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Assessment, technology and democratic education in the age of data

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Abstract

This paper contends that powerful techniques to manipulate data, enabled by technological and economic developments, can be easily co-opted to serve the restrictive frameworks of hyper-controlling, managerial accountability that characterise current cultures of summative assessment in education. In response to these challenges, research is urgently needed to increase our understanding of the impact that assessments have on individuals and society. The paper concludes that social research ought to contribute to the identification of responses – educational, technological and political - that can minimize inequalities and potential abuses through the encouragement of data literacy across society.

Introduction

This paper argues that the increasing globalisation and sophistication of educational assessment is inextricably linked to the 'technologisation' of education more broadly. Technologisation is understood here as the process of engineering institutional cultures in pursuit of technocratic ideals of performance and efficiency (i.e. 'performativity', see Fairclough, 1996; Lyotard, 1984). The 'technologisation of education through assessment' is taking on problematic connotations which call for socially orientated forms of research and new approaches to the design and the use of technologies in education.

As noted by Broadfoot and Black (2004), the field of educational assessment has seen many dramatic developments over the last decades, and a growing number of national contexts are now grappling with similar issues, such as how to effectively manage the transition of large numbers of students from secondary education to increasingly selective and/or economically challenged higher education (HE) sectors. Data from the Organisation for Economic Cooperation and Development (OECD)[1] clearly point to a trend of steady increase in access to HE in most countries – certainly the UK and the US - but similar trends can be discerned across Europe (with the exception of some countries in the southern EU regions where ever deeper socio-economic crises are beginning to impact on the capabilities of local institutions and on levels of public confidence)[2]. As a result of such trends the traditional function of assessment - the high-stakes summative evaluation of large student populations to inform key decisions and choices - is now more important than

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[1] http://stats.oecd.org/

[2] In the UK education sector, very recent figures - from 2012 – also seem to suggest a decrease in HE enrolment. However, these have been explained as fluctuations reflecting normal variations in population rates rather than the current economic challenges; certainly not enough to abate the chronic issue of applications exceeding places available (UCAS, 2012).

ever, at the expense of its formative, developmental function (Black at al., 2010). This growing relevance also relates to the rise of a so-called 'supranational' educational discourse (Stromquist, 2005), which unsurprisingly found in assessment the vehicle through which national policy agendas can be influenced; hence the authority that international organisations, institutions and corporations - the already cited OECD, consortia and alliances of global employers – can nowadays exert (Ozga et al., 2011).

These developments are accompanied by what could be called a 'proliferation' of data in educational assessment, and by a growing interest in technologies that allow the management and exploitation of huge amounts of information produced by increasingly complex systems and processes. For instance, 'learning analytics' is an approach that relies on automated computations to make sense of large datasets about different aspects of student performance and behaviour in formal education. Similarly, quite a lot of research has been carried out in recent years about games and simulations capable of collecting information about learners in real time, as they perform tasks and solve problems while engaging in 'intrinsically motivating' activities (Shute et al, 2009). Moving on from this background, three more specific assumptions can be defined, which have growing relevance in education - and beyond – and demand with increasing urgency new forms of scholarship to inform policy and practice:

a) the introduction of more sophisticated methods of data collection and analysis. Unsurprisingly, these techniques are beginning to be commercialised in compulsory education (especially in the US) as they appear to offer the promise of accurate predictions, personalised recommendations and dramatic increases in the efficiency and effectiveness of provision (e.g. SAS 2011). This trend is spearheaded by recent developments in the digital economy, where consumer data analytics is currently one of the most profitable sectors. Attempting a forecast based on previous trends in educational technology, where many innovations have been predated by developments in other sectors of the economy (the personal computer in the 1980s, the push for connectivity and the Internet in 1990s, mobile devices and smartphones in the 2000s), it could be argued that powerful analysis of student data is where significant investment is likely to be found in the near future. Now, the need to make data machine-readable (capable of being processed and modelled by computers) makes it also very likely that any foreseeable development will rely on readily quantifiable information: test scores, attendance rates, time on task and completion rates during exercises.

b) The emergence of new roles and forms of expertise in the process of collection and analysis of performance data, which runs the risks of weakening even further existing educational institutions. For instance, a range of organisations and corporations are beginning to directly or indirectly provide educational services, qualifications and assessments (Mansell, 2012); this raises questions in terms of uncontrolled access to sensitive information that could be easily used to make important decisions about individuals or groups (e.g. as part of a recruitment process). More seriously, intensive data use and the need to rely on complex technologies and specialist (often non-educational) expertise may lead to a situation which replaces democratic accountability with managerial and technocratic one, thus reducing the possibility of building responsibility around social goals and democratic processes (Ozga, 2009). Ozga suggests that within an assessment framework with a strong focus on data collection, comparison and diagnosis in the service of performativity, schools may become subjected to a 'relentless and inescapable' scrutiny (ibid:155) taking place outside of their sphere of control. A process of increasing sophistication will likely lead to the development of large 'data warehouses', or the proliferation of public/private initiatives to find ways to increase efficiencies. Through these initiatives schools may be seduced by the promise of costs savings and by the powerful tools to monitor and improve performance, but may also be relegated to being 'end users' of complex systems and procedures, in which deceptively simple interfaces hide the problematic data manipulations performed 'under the hood' on remote servers.

c) As data-hungry digital media become pervasive and ubiquitous, beliefs associated with privacy and the ownership of personal information need to be revised to meet the demands of the changing socio-economic landscape. Commentators have suggested that digital media have now become fundamental tools in dynamics of social interaction, personal identity and network building. As these tools penetrate their users' lives, not only do the mechanisms on which they rely tend to become invisible and taken for granted, they also overtly or covertly require a more fluid and negotiable attitude towards valuable personal information. It is no secret that there are significant interests

surrounding the commercial uses of such information, and as a representative of the US Consumer Electronics Association observed: "The mining of personal data is here to stay; there is just too much money at stake to imagine otherwise" (quoted in Shiels, 2010). In response to this seemingly unavoidable economic necessity, corporate actors are actively advocating the commoditisation of personal data, whereby consumers are expected to embrace the opportunities that are currently arising by authorising the use of their information and carrying out 'advantageous' business deals (Boothe et al, 2010). As more critically minded commentators have observed, there are a number of issues likely to arise from this exchange model, where the promise of ill-defined benefits can obscure the very real threats associated with the loss and the misuse of personal data (Debatin et al, 2009; Acquisti and Gross, 2006; Jagatic et al, 2005;). For educational institutions, this may translate in unreflective and instrumentalist forms of behaviour, whereby the promised gains in terms of efficiency and impact on performance conceal the trade-offs of treating student data as if they were removed from the socio-cultural contexts in which they originate.

The challenges ahead

Moving on from the assumptions described in the previous section, I would like to suggest now that powerful techniques to manipulate data can be easily co-opted to serve the restrictive frameworks of competitive, hyper-controlling, managerial accountability that characterise current cultures of summative assessment in many countries. In fact, recent technological developments may work against the inclusion of more sophisticated forms of evidence, such as those that assume constructivist and collaborative epistemologies, since the emphasis on machine-readable information tends to cause overreliance on quantifiable data (Hildebrandt, 2010). As Theodore Porter reasoned back in 1995: "Quantitative technologies to investigate social and economic life work best if the world they aim to describe can be remade in their image (...) quantification is simultaneously a means of planning and of prediction" (Porter, 1995: 43).

As such, decontextualized analysis of student data, and the powerful performativity arguments that underpin them, may subvert concerns for social equity and justice. Computer-generated predictions could be used to rationalize and/or conceal the 'weeding out' of students at risk of underperforming, or – on the other hand - to create implicit barriers to access for specific groups. Although such consequences are by no means linked to accountability per se, they have been observed when strong competition has pushed educational institutions to pursue homogeneous social milieus, therefore exacerbating differences on the basis of class and race (Anushek & Raymond, 2005). Even the often genuine preference of educators for progressive pedagogies and collaborative, dialogic technologies, does not seem viable in the current accountability regimes; unless said pedagogies and tools present opportunities for data mining, analysis and comparison.

A clarification is due at this point: there are no intrinsic, 'essential' qualities to data which, in absolute terms, will bring about troubling consequences. There are in fact positive aspects associated with models for data analysis that afford more granular forms of evaluations. For example, there is evidence indicating that students may benefit from a more adaptive and fast remedial action, which can obviously be facilitated by the computer-assisted analysis of achievement and behavioural data (Hepplestone et al, 2011).This caveat notwithstanding, there remains a compelling reason to identify more responsible and equitable strategies to deal with the issues described thus far. **It is proposed here that one of such strategies should be a research and policy agenda that aims to encourage 'data literacy' across schools and local communities**. The components of this type of literacy will need to be defined and rigorously evaluated, but will involve elements of digital literacy, citizenship and varying degrees of methodological knowledge, which together arguably represent a crucial '21st century skill' for a more active and informed participation not only in education, but in many other domains increasingly characterised by pervasive data collection and manipulation.   As assessments and ways to evaluate, measure and categorise people become ever more pervasive and 'high-stakes' – with similar principles and technologies at work in education and in several other domains - can we teach young people, their parents and educators how to read these principles and technologies in order to ask questions about the models and assumptions that underpin them?

Responding the challenges: a research agenda

In this final section, I would like to argue that the global trends in assessment – and the related technological developments described so far, may contribute to the encroachment of education systems around increasingly restrictive and punishing forms of accountability, whereby alternative forms of evidence are impossible to consider. Not only because they cannot be readily quantified and included in the machine-readable models, but most importantly because educators and learners may become ill-equipped to recognise them, even in purely conceptual terms, as the computer-generated predictions and diagnoses have the potential to colonise all aspects of the educational discourse. In response to these issues, it is proposed here that researchers and technologists should begin to engage more critically with the socio-economic and cultural dynamics that underpin the design of educational assessments. This engagement will then inform a more critical agenda for research and policy.

Ideally, such a research effort will set forth from the development of a theoretically informed critique of the socio-economic dynamics that 'use' assessment to pursue an agenda of globalisation and technologisation. It will then move on to explore notions of assessment literacy and data literacy, investigating the ability, the language and the culturally acquired predispositions that help individuals, groups and possibly whole institutions develop a whole range of empowering, critical and informed responses when faced with pervasive and 'high-stakes' forms of evaluation. The ultimate aim would not be to inform assessments per se but to increase our understanding of the impact that assessments have on individuals and society beyond their intended ones; and to suggest appropriate responses that can minimize inequalities and potential abuses.

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