that really frustrating. Teachers are crucial to all of this bloody stuff.

To respond to this need for cultural change, the department created a teaching workforce capable and interested in using IT in education, to foster the acceptance and use of digitalized data management systems in schools, and to simultaneously increase access to student data to a wider range of educationalists. As the bureaucrat explained:

> To reform [education] … make it a better world … what often happens in government is the Treasury wants to manage it … in the end you can't just rely on figures or data that Treasury come up with you also have to have the educationalists with the same data. Out of that you can end up with a receptive policy.

Interestingly, the grouping of educational professionals around a stronger embracing, but also streamlining of data access brought this group into the process of educational reform, specifically into the process of the OneSchool development.

'Russell,' who was a school leader around 2003, recognized that there was "something looming" in the education management space, "we didn't quite know what. And I thought I want to be on board with that."

At the school level, it was common around that time that there were physical and philosophical separations between the infrastructure assemblages of 'IT-management-administrators' and 'IT-pedagogy-teachers.' 'Nick,' another school leader, viewed this separation in terms of "who owned what." Technologies that linked directly to the curriculum and pedagogical needs of schools were considered "the realm of the schools" (Nick, senior bureaucrat). Whereas the "box and wires of IT," as Nick referred to schools' government-provided IT infrastructures, including the administration servers and networks, were viewed as being 'owned' by the central governing authority of Central Office.

Access to the administration network that contained school and student information was restricted to school leaders and administration officers (AO) located in the school administration building. Teachers, restricted from accessing the administration server were reliant on others, often school AOs, to email or distribute physical copies of student information on behalf of school leaders. Governance of teachers' access to data and networks through policy and physical placement was, within that context, then commonly considered a system control that actively constrained teachers' professionalities.

Interestingly, resistance to that power asymmetry had already emerged in schools around the same time the CIO role became implemented in the department. More specifically, school-based professionals (teachers, school leaders) began to develop more autonomous technological systems, which actively sought to develop more technical and data use skills, thus re-shaping their professionalities 'from below.' The individually created school platforms indeed facilitated their desired flow of student data, disseminating the information to various actors within the school. However, these actions altered the flow of student data used to meet political or whole-of-organizational data needs away from the authorized data flow processes of older systems.

Within the school governance area of Central Office, the emergence of even a small number of school-developed management systems was partly viewed as a data security risk. At the same time, the 'cultural reform' intended from the department drew attention to those educators who were developing growing technological interest and technological skills. It was particularly those educators who the department

consequently brought together in the Management Systems for Schools (MSS) project, the forerunner of OneSchool.

Both, Russell and Nick, the aforementioned school leaders, became part of the MSS project as members of the Guiding Coalition performing as a so-called subject matter expert (SME) and business analyst.

During that time, the education department advertised for "school administrators to go and look at a new system, to test software" (Nick, senior bureaucrat).

Engaging with school-based professionals altered the decision-making environment of Central Office with the MSS project becoming 'other' to the traditional IT, data, and teaching and learning divisions of Central Office. This was considered influential in schools' later acceptance of OneSchool, as Russel explains:

> I think they took us onboard because we weren't Central Office. I think we were both, it was how we were put together, we were people from schools, and we weren't housed in Central Office.

This comment reveals the importance and relevance of the situational positioning of the future technical development as 'belonging to schools' to further show the prioritization of past, present and emerging school-based professionalities rather than those of the bureaucrats of Central Office.

Indeed, testing available programs through the group failed to produce the desired management solutions. As a consequence, the project moved to establishing the business specifications of a new system. To determine requirements a series of workshops, called the 'As Is and To Be' workshops (Education Queensland, 2006) were used to gather the technical and pedagogical requirements for the MSS project. Workshops were conducted throughout the hierarchical geographies of the state schooling system to create an assemblage of professional qualities from teachers, school leaders, policy officers and bureaucrats.

Within this context, a 'Guiding Coalition of Leaders' was established to clarify and confirm initial project requirements determined through analysis of the workshop data. As coalition members, principals, deputy principals, and heads of department performed as business analysts, quality assurance officers and subject matter experts, using their knowledge and skills to advise on the current processes and needs of schools existing within social-policy-technical spaces. Particular professional qualities were sought in the selection of guiding coalition members:

> People who would take on change, who would be change leaders, who had the ear of other people, who had shown that they were willing to adopt new methods. (Patrick, senior bureaucrat)

The guiding coalition brought into the project a deliberately determined assemblage of professional qualities from the pedagogical field of schools; technical affinity and change orientation.

Once the requirements for the new system were defined the next stage of the project focused on selecting options for the establishment of a new platform. Purchasing was the first option however, it was found that while "there was stuff available all over the world, they only did some of [what was required]" (Martin, senior bureaucrat). Other options were then explored:

> [We] didn't actually want to be the service provider … [or think that we'd] have to be the creator of everything. We spent a year going through the value for money framework for public-private partnerships. (Roger, senior bureaucrat)

It is notable that the qualities of the informing professionals had affected the requirements to such a degree that neither of the options, "buy off the shelf" or "public-private partnerships" (Roger, senior bureaucrat) provided any acceptable result. The decision was made to enter a tender process, and local and international technology market were invited to submit a proposal for the creation of a platform that met the established requirements. The tender documents that set out the requirements for the new system were "released to the market in 2004. [We] then spent until the end of 2006 to finish evaluating [the submitted tenders]" (Roger, senior bureaucrat).

The school-based members of the project team now became, somewhat reluctantly, evaluators of the tenders. Roger (senior bureaucrat) recalled the alarmed response when the ex-school leaders were given the task of evaluating the tenders:

> They all shat their pants and said but we don't know how to evaluate a tender. [And they were told] you do know how to evaluate; you just haven't done it in IT.

The professional skills associated with school assessment processes where student work is evaluated and moderated using criteria, while not acknowledged by the school-based professionals as being of value in a technological environment, were hereby indeed recognized by the project team's technical and business professionals.

By 2006, key decisions were made simultaneously in interconnecting but separate spaces. The original project team was housed on one side of a building working to create pilot platforms with the top two tenders. Eventually the decision was made "to say, 'stop' there was nothing there that we wanted to buy" (Roger, senior bureaucrat).

In the other half of the very same building, a small team of school-based educators (school leaders, teachers, AOs), had been brought into the project by the CIO to develop a "backup plan" (Charles, senior bureaucrat). This team developed a student data management platform based on the programs that had been autonomously developed in individual schools:

> In less than 12 months we had built the first version. We had a reporting system, behaviour system, record of contact stuff, in like eight months, and we were in our pilot school in May 2007. (Charles, senior bureaucrat)

The professionalities of the originally school-based platform creators developed to a level where their proposed solution was accepted as outperforming the then embryonic international technology market. The platform was named 'OneSchool' and retained the pedagogical alignment with Queensland schools that had been a feature of those early school-developed programs. OneSchool proceeded beyond pilot stage quickly and moved into full production to be launched across the state in 2008.

In summary, this section has shown how educational professionality underwent several changes within the emergence and initial development process of OneSchool. In doing so, it drew attention to a process of professional change which is neglected when solely focusing on the professional impact platforms have when being used in schools. As the analysis illustrated, OneSchool emerged within a complex, multilevel assemblage of different (state school) actors and logics, which – through being assembled in a particular way – underwent professional change, yet in multiple directions simultaneously (e.g., in the direction of bringing in pedagogical context knowledge from different schools into the platform development process, but also in the direction of becoming tender evaluators). Still, an overall re-shaping of professional decision-making can be identified, oriented towards the creation of a standardized platform which should work across school contexts.

6. The (re-)shaping of educational professionality in the implementation of OneSchool

Taking a temporal leap, this second analytical section focuses on when OneSchool had become embedded in the daily tasks of educational practitioners across Queensland. Built to provide "access anywhere, anytime" (Martin, senior bureaucrat), OneSchool went beyond previous siloed systems, to provide access to all authorized Education Queensland employees in schools, regional and central office. At the same time, as this section will show, authorized allocation of access became directly linked to alignment of professional tasks with the platform's functions.

Describing OneSchool through its functions is to catalogue the tasks that educational officers participate in, in relation to the management of students, policy and data. Viewing the organizing headings and categorization of OneSchool's functions (some of which are included here), from a school site, provides insight into the platformized logic of structuring education: Student (Enrolment, Attendance, Student Profile), Curriculum & Assessment (Curriculum plans, Specific Educational Requirements, Standardized Assessments, Academic Reporting), Behavior Support

(Positive Behavior, Behavior plans) Finance, School Management, Reports (Class Dashboard, School level reports) System Management (Role allocation), Help (User Guidelines and manuals).

Access to OneSchool is recorded in policy as the responsibility of 'requesters,' 'users,' 'endorsers,' and 'approvers' (Queensland Government, Department of Education, 2022). The procedures that govern access demand attention:

> Unauthorised OneSchool access or misuse of OneSchool information may result in disciplinary action … This behaviour may also result in criminal prosecution. (Ibid.)

Those who applied for access and those who endorsed and approved access were therefore required to have the professional knowledge and understanding of what access was "necessary, appropriate, proportionate to the key tasks of the requester's role" (ibid.).

Student data that had previously been governed by access to servers housed in school administration buildings, was now governed by an access assemblage, distributed among different OneSchool roles. More specifically, access to OneSchool relied on an assemblage of information security and privacy legislations, work-place roles (e.g., teacher, principal, AO), the tasks of educators (e.g., creating a school timetable, viewing enrolment data, recording assessment results), OneSchool roles (e.g., level 6 (classroom teacher, level 1 (principal, HOS), enrolment officer) and the tasks coded to align with those roles (e.g., marking the roll, creating a curriculum mark book, viewing whole school attendance reports).

The school-based determination of the alignment of platformized roles and tasks was at times problematic despite the influence throughout development from school voices through the Guiding Coalition, subject matter experts and user feedback. Principals responsible for allocating tasks to staff, were used to making autonomous decisions in their schools, unobstructed by the external gaze that platforms now provided Central Office. As Charles (school leader/senior bureaucrat) explained, prior to OneSchool their school had directly employed a chaplain and a nurse as part of their student services faculty, "we all used to work together for the kids and if there were any issues, we all had the information." During OneSchool's development, legal advice restricted access to state employees of Education Queensland:

> [We were told] 'Oh no, you can't do that.' I get it, those nurses aren't a part of DET [Department of Education and Training], not employed by EQ [Education Queensland] so we shouldn't be giving them access to the data. (Charles, school leader/senior bureaucrat)

Principals were faced with the prospect of disciplinary action if they approved access to the OneSchool platform, which when audited was deemed 'unnecessary' or 'inappropriate.' All access requests in schools and regional offices are recorded automatically within the platform for audit purposes. Formally auditing OneSchool

access brought the importance of those decisions into alignment with the importance placed on other school decisions audited during school inspections such as curriculum and financial decisions. 'Jane,' a school leader explained,

> if we're audited, we have to be able to back up what we're saying.

School staff were used to taking on tasks beyond their traditional core role of 'Classroom Teacher,' for example, if they were responsible for setting up subject timetables required both OneSchool 'level 6' and 'timetabler' roles. The formal allocation of roles created official recognition of the additional tasks that were previously unacknowledged and unseen parts of their professionality. For 'Simon' this meant the allocation of an additional 'Financial Delegation' role to enable him to balance his department finances – which was not standard practice. As Simon explained:

> Other people in school like the principal and deputy just throw receipts [to the business manager] in the office and say, 'do it.' Whereas they say to me, 'you can easily do this yourself.'

Schools differentiated the allocation of roles according to their local staffing conditions. Allocating roles, such as Simon's financial delegation, required endorsers and approvers who were aware of staff's abilities to complete designated tasks *in* OneSchool. Patterns of professional qualities were recognized as both familiar and changed as they were shaped by pedagogical, policy *and* (now increasingly) technical demands (of the platform). 'Mae', a senior bureaucrat in Central Office, recognized these re-shaping as

> OneSchool really changing something about the way people view their role as teachers.

Considering re-shaped roles of self and others included finding themselves 'caring' for systems and platforms by the constant recording and updating of data. The demands on professionals to care and instruct platforms, rather than their students were noted. 'Harry' (school leader), recognised the time teachers were

> expected to do OneSchool … it ties up a lot of their time.

The additional teachers' task "to do OneSchool" indicates one way in which teachers' professional roles are platformized. Teachers' engagement with student and school data, was enabled by the allocation of platformized roles. Their professionalities are thus shaped by their pedagogical and technical abilities to both record and access the data, as well as the platform's governance of what they can and cannot view or action. As 'Dana' (senior bureaucrat/school leader) explained:

> [In schools] there's a lot of conversation around what different roles can see. I would sometimes go into my principal and say, 'What, can't you see that [report]?'

‘June,’ a senior bureaucrat in Regional Office, spoke of OneSchool as having “revolutionized our work. It’s a big word, but it’s true.” Simon also spoke of OneSchool in revolutionary terms, recalling the introduction of OneSchool:

> It was revolutionary and like lots of revolutions there was blood and gore and everything, but we’ve had a nice peaceful outcome – a successful outcome would be really great.

‘Christine’ (school leader) linked the likelihood of “successful outcomes” to the need for a state-wide “consistent approach.” She was “appalled” when local high schools rejected the use of available student information in OneSchool to prepopulate enrolment forms for parents, saying that

> the stress and anxiety that that causes families who don’t have literacy and who don’t trust schools is really sad.

Christine was unsure “if that’s a OneSchool thing or a local school issue.” Christine later added that the pre-population process had “become policy [in the region], but only one high school did it.”

The educators responsible for enrolment at the local high schools can thus be viewed as retaining the same patterns of professional behavior in their management of student enrolment rather than re-forming their professionalities through engagement with the OneSchool platform. Whether they were unable to use OneSchool to create a ‘gap’ through the ‘obstacle’ of enrolment process because they lacked the policy or technical skills, or if school-based policies prevented the use of their skills is unknown. The result, however, was that their enrolment process remained unaltered, as did the pattern of their professional behavior, and parents retained their “stress and anxiety” (Christine, school leader).

In summary, as this section has shown, the re-shaping of educational professionalities continued after OneSchool had become implemented in the everyday activities of the schools. A key mechanism to disentangle this re-shaping process was hereby found in the allocation of authorized roles to not only act on the platform in a specific way, but equally to be assigned with a specific form of ‘caring’ for the platform, as well as to get access to particular data (i.e., key knowledge for decision making). While, on the one hand, former professionalities (see nurse example) were hereby denied access to the platform and, thus, a professional role in the platformized school environment, on the other hand, OneSchool came with new pre-defined roles which had to be ‘filled’ by available personnel, which some teachers perceived as new/extra work. Others reported, however, that through the new role assignment they were able to ‘make visible’ former (e.g., administrative) parts of their work which had already emerged (yet invisibly) before the OneSchool implementation.

7. Concluding remarks

The aim of this article was to draw attention to the re-shaping of educational professionalities during the process of a platform development and implementation process. Hereby, the article did not focus on one specific type of profession (e.g., teachers or bureaucrats), but rather on how the OneSchool platform emerged as a relational assemblage, which brought together different professional groups at different times for different purposes, while transforming these professional groups through this assembling. This closing section argues that the concept of diffraction might be used as a theoretical 'siting device' (Haraway, 2004) to position the viewer (reader) to understand how the ongoing platformization of educational professionals is an assembling processes.

Recognizing the diffraction of professionalities in re-shaped education practitioners, focuses attention on the oftentimes illusory boundaries that contour the professional characteristics of 'teacher,' 'school leader,' 'policymaker,' and 'bureaucrat.' Diffraction of professional qualities is not a static process but an active 'doing' where both human and non-human participants are actively involved in progressing through gaps in the obstacles that appear before them.

In the two empirical situations presented – the development of OneSchool, and the governing power of role assignment on the platform – the OneSchool platform, those who developed it, and those who use it, are shown in the act of diffracting into platformized professionalities. Diffraction occurs when light or sound waves or, as presented in this paper, patterns of professionalities are impacted by some form of interferance. Mapping the resulting interferance generated as professional educators, on encountering obstacles to their practices find or create gaps through which to progress, creates visibility of the re-shaping of their professionalities. Obstacles highlighted throughout this paper have included restricted access, non-responsive edu-business marketplaces, user knowledge and skill levels. Gaps emerged when access – necessary, appropriate and proportionate – is allocated and authorised, when roles and tasks are identified and when human and non-human vitality are assembled rather than dismissed. In this role, OneSchool is simultaneously implicated in forming obstacles and creating gaps to become an active participant whose own professionality is diffracted over time. Put differently, over time, OneSchool became an active contributor to education, blurring the lines between human and non-human participants and re-forming existing educational practitioners and their professional qualities.

The professional performativity of platforms is illuminated by their vitality, their ability to "impede or block the will and designs of humans" and to "act as quasi-agents or forces with trajectories, propensities, or tendencies of their own" (Bennett,

2010, p. viii). When schools experienced the obstacle of problematic access and flow of student data, technically capable and orientated educators in 'partnership' with platforms created gaps through which both human and non-human participants progressed. These re-shaped educators brought school-based pedagogy into the design process of OneSchool while simultaneously re-shaped policies, procedures and platforms moved into schools.

Digital infrastructures, proffered as new ways for educational actors to manage the demands for data, are implicated in how educational practitioners perform and are made into subjects (Selwyn, Nemorin & Johnson, 2017; Williamson, 2016). Platforms render visible the standards and categorizations of educational professionals, their skills, roles, and tasks to provide them with access *as* platformized professionals. How those standards and categorizations are determined is of importance to education systems globally. OneSchool's cataloguing of professionalities was determined not by a single external developer governed by market forces and shareholders, but by a collection of internally determined and authorized personnel.

Commercial pressure from edu-businesses seeking access to Queensland state schools are increasing. However, I suggest that it is because of the experiences of having developed their own platform that the diffracted patterns of re-formed professionalities are wary. When asked about the addition of third-party applications accessing schools, Ron (senior bureaucrat) replied:

> Can your vendor meet our requirements? Because if the vendor can't meet the [security, usability] requirements, I don't give a rat's, and I don't want to play with them.

As future educators continue to face the "always-already reconfiguring" (Dixon-Román, 2017, p. 437) world of education, those educators with platformized professionalities are well positioned to utilise rather than be used by the social, political and technological demands of platformized education system.

Notes

1. For example, subsidized digital cameras and handheld devices, government supplied laptops for teachers, digital use 'awards', digital license/certificates.
2. Voluntary redundancy provides financial incentives to employees to voluntarily become 'redundant' and cease their employment.

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