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One thing can be more than one thing: a comparative study of the teacher professionalization app ‘TeacherTapp’

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ABSTRACT

This article analyses the smartphone application TeacherTapp that is used to collect and disseminate information on teachers’ views on education and their classroom practices. The research takes as its object of analysis the use of TeacherTapp in England and Flanders. We analyze what TeacherTapp is, how it relates to a given localized community in its form and function, as well as how it impacts education by re-shaping discourse on teaching. We find that this technology is a ‘multiple enactment’ that is articulated, used, and viewed differently between England and Flanders as well as in different contexts of use. We furthermore find that this multiple enactment centers on the complexities of the participatory data streams’ flowing from, and generated by, the app. We conclude that TeacherTapp enables new forms of participatory datafication in education that constitutes new modes of enacting teachers’ professional voice as a teacher professionalization app.

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ed-tech apps; locality; comparison; teacher professionalization; participatory datafication

Introduction

Technology of some kind has always been central to society, be it in terms of capital and growth (Piketty 2014), global and local policymaking (Helgetun 2023, Slota & Bowker 2017), culture and sense-making (Luhmann 1997), self-identity (Lupton 2014), or past and modern learning (Decuyper 2019; Fenwick and Edwards 2010). Meanwhile, education has been transformed by new technologies enabling new forms of teaching/learning (Trilling and Hood 1999; Bulman and Fairlie 2016), as well as novel forms of insight into the education processes (Akiba 2017) and control over the teaching profession through the advent of technology enabled large-scale data collection (Ozga 2009). What is interesting in this regard, is how technology is employed in novel ways causing new practices in education to appear. These new modes of education and learning include the ability to be educated (almost) anywhere with one’s phone using videos, video conferences, e-books, and interactive applications, which differ from historic reliance on (more cumbersome) printed books and classrooms. Indeed, it is observed that education and learning is increasingly pushed towards multifarious digital platforms and digital devices such as smartphones, tablets, and computers in teaching (e.g., Mifsud, Mørch, and Lieberg 2013, Decuyper et al. 2021). Meanwhile, teachers and learners are increasingly measured through the capturing and ongoing logging of data in a form of ‘datafication’ of education (Knox, Williamson, and Bayne 2019). Datafication refers to the increasing use and reliance on quantifiable (big) data, quantitative analysis, learning analytics, and

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algorithm-based learning and decision-making made possible by digital technology (Hartong and Förschler 2019).

In this paper, we analyze the multiple enactments (Mol 2002) of one such digital artefact in education, the teacher professionalization app ‘TeacherTapp’ (sometimes spelled Teacher Tapp), a newly emerging yet important application in the increasingly digital lives of teachers. The app’s purpose is to collect and disseminate data and advice on ‘what works’ or is going on in education directly to teachers. TeacherTapp is interesting to analyze, as it constitutes at once a new way of both engaging with teachers through ‘daily reads’ in the form of blog posts marketed by them as ‘bullet-CPD (Continued Professional Development), as well as a way to collect information from them with the self-declared aim to provide a voice to teachers and ‘[paint] a true picture of education one tap at a time’, as can be seen on the app’s store page (both Android and Apple stores). Our focus in this paper is on the similarities and differences in the enactment (i.e., how it is brought into *being*) of the app in England, where it originated in 2017, and Flanders, where the app was introduced in 2020.¹ We argue that the kind of analysis undertaken here is particularly relevant at present given the ever accelerating foci on a range of digital technologies often related to large scale data that enable knowledge production and dissemination of discourse on ‘what works in education’ for policymaking, governing, and practices (Decuypere, Ceulemans, and Simons 2014; Helgetun and Menter 2022; Sørensen and Robertson 2020). Additionally, it is also relevant because it is revealing of how societies think about teaching and technology in education due to the multiple links between technology, education, and society (Godin 2006; Resnik 2006). For example, what education *is* in an ontological sense, depends on its differentiated enactment in a given locality or context (Crossley 2010). Therefore, the form of enactment an education artefact (such as TeacherTapp) has, is also context dependent, implying that it is likely to be differentially enacted in different localities.

The comparative and conceptual aspects of the analysis enabled us to see how different contexts create identifiable groups of actors and how these groups in turn use and shape technology in different and divergent ways. This matters because much research by now recognizes that technologies can be variously adopted and are in that sense ‘multiple’ (Lupton 2014). Drawing on the foundational work of Mol (2002) on multiple enactments, it is possible to see the enactment of objects such as technological artefacts as enacted realities that are *more than one*, yet at the same time *less than many*, as they are manifested in situ. However, what is currently still lacking are empirical analyses of how educational technology is, in and by itself, *by definition* multiple, as it engages with differentiated communities of users whose practices are not uniform and as such construct differentiated space-times (Van de Oudewetering and Decuypere 2021, Piattoeva & Saari 2022). A context-sensitive comparative analysis centered on the concept of enactment as done here, provides empirical support to this point by contrasting the similarities and differences *inherent* in different spatial-temporal localities in relation to education.

The disposition of activity-based differentiation rests on how an artefact such as TeacherTapp, as any artefact, is a socio-political construction, and its enactment is a socio-political process (Vertesi et al. 2017). As a socio-political construct and process, we argue that the artefact is constantly (re)shaped by the institutionalized environment it is enacted in by its communities of users. These institutionalized environments, such as the education or research environments in England or Flanders, are constituted by the evolving formal and informal rules, values, norms, and beliefs, held by actors unified through a perception of a shared context (Scott et al. 2000), that often relate to a specific discourse (Helgetun 2021). ‘Discourse’, here, is taken to mean the socio-political practices of knowledge construction and legitimization that construct the ‘truth’ of the object of which it speaks through the form it is spoken in and to whom it is addressed (Foucault 2002). Moreover, discourse in today’s ‘evidence era’, where arguments must lay claim to a form of evidence for their legitimacy (Helgetun and Menter 2022) relates to what Miller (2001) denotes as calculative (accounting) practices. That is, we argue, drawing on these works, that numbers – and data

more broadly – when generated and disseminated, construct their own discourse, whilst at the same time lending legitimacy to the discourse of those who enact the numbers.

The analysis presented here, through its diverse conceptual lenses, arguably enables a thorough comprehension of a technological artefact that is constantly (re)produced in a temporal sense, while it enacts different discourses in different localities, and constitutes a multiple sociomaterial artefact.

In sum, in this paper we aim to show how TeacherTapp takes different forms in England and Flanders, but also *is* something different dependent on the activity it is used for. That is, we will show that *one thing* (i.e., TeacherTapp) is variously enacted as *more than one thing*, and therefore is more than the sum of its technological parts, whilst still constituting a single identifiable artefact (Shankar et al. 2017).

Methodology and method

The first step of our data collection, aimed at establishing the functions and functionality embedded in the app's Graphical User Interface (GUI), consisted of an initial daily use of the English version of the app for 4 weeks in October 2021. This took the form of a walkthrough method (Light, Burgess, and Duguay 2016; Decuyper 2019), where all functions of the app were used by one researcher who documented what the app did, or claimed to do, at the GUI level. The purpose of this initial probing² of the app's GUI was to refine the analytical and conceptual approach of the research prior to more in-depth data collection and analysis across both England and Flanders. The initial probing led us to conduct a multi-entry data collection. This necessity flows from the multi-faced characteristics of the app as is presented throughout this paper. We found that to understand TeacherTapp, we did not only need to focus on the GUI of the app itself, but equally had to focus on the wider ecosystem and environment behind the artefact (*see also* Fenwick and Edwards 2010; Decuyper 2021). To do so, the data collection went *beyond* 'the app itself' to include social media and websites connected to the app (Decuyper 2019, 2021). As we shall see, in this case, the infrastructure is comprised of interactive device (smartphone GUI), communication forms (operating organizations, websites, blogs, and social media), and statistical (large-scale) data collection and analysis.

In our main data collection and analysis, we first continued the walkthrough method by systematically examining the app itself by using the English and Flemish versions of the app daily for 4 weeks in February 2022 on two separate phones, with the dual purpose of understanding the functionalities of the architecture of the GUI, and how the app constructs its audience. All features on the app GUI were screenshotted daily to record the content. As such, we 'walked through' the app, and this was done daily, as the app changes what it does (changing its questions and disseminated data, but not its layout) every day.

Second, the lead researcher conducted thematic open-ended interviews with three senior managers at Education Intelligence who own and operate the app in England, and three senior researchers working on the app at Arteveldehogeschool in Flanders under license from Education Intelligence.³ The interviews took a thematic approach to explore the origin of TeacherTapp, the goals of the organizations behind it, the spread from England to Flanders, local opposition and/or support to the app's entry into the education environment, and future plans for the app. The interviews were then synthesized in relation to these themes to enable the researchers to fully understand what TeacherTapp *is*, and how it moves between localities. To ensure the anonymity of the interviewees, direct quotes are not used, and the interviews were only sparingly referenced in this text.

Third, we analyzed discursively (elaborated below) the websites of Education Intelligence⁴ and Arteveldehogeschool⁵ and their social media accounts (Twitter, Facebook, Instagram, Reddit), to understand the wider organizations and technologies associated with the app, as well as the communities of users and how they express themselves publicly on social media in relation to the app. The social media observations were conducted roughly once a week between February and May

2022, as the relative low volume of entries precluded the need for daily observations. These analyses were distinct in so far as analyzing social media differs from the analysis of more general websites, but the intent of observing the range of actors and potential actors and their engagement with the app were similar. The website analysis was exhaustive in so far as every page and sub-page was fully recorded and analyzed regarding its content (i.e., what did each page do and what did it tell the reader). The analysis here enabled us to understand what services, in relation to the app, were provided by the owners, such as the buying of questions and analysis, or what partners they officially worked with, as is detailed in the subsequent sections.

Fourth, as the app is presented as a voice for teachers in policy debates, we traced the presence of the app's data in key policy documents published since the operationalization of TeacherTapp in England in 2017 and Flanders in 2020 (we found one white paper in England using TeacherTapp data: 'Opportunity for all Strong schools with great teachers for your child', but none in Flanders) to flesh out TeacherTapp's data streams and further our analysis of TeacherTapp's discourse. This was done by searching the white paper for references to TeacherTapp, noting what data was presented and how, tracing the source of this data ('following' the references), and then comparing the data as presented in the white paper to how it was presented in its source. This was then compared to how the same TeacherTapp generated data is presented within the app itself, on social media, and in blogs, to provide contrasting views of the data streams (see below).

The collected data from these different sources was sorted in relation to type and then cross-read for similarities/differences (Figure 1) following the circular method of the research process (Flick 2009; Helgetun 2021).

The contrasting comparison between data sources relied on what we came to call 'visual comparison'. This is a derivative of discourse analysis (Fairclough and Fairclough 2012; Helgetun 2021), where the form something is stated in, is compared across data sources. That is, how something is said, in terms of both words used and visual presentation (e.g., use of graphs/tables, colors, highlights, design) is compared to see what is similar and what is different. This enabled us to 'see' how the data generated by the app was enacted differently across contexts as represented by data sources (e.g., how a tweet in England is different from a tweet in Flanders, or how the same data is represented differently in a blog or a policy document). In the empirical observations section, to which we now turn, we have attempted to visually show parts of what we saw using our visual comparison technique.

Empirical observations and analysis

Origins and self-reported purpose of the app

TeacherTapp originated as a research project by Oxford University Professor Becky Allen with funding from the Gatsby foundation and Nesta, before evolving into a commercial application with the help of journalist and current CEO Laura McNerney, as well as teacher and programmer

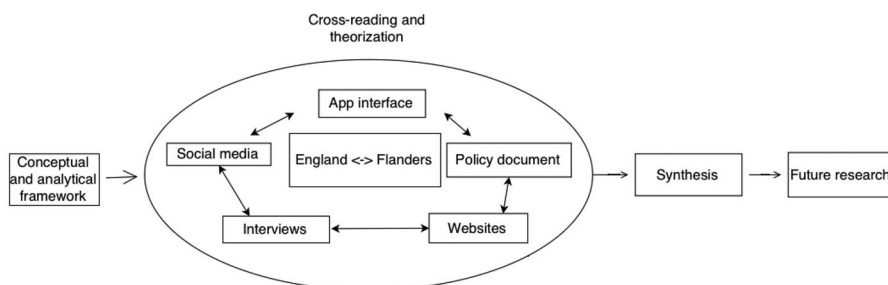


Figure 1. Circular method of the research process for analyzing TeacherTapp.

Alex Weatherall. The private company they created, named Education Intelligence, was incorporated by Allen and McInerny on the 19th of June 2017, and the website and app launched around the same time.⁶ The original intent of the app, our interviews indicate, was to collect data on what teachers actually think about policies and daily life in schools, and as such provide them with a voice through the use of statistical data obtained by surveying teachers daily. This intent is currently equally seen in the Android and Apple app-store presentation of the app, where its description states: *‘Teaching is often talked about, but teachers often don’t get a say. So, TeacherTapp was created to give teachers a voice.’* At first sight, the precise form of this voice appears to be using statistical data. This emphasis on statistics to influence policy can, for example, be seen in the Twitter-bio for TeacherTapp, which states: *‘7000 teachers each day on mission to paint an accurate picture of what’s going on in schools so policymakers can’t ignore you.’* Meanwhile, the heading of TeacherTapp’s associated website states: *‘painting a true picture of education one tap at a time’.*⁷ The aspect of providing a voice to teachers through statistical data, is especially interesting in the English context due to the historic emphasis on data in education discourse there (see Ozga 2009; Helgetun and Menter 2022). Through its discursive form, then, TeacherTapp did arguably constitute a new form of ‘voice’ for teachers in England at its inception, at a time when teachers had been struggling with being heard by policymakers (see Helgetun and Dumay 2021). In this regard, the potential novelty of the app as providing teachers with a ‘voice’, rests in the format and approach to give teachers a voice *centered on large scale data collection*. As such, the app furthers the datafication of education by enacting a form of discourse (a claim of what is *really* going on) rooted in data obtained through the smart-phone app.

Two additional purposes of the app at the time of its launch were to enable practitioner participation in research and helping teachers learn. This can be seen on the TeacherTapp Twitter page, through the, at the time of analysis (24.04.2022), pinned tweet⁸ (Figure 2):

The app subsequently migrated to the Netherlands (it also operated for a short while in Ghana) before it came to the attention of Pedro De Bruyckere and Geert De Meyer, who work as researchers and teacher educators at the Flemish Arteveldehogeschool (Artevelde University of Applied Sciences) in Belgium, in 2020. The existence of TeacherTapp came to Artevelde’s attention through shared academic networks with education researchers in the Netherlands. The researchers at Artevelde were, according to our interviews, already interested in technical solutions to both survey teachers and for building communities that were, according to them, lacking for teachers in Flanders. The goal of adopting TeacherTapp was to give teachers a shared platform to interact on, which could also help them gain a voice outside of more formal associations like teacher unions. So how does TeacherTapp attempt to achieve these goals today?

Technical functions and content of the app

In terms of technical function at the time of observation in February 2022, the app still set out to be a voice for teachers by collecting data from them and provide what they call ‘bullet Continued Professional Development (CPD)’ to them to enhance their teaching abilities. The data collection is



Figure 2. Photo of pinned tweet marketing TeacherTapp.

done through 3–5 daily multiple-choice questions as is illustrated in Figure 3. The results of these questions are displayed the next day, as seen in Figure 4.

The bullet CPD is generally a written text, usually in the form of a short blog post, which can be accessed through an embedded link, and is called the daily read. As seen in Figure 5, the information about the daily read within the app is very short. In the illustrative photo, we see a short presentation of the read in the English version followed by an estimation of how long it is to

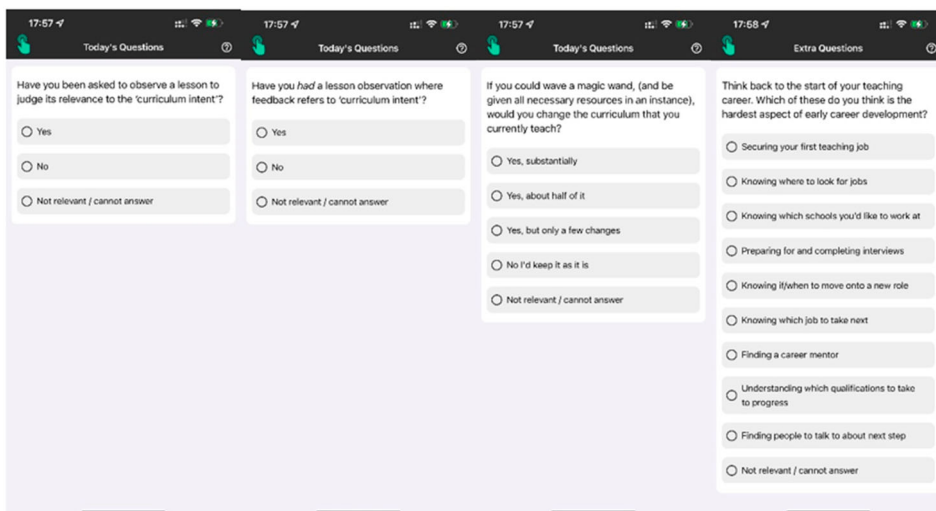


Figure 3. Illustrative photos of daily data collection through TeacherTapp 27.02.2022 (3 questions and a bonus question).

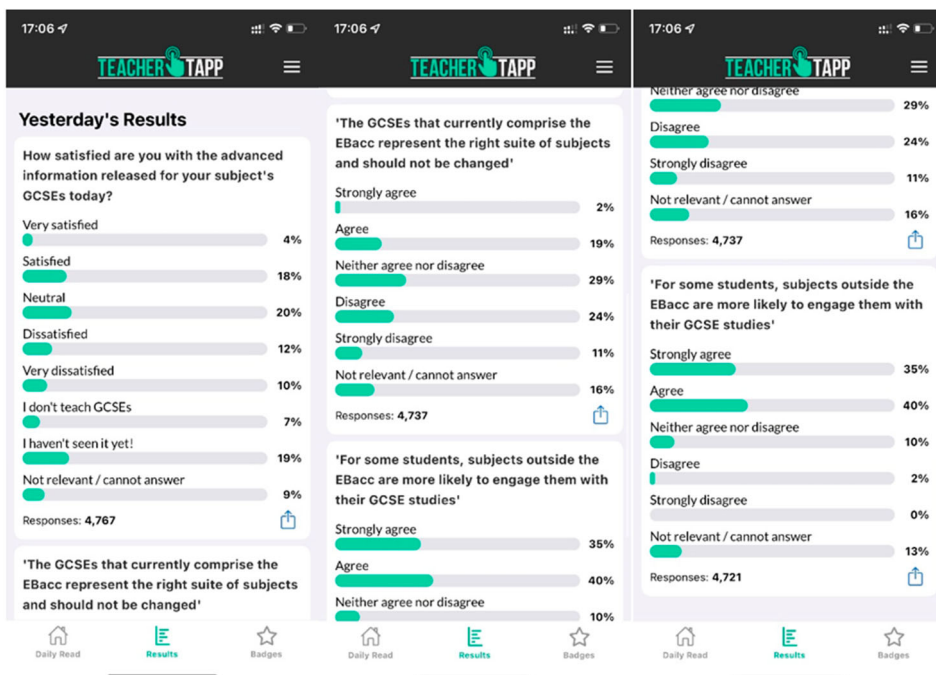


Figure 4. App interface 28.02.2022 – results from the questions the day before (bonus question result was not included).

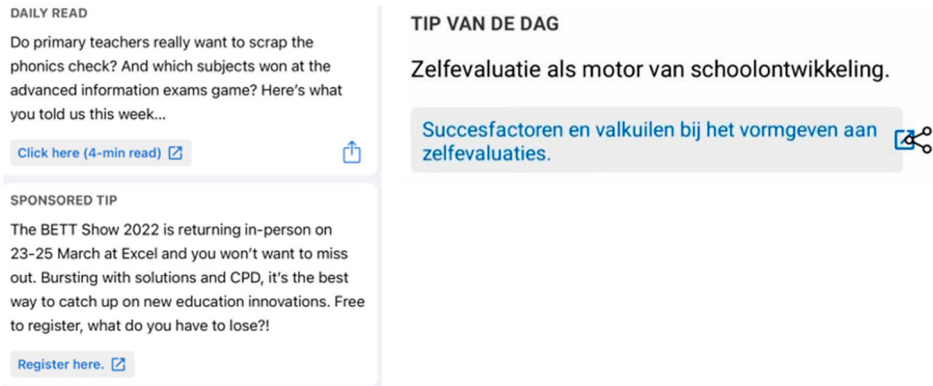


Figure 5. Illustrative photos of daily read: 15.02.2022 England and Flanders.

read. Below that, we see a sponsored tip that someone has paid for to have it included. In the Flemish version, the information about the daily read is even shorter, since there is no sponsored tip in this version of the app.

The app also contains gamification elements, such as streaks and data on how many questions the user has answered in total. In technical terms, the app is rather simplistic to use; a singular application is downloaded from the app store at which point the language and locality is selected, but the features remain the same in the different localities and the app's technical and graphical interface is identical. That is to say: the user answers 3–5 multiple choice (usually 3–10 choices – there are no free form questions and present, but the interviews indicate this may change) questions before being presented with access to the daily read (page 1), yesterday's results (page 2) and the overview over collected badges and streaks (page 3). The app is also the same across iOS/Apple and Android platforms. The app itself is free to use. It is open to anyone (no need to be a teacher) and has no limitations or tiers. Importantly, however, the questions themselves can be conceptualized as an entry fee; the app requires the user to provide answers before they are allowed to access the 'bullet-CPD' of the daily read and the data from yesterday. That is, the user pays by providing data for the app, thereby becoming a form of 'prosumers' of educational data (see Beer 2013; Williamson 2016). The answering of questions to access other information is a hard condition in England, where the questions and answers are only immediately accessible on the app. In short, on the surface of its GUI, TeacherTapp *appears* to be a similar app across both England and Flanders, albeit with minor local differences. This constitutes the common 'core' of the app.

Beneath the GUI, however, the differences within the functioning of the app itself are plentiful. In terms of content, the sources for the 'daily read' in England are somewhat similar, in so far that they mainly use blog posts by practitioners in England, often published on WordPress, and one weekly blog written by the TeacherTapp staff. An exception to this general pattern, are some newspaper articles (2 in October 2021, 1 in February 2022). In Flanders, by contrast, the sources range from blogs to podcasts, and equally include government publications in some instances. The Flemish sources are also often more Dutch than Flemish, which according to our interviews related to the availability of blogs and the small size of Flanders – interviewees indicate that principally, the preference was directed at Flemish sources, but they found it impossible to find a new Flemish blog on a daily basis. This may relate to population sizes rather than a lack of prolific blog writers in Flanders (i.e., there are more teachers in England alone than in the Netherlands and Flanders combined, while there are more teachers in the Netherlands than in Flanders). This illustrates how the local enactment of the app is technically restricted by a wider ecology such as the availability of blogs – and the language blogs are written in.

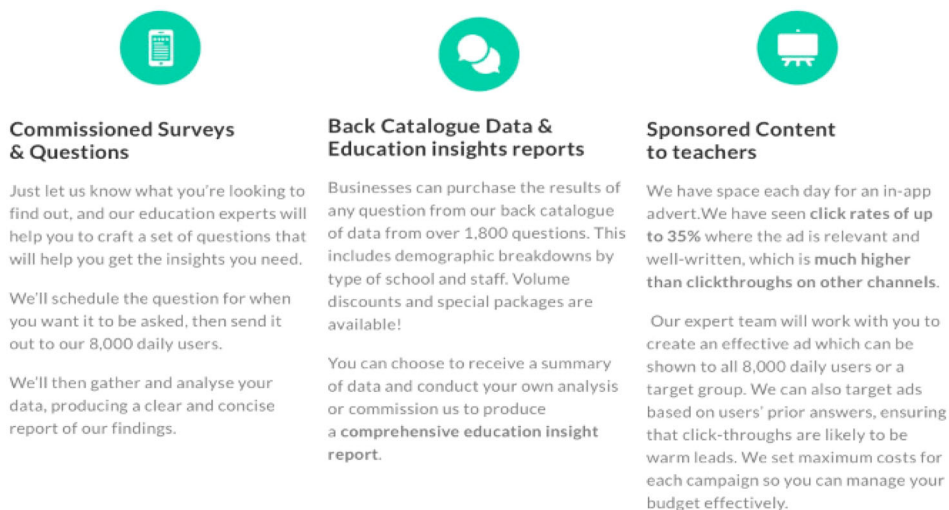
Multiplicity of actors and the use of TeacherTapp in political discourse

The range of actors the app interacts with, is distinctly different between England and Flanders, which impacts the diversity of the communities of users that enact it. As noted above, the app is run by Arteveldehogeschool in Flanders, without partners. By contrast, Education Intelligence in England works with a range of partners. In October 2021, these were according to their website the British phonographic industry, Big change, Driver youth trust, Boclips, Pearson, MyTutor, and the Anna Freud national center for children and families – this then constitutes a much more encompassing environment than that in Flanders, accommodating a wider range of diverse organizations within the eco-system of the app. Indeed, much goes on behind the app itself to enable its multiplicity, and once we expand the concepts of ‘use’ and ‘user’, a more complex picture is revealed. Users are not only the teachers who answer questions and read the daily read. According to our analysis, other actors equally use the data from TeacherTapp in discourses in social media, in newspaper articles and blogs, as well as in research as we unpack in this section.

A second official target group of the app, after teachers, are people who employ the data collected by the application for analysis to inform education policy and practices, such as researchers of different kinds, journalists and other public commentators, and policymakers (such as politicians or civil servants) themselves. In relation to this second kind of user, the differences between England and Flanders are enhanced, as people/organizations can buy questions and analyses in England, as illustrated in the screenshot below (Figure 6), but not in Flanders, where it is run by a higher education institution.

The ability to purchase questions and analyses also grant a new form of potential use for those interested in data from teachers in England, as they can target their own questions in a way that is not possible in Flanders, where questions are only formulated by Arteveldehogeschool. This, in turn, gives Artevelde a form of monopoly on parts of the data collection and enabling of teachers’ voice. The potential of the app rests in the formulation of the questions and the multiple-choice answers, as well as the selection of the daily read.

As noted in interviews and seen across our observations, Arteveldehogeschool is careful to ensure the app and its questions remain ‘business-free’, and that they respect the norms of the education and research environment they are a part of. The ‘business-free’ approach at Arteveldehogeschool, according to our interviews, leads to some frustration for their English counterparts, whose



The screenshot displays three service options, each with a teal circular icon at the top. The first icon shows a smartphone with a survey, the second shows two speech bubbles, and the third shows a computer monitor with a presentation. Below each icon is a title, a brief description, and a paragraph of details.

 Commissioned Surveys & Questions Just let us know what you're looking to find out, and our education experts will help you to craft a set of questions that will help you get the insights you need. We'll schedule the question for when you want it to be asked, then send it out to our 8,000 daily users. We'll then gather and analyse your data, producing a clear and concise report of our findings.	 Back Catalogue Data & Education insights reports Businesses can purchase the results of any question from our back catalogue of data from over 1,800 questions. This includes demographic breakdowns by type of school and staff. Volume discounts and special packages are available! You can choose to receive a summary of data and conduct your own analysis or commission us to produce a comprehensive education insight report.	 Sponsored Content to teachers We have space each day for an in-app advert. We have seen click rates of up to 35% where the ad is relevant and well-written, which is much higher than clickthroughs on other channels. Our expert team will work with you to create an effective ad which can be shown to all 8,000 daily users or a target group. We can also target ads based on users' prior answers, ensuring that click-throughs are likely to be warm leads. We set maximum costs for each campaign so you can manage your budget effectively.
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Figure 6. Screenshot of how services can be purchased.

main focus is on growing the app and enabling monetization to ensure the viability of their business model. The view at Artevelde, according to our interviews, is that any monetization or business-like foray would undermine the legitimacy of the app in the eyes of Flemish teachers. In the UK, conversely, this view is contested by Education Intelligence, who do not believe there is evidence to support such a claim. Furthermore, one limiting factor of the lack of monetization in Flanders was that the team of analysts there is unable to grow at present. By contrast, in England monetization has enabled an expansion of the analyst team and an expansion of the services (i.e., types of analysis) Education Intelligence is able to provide. It is important to note that, before the creation of Education Intelligence, TeacherTapp began as an academia-led project in England. In Flanders, the app (so far) remains anchored within academia – this academic anchoring is considered by the team behind it to be one of its key sources of legitimacy there. That is, the belief is that TeacherTapp *could not exist* in Flanders if it was not tied to an established non-market organization. This appears to reflect an English view on money as central to making the world go around (even for altruistic goals) and a Flemish view that education is not a business, but rather a public good. This in turn leads to a further differentiation in perceived possible enactments of TeacherTapp – in one locality, it can be enacted as a business tool and an integral part of a knowledge economy; in another, it cannot readily be enacted the same way as it must remain free of business concerns.

Thus, as form of giving teachers a voice, the app inherently *relates* itself to the political sphere and a range of education stakeholders such as teacher unions, professional teachers' associations, or education lobbyists such as Pearson or McKinsey. However, *how it does so is location specific*, and the interactions of the app with a political sphere is localized and dependent on what actors are present locally to construct different communities of users.

Enactment and datafication beyond the app's GUI

As we now explore, the role of TeacherTapp data in localized political spheres are also multiple and goes beyond any collection and dissemination of data contained within the app's GUI. Actors, such as Education Intelligence, Arteveldehogeschool, or others such as private enterprises, researchers and/or unions, can re-formulate the data from the app (e.g., in blogs or on Twitter) as they enact their own discourse. Such a discourse is both related to, and distinct from, the discourse disseminated in the GUI of the app. That is, it is appropriated, repackaged, and reused by a new set of actors. The former, the discourse disseminated by the app, is a form of sociomaterial product enacted by the interaction between the organizations behind the app (who formulates the questions), the technological artefact (TeacherTapp), and the respondents (who answer the questions); only the combined work of these three actors enacts the discourse displayed in the app's GUI we saw above in Figure 4. It is only in a second instance (a different act to the former) that this is reproduced as a political discourse where data is actively used and interpreted to construct a discursive narrative outside of the confines of the app (e.g., on Twitter) by new actors. This can be done by for example: teachers, policymakers, union representatives, or Education Intelligence themselves on a blog or in a Twitter post, as can be seen in the tweet by Education Intelligence Chief Executive Officer (CEO) Laura McNerney in Figure 7.

Within the app, we see a series of data provided by an entwined sociomaterial interaction displayed within an artefact (a discourse of thousands of data points). On Twitter, by contrast, we see the active construction of a discourse centered on select data from one of three questions, with a text commentary, and a call for future action that is not present in the app's GUI. Hence, we see a dual enactment of discourse, one located within the app's GUI, the other on social media. This differentiated enactment is multiple in more ways than one. Indeed, the multiplicity of enactment of the data collected by TeacherTapp in education discourse in England can also be clearly seen in relation to a teacher-provided question on 11.02.2022 that asked, 'what makes planning difficult for you?'. Parts of this data were used in the 2022 Department for Education (DfE) white paper 'Opportunity for all: Strong schools with great teachers for your child', which

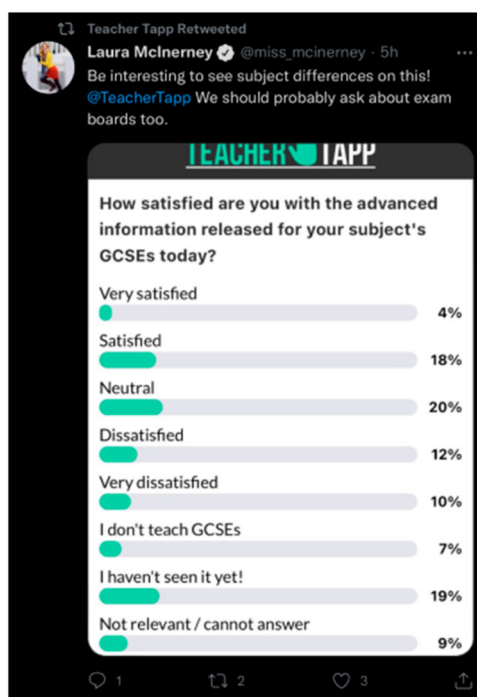


Figure 7. Tweet by TeacherTapp CEO.

was the first white paper in education since 2016. In the policy document, the TeacherTapp data was appropriated and used to critique current practices: ‘Curriculum design is an expert skill, yet too many teachers reinvent the wheel and design new lessons, with recent TeacherTapp data showing 46% of primary teachers are planning their lessons from scratch.’ (P.26). This is a form of enactment of TeacherTapp data that differs from the analysis of the same data presented by Education Intelligence in their blog post titled ‘Should we keep the phonics check? And which subjects won at advanced info?!’,⁹ which focused briefly on planning by denoting what users had responded, whilst the enactment of the data the blog differed from the data as presented in the app’s GUI, because it was weighted and differentiated between primary and secondary teachers. Meanwhile, we can again see yet *another differential enactment of the same data*, in a Twitter exchange showed in [Figure 8](#).

One argument in this Twitter exchange relates to the teachers’ happiness and autonomy; another centers instead on efficiency and time-consumption. These differences between enactments of the same data in turn appear to relate to the distinct communities of users and their view on what the data actually ‘says,’ and how it ought to be used in education discourse. As such, we see how data is enacted as information (data flow) and discourse in (at least) a dual process of first being between user and app, then secondarily it can be re-enacted in a multiple of ways in public, such as on Twitter or in policy documents. Each such enactment constitutes a transformation of the data flow, and the form the data is communicated in. Hence, the notion of TeacherTapp ‘data’ and ‘user’ are both multiple, as communities of users engage with the same artefact *but in different ways*, and for different purposes that may or may not overlap. These communities then, through their practices, again enact the data from the app differently and eventually turn it into different forms of education discourse. Thus, the app, as a sociomaterial device, is not singular in its function, and the practices it enables do not end with the app’s GUI. Rather, TeacherTapp should be considered as a ‘living’, constantly growing, assemblage that has a presence not only within the confines of the GUI of the app, but equally within blogs, social media, and even within governmental long-term strategy documents.

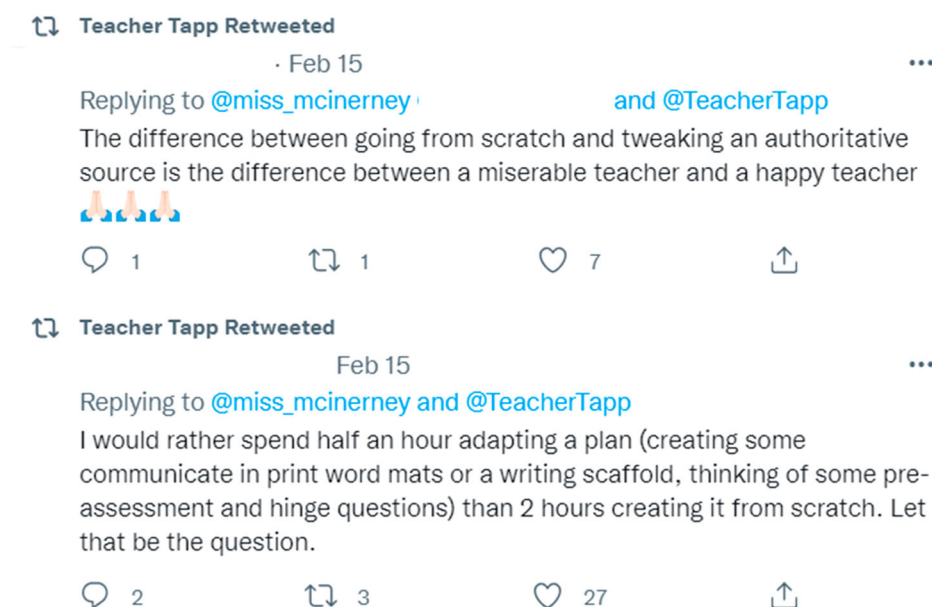


Figure 8. Twitter discourse illustration.

To conclude this section, we find that TeacherTapp relates to a wider conception of digital governance (see e.g., Decuyper, Ceulemans, and Simons 2014; Williamson 2015) as including non-state actors who have a bearing on practices in education across a large ensemble of schools by shifting policy and education discourse through the expanding use of technology and data. What then of the future?

Digital artefacts as ‘living things’.

Digital artefacts may not only evolve themselves; they can (and often do) also lead to ‘spin-off’ products. For example, after the launch of TeacherTapp and its initial success in Flanders, Arteveldehogeschool launched a second app with the help of the Flemish ‘De Ambrassade Office for youths’¹⁰ targeted at collecting data on youth behavior called ‘Waddist’. This app was not developed by Education Intelligence, but was a proprietary solution made for Artevelde with many of the same functionalities as TeacherTapp (such as the three daily questions, the daily read, and the showing of yesterday’s results). Arteveldehogeschool, according to our interviews, expanded on this functionality by adding the possibility of winning ‘skins’ through streaks, in an effort to attract youths. We find there to be a striking similarity in the GUI of Waddist (see Figure 9) to the GUI of TeacherTapp shown above in Figures 3–5. This seems to denote that there is a form of technological path dependence at play (Mifsud, Mørch, and Lieberg 2013). That is, the sequence of events matter, and what came before (here TeacherTapp) structures what comes after (here Waddist).

Meanwhile, the Flemish education inspectorate have launched their own closed-entry app for teachers called ‘VOI.CE’.¹¹ In England, it does not appear as if TeacherTapp has had the same innovative impact, as the only similar app was the short-lived Education Intelligence made app ‘Parent ping’, that surveyed parents at the start of the Covid-19 pandemic.¹² However, our observations indicate that the app is becoming increasingly influential in discussions on teaching and teachers work on Twitter, a central medium within the wider education discourse in England (Helgetun and Menter 2022; Watson 2020). This has, by contrast, not been the case in Flanders, where teachers and teaching discourse has a more limited presence on social media. Thus, one could say that the app has had two different forms of impact in the two distinct localities. In England, it is a tool that enhances debates on social media, and as such constructs a new discourse rooted in the daily survey

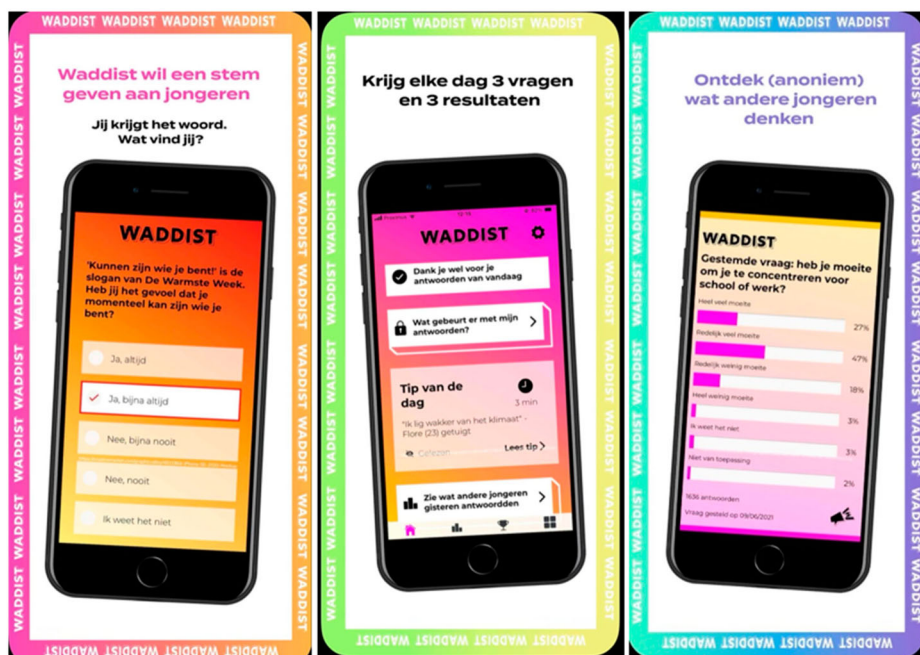


Figure 9. Screen shots of Waddist from the ‘app-store’ showing its features of daily questions, tip of the day, and the result of yesterday’s questions.

of teachers, while also building a community of different actors from multiple communities of users who engage with TeacherTapp. In Flanders, conversely, it is seen as a new technological solution where actors are keen to expand its use both to other domains and to operate their own version of it within the domain of data collection and dissemination from and to teachers. However, in the Flemish case, it does not seem to gradually bring different communities of users into the same fold as it does in England, nor is the communal aspect of social media as present in the eco-system of the app. Hence, the multiplicity of the app is not limited to the artefact itself, but also has wider ramifications as sociomaterial interactions continuously unfold and strive to expand their reach. The spread of ‘spin-off’ apps in Flanders helps illustrating this point. However, the separation between TeacherTapp and the inspectorate’s app VOICE in Flanders, whilst the DfE employs TeacherTapp data in its white paper, also shows a difference in approach: in England, data collection and analysis is often outsourced by the Department for Education, whereas in Flanders, there is a desire to keep things more ‘in-house’ (cf. Helgetun 2021).

Discussion, reflections, and concluding remarks.

In this paper, we have argued there is a multiplicity in the functioning of TeacherTapp as a socio-technical artefact. This is arguably a process where the human user and the technological artefact continuously interact to co-produce and co-transmit different forms of knowledge. That is, the app illustrates how technology is multiply enacted in different localities, despite having similar functions (e.g., gathering teacher data through three central questions) at its core, ensuring it is more than one, but less than many (cf. Mol 2002). The multiplicity of the enactment is first seen through the in-app presentation of the data (i.e., the collection and dissemination done in the app’s GUI), and a second enactment of the data as it flows between different mediums (from app to blog to social media to policy document). Indeed, the data produced by the app is, in turn, enacted differently in education discourse by different communities of users. Thus, the app has a multiplicity in what Bowe and Ball (1992) talk of as the ‘context of policy influence in education’.

Moreover, we have found TeacherTapp to be at once a potential voice for teachers *and* a constraint on their practices, as it attempts to (re)define professional norms regarding what is considered as ‘normal’ in the education discourse, as well as defining what is ‘really going on in education’ as quoted above, making it a teacher professionalization tool. Its enactments as a professionalization tool are not only guided by the developers of the app, but equally *by and through the app itself*, as an actor who acts on its users both in intended and unintended ways, as the ‘prosumer-users’ modify the app’s output (Williamson 2016). With this, we first mean that the designers of the app choose the questions and guide the potential response – as such, they greatly structure the potential data production by selecting what questions to ask and how to ask them (see also Bowker and Star 1998 on the power of technicians and their language to guide data production). At the same time, however, they do not determine the answers of the users – which is what forms the backbone of the app’s discourse. Hence, even though the datafication enacted by the app is guided by the owners/operators of the app in Education Intelligence and Arteveldehogeschool, it retains participatory elements, as any user has some contribution to the discourse (Hartong and Förschler 2019).

Based on the observations presented in this paper, we would go further than Ideland’s (2021) insightful observations on the digitalization of education by ed-tech businesses that seek to redefine the role of the teacher. To us, apps such as TeacherTapp also inherently seek to create, sustain, facilitate and at once need evolving communities of teachers due to their participatory forms of data creation. As argued by Decuyper and Landri (2021), such participatory forms of datafication both enable and interactively govern new modes of (giving) teachers voice. Indeed, this article has shown the complex interplays that arise when teachers are allowed to participate and partake in creating data and ‘facts’, yet at the same time are being governed by various commercial and policy actors that appropriate the generated data (and hence, teachers’ voices) as a resource to further draw on. Thus, such new forms of ‘voice’ (Helgetun and Dumay 2021) are stringently limited by their enacted sociomateriality through the app’s GUI and user architecture. In that respect, we follow Hartong and Förschler (2019) in arguing that there is a need to closely disentangling how (participatory) datafication *is being done in practice*, and to expand the scope of such analysis to include not only policy analysis and discourse, but equally how sociomaterial interfaces are constituted of, as well as constituted by, processes of datafication that are enacted in specific contexts. Hence, comparative analyses are to be desired, as we try to further figure out how ed-tech driven (participatory) datafication takes place in concrete practices and localities (Hartong and Decuyper 2023).

Finally, this article contributes to our understanding of how new and participatory forms of evidence construction continue governing the educational field in general and the (professionality of) teachers in particular. In that regard, much research has stressed that evidence-based discourse runs the risk of reducing the place of the art of teaching in favor of technical solutions rooted in conformity to norms in the form of classifications and perceived standards that spring from the datafication of education through nudging (Bowker and Star 1998; Knox, Williamson, and Bayne 2019). This potential conformity, rooted in the datafication of the profession and data-based interpretation of what a teacher thinks and does, or should think and do, may move the profession from one centered on teaching as situational (Alexander 2001) to one that is not sensitive to context. Apps like TeacherTapp can then worryingly become a tool that reduces the scope of in situ context adoption, as users are pushed to conform their practices to what is pushed by the app. Such a shift at a global scale, we hypothesize, is increasingly justified by its promoters through claims of procuring ‘evidence’ and a view on the teacher as someone constantly plugged into the latest data regarding ‘what works best in education’ (cf. Helgetun and Menter 2022; Miller 2001). However, such digital artefacts may equally positively become sociomaterial devices for a new form of democratic participation in education discourse through direct daily human-data interactions (Hartong and Förschler 2019; Decuyper and Landri 2021). Thus, future research ought to consider both what is and what is (potentially) becoming in equal measure. The main concern remains however, who asks the questions and who answers them?

Notes

1. As education is a devolved matter within the United Kingdom (UK) and federated within Belgium, our analysis does not extend to the UK and Belgium as a whole.
2. The probing approach is based on what George and Bennett (2005) call ‘soaking and poking’, where initial exploration helps refine the research design for a more in-depth qualitative case study. This approach enables a more empirically grounded understanding of the research object(s).
3. Desired interviews with more coders and analysis working at Education Intelligence was denied due to business concerns.
4. The website for Education Intelligence can be found at: www.teachertapp.co.uk
5. The website dedicated to Teacher Tapp at Arteveldehogeschool can be found at: <https://sites.arteveldehogeschool.be/deleraandenkt/>
6. For an overview of the company see <https://find-and-update.company-information.service.gov.uk/company/10825354/filing-history?page=2> (accessed 25.04.2022)
7. Source: www.teachertapp.co.uk last accessed (15.12.2022)
8. During the revision stage of this paper and after our main analysis were done, the pinned tweet changed on 14.11.2022 to one centered on the policy impact of Teacher Tapp as a voice for more than 7500 teachers.
9. Source: <https://teachertapp.co.uk/should-we-keep-the-phonics-check-and-which-subjects-won-at-advanced-info/> (accessed 10.06.2022). The blog was cited in the white paper.
10. See <https://ambrassade.be/nl/nieuws/de-eerste-waddist-cijfers>
11. Source: <https://www.onderwijsinspectie.be/nl/voice> (accessed 10.06.2022)
12. See <https://parentping.co.uk/>

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