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Bourdieu's Theory of Practise and the Impact of

Educational Technology Policy

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Abstract

Educational technology has long been seen as a way of transforming education, particularly in the area of inequality. Inequality in education often pertains to access and quality of access but it can also be interpreted as inequality of methodology. Technology allows for a multitude of different and advanced approaches but consistently these approaches are confined to the current structures modelled on 19th Century industrialism with little reimagined (Robinson, 2010). Ultimately what can be seen is that the limiting factor is outlined in Bourdieu's (1977) Theory of Practise. That is, the power structures that are regenerating an enduring habitus are maintained through mechanisms of symbolic violence. This social reproduction is facilitated by agents who engage in the transactions of various forms of capital in order to maintain a position in a so-called field, thus maintaining a position of power and contributing to the reproduction of the inculcated habitus. Educational technology policy makers must consider the elements of this habitus, and their strength, before effectively implementing policy that will enable true equality in education.

Introduction

Technology in education has long been seen as a means of reforming education. In 1985 Lepper stated, "it seems hard to believe that this new technology will not eventually force us to reconsider the structure of our basic elementary school curriculum" (p.15). In 1993 it was predicted we would see a "world of highly individualized learning, where students will learn and pay for their education through computer-supplied educational materials that are tailored to the students' needs and interests" (Perelem, 1993 as cited in Kent and McNergney, 1999, p.21). What prevails is a curriculum modelled on 19th Century industrialism where relatively little has been reimagined (Robinson, 2010) and the same recommendations are repeatedly prescribed (Culp et al, 2005). While there is little doubt that, in the information age, digital technology can support and enhance the curriculum, it has been said that technology in education is an "an important means of redressing inequity" (Claremont, Renner and van der Lubbe, 2007, p.5). The question remains whether it can indeed act as the 'the great leveller'.

Principally technology access allows for greater participation in formal and informal education. The advent of the computer and the internet has provided wider access to resources and information for those who previously had little or no access and this is seen to be having a positive influence on education in emerging and developing nations (PEW Research Center, 2015). Beyond access, technology in education is able to provide opportunities for learning that were previously only available to individuals with access to well resourced institutions. It is understood that inequality is relative and Wyatt (2000) states "differences and diversity do not imply inequality" (p.5) and continues to suggest, "difference and diversity are, however, prerequisites for inequality where lack of goods, service or attributes confers and actual and/or perceived disadvantage" (p. 5)

It is through the introduction of technology that educational policy makers are attempting to reconcile the disparity of 'goods, services and attributes' between institutions; thus reducing the opportunity for perceived, or actual disadvantages. Ultimately, what has emerged are recommendations aimed to integrate technology into current structures in order to improve and equalize the learning experience of students, through the increase of quality in teaching and learning methodologies (Goddard, 2002) and thus providing equal opportunities with broadly equal resources available. This is particularly evident in catering to students with special educational needs (Hasselbring and Glaser, 2000) and to those with preferred learning styles that do favour the recognised forms of assessment, namely traditional examinations (Grasha and Yangarber-Hicks, 2000).

There are few that would argue against technology use to enhance the curriculum, however, it should be considered that some suggest "ICT, as a necessary resource in the modern information society, might become a factor contributing to educational inequality and divide between young people" (Koivusilta, Lintonen and Rimpelä, 2007, p.102) and despite optimism in technology's ability to remove inequality in education some researchers suggest "technology and equity are not inevitable partners" (Noeth and Volkov, 2004). Once we move beyond the traditional elements of digital divide research it can be seen that unless the power relations in education technology policy are accounted for, progresses in remedying inequality in education will be restricted. Stated simply, by embedding educational technology policy into current structures that are restrained by societal expectations and underlying power relations, "there is a distinct risk that schools' use of technology will simply reinforce existing inequalities" (Buckingham, 2007, p. 72). This paper employs Bourdieu's (1977) Theory of Practise as a theoretical framework for investigating the power relations that encompass elements of educational technology policy that are failing to address inequality.

Bourdieu's Theory of Practise

Bourdieu's Theory of Practise was first published in 1972 and over the course of the following five years it was developed and translated into English (Bourdieu, 1977). His works introduce the idea of the 'habitus' as a larger organisational structure that reconciles the dualism of social class structures with agency. Central to Bourdieu's theory is the social space, or field, in which an individual and their habitus acts, the field and habitus are said to be relational and non-dichotomous (Bourdieu and Thompson 1991). Finally, Bourdieu's Theory of Practise describes how agents engage in the transaction of various forms of capital in order to maximise their position within a field. In considering the power relations embedded into education and determining whether educational technology is able to succeed in dissolving the power relations to produce a more equitable education system, Bourdieu's ideas of field, habitus and capital are essential. Through considering these concepts, in terms of an enduring education system, we can better understand the acceptance of existing models and why, through social reproduction, we continue to reinforce inequality.

Field

Agents occupy certain social structures, Bourdieu refers to these social structures as fields (Bourdieu 1989). Bourdieu considers fields to be relatively autonomous (Verter 2003), and fields in education can be reduced to or overlapped with a number of other fields, resulting in fields with a "well-nigh inexhaustible" number of possibilities for distinction (Bourdieu 1984, p.226). "A field consists of a set of objective, historical relations between positions anchored in certain forms of power (or capital)" (Bourdieu and Wacquant 1992, p.16). Each field is a differentiated and structured space of objective relations between positions held by agents or institutions (Gomez 2007), and these "social structures are not the aggregate result of conscious rational calculation" (Swartz 1997, p.133). Within the fields there are certain forms of autonomy and it is this autonomy that allows a field to exist in a different state to a neighbouring field.

"Agents are defined by their relational position within the field's distribution of capital (resources conferring power or status) and from which they derive properties irreducible to intrinsic characteristics of the agents themselves" (Maton 2005, p689). Maton (2005) goes on to say that it has been seen that agents in the field of education are capable of maintaining the status quo so as we consider fields in education it is important to realise the importance attached to autonomy of any given field, as Swartz states (1997) "as cultural fields grow in autonomy from political and economic power they gain in symbolic power" (p.127).

Habitus

"The relationship between habitus and field is a two-way relationship" (Dogaru 2008, p.11), as such when agents occupy a field they are influenced by the field and the field by the agent's habitus. "Habitus consists of a set of historical relations 'deposited' within individual bodies in the form of mental and corporeal schemata of perception, appreciation, and action" (Bourdieu and Wacquant 1992, p.16). In addition to the habitus are 'the doxa' which are a set of common assumptions and understandings that develop within a field over time (Bourdieu 1987).

If "habitus is the analytic link that connects individual behavior and social structure" (Vaughan 2008) then with educational technology we are looking at a relatively young social structure. The doxa within this emerging field have yet to develop and with that there has yet to be an evolution of attached symbolic capital. As agents impart their own habitus on the field, the field of educational technology may just be a reflection of the doxa developed in line with traditional educational systems and functions. As I explore educational technology within Bourdieu's framework it may be that contrary to the beliefs of educational technology this may just be another factor contributing to social reproduction.

Capital

As agents arrive into a field, they bring with them their habitus, a form of embodied capital as a result of 'self-improvement' (Kapitzke 2015). This is defined by an agent's history and their route into the field. The field is highly competitive place where agents exchange and transform various

amounts of capital to build and exert power from their own position in the field. Central to this is the acquisition of capital. Capital, according to Bourdieu (1984), comes in four forms: economic, social, cultural and symbolic. Economic capital is not always the overriding form of capital, though it has a large part to play. Hamre states "the social capital of others influences their attitudes and decision to adopt a new technology" (2008, p.9) and existing social networks will impose the established doxa and influence an agent's behaviour and attitudes towards technology (Murphy and Chang 2002). Thus it could be seen that the existing and lasting habitus limit even the acquisition of technological capital. It could be that the development of symbolic capital is crucial in terms of successful adoption, what is emerging is a new 'digital' field in which economic, social, cultural and symbolic capital can be wielded. Seale (2013) demonstrated how there is a complicated overlapping of social, cultural and digital capital so as we consider technology policy we should perhaps be considering a digital capital in terms of the four major capitals outlined by Bourdieu.

Social Reproduction

Bourdieu was concerned with social reproduction as a reproduction of the ideals of the dominant culture (Bourdieu and Passeron, 1977). Social reproduction requires a level of symbolic violence, which can be considered as a set of unconscious mechanisms the dominant in society use to reproduce culturally arbitrary values within the dominated. Symbolic violence is legitimised to the extent that the dominated are no longer able to identify any domination and, as Bourdieu and Passeron (1977) state "every power which is able to impose meanings and to impose them as legitimate by concealing the power relations which are the basis of its force, adds its own specifically symbolic force to those power relations" (p.4). Bourdieu and Passeron (1977) highlight education as one mechanism for exercising symbolic violence and suggest education can be "considered as the process through which a cultural arbitrary is historically reproduced through the medium of the production of the habitus productive of practices conforming with that cultural arbitrary" (Bourdieu and Passeron, 1977, p.32). If the use of technology in education was supposed to reform the structures that preserve inequality, we should consider what would become of the habitus and established doxa in the associated fields. In considering educational technology through Bourdieu's Theory of Practise we are contemplating the mechanisms required for a change in culture that can overcome the strength of existing power relations, and particularly the highly valued symbolic capital attached to traditional education.

Policy and Practise

The history of computers in education began in the 1970s (Tatnall and Davey, 2014) and although technology has long been present in education, it was the dawn of the information age that gave rise to a new approach. In the 1980s as computers became more widespread in society, this was reflected in schools and greater interest was shown in policy that increased educational access to computers (Røsvik, 2014, p. 71). Before computers, printing press, radio and television all came with the belief that new technology could change education but it was the advent of computers and digital

technology that gave us the tools to achieve the desired levels of change. Bates (2015) argues "the printing press was important because it enabled the written word to spread to many more people" (p.57) however the Internet and its capabilities provides connections with knowledge in a way that books cannot. With computers, and specifically the Internet, there was expectation that access to vast amounts of free and immediate information would equalise education.

As technology use in society and education grew it was observed that many were benefitting from this new form of objectified cultural capital but others, for reasons cultural or economic, were not. This area of research quickly became known as the digital divide (see Coria et al. 2013; Dibello, 2005; James, 2008). Governments began to embrace technology to address the so-called digital divide, in doing so they have initiated programmes with the apparent aim of supporting citizens at risk of being 'left behind' (Selwyn, 2002). This is important as it is seen that the internet is a key enabler for society to participate in common internet related activities such as employment, health, civic engagement, financial and consumer services health (U.S. Department of Commerce, 2013). Education is a central arena for policy makers seeking to reduce social inequality (Kozma, 2008, Selwyn, 2002) and Bourdieu outlines education is a major mechanism for regenerating the habitus (Bourdieu and Passeron, 1977), thus it is fitting that it has developed as a medium for distributing a new type of cultural arbitrary in the form of technology use and procurement.

Along with the desire to equalise access to technology in society, there has been the drive to 'improve education' through the use of technology which has resulted in myriad recommendations for schools and teachers. Ultimately it can be seen that these recommendations act as a supporting system for 'pedagogic action' and 'pedagogic work'. Bourdieu (1977) uses these terms to describe the imposition of a cultural arbitrary by an arbitrary power essentially referring to the actions of education as symbolic violence. This reproduction of the established doxa and habitus through acquisition of objectified cultural capital combined with the research into the digital divide provides a good platform for educational technology policy exploration from a Bourdieusian perspective.

Digital Divide

The acquisition of technological items, what Bourdieu (1986) refers to as "machines" (p.20), is classified as objectified cultural capital, and it has been said that "access to information and communications is a key factor in the socioeconomic development of society" (Armenta et al. 2012, p.346). Just as has been seen with electricity or the automobile before it, the importance of a commodity does not preclude inequality. Schools are a microcosm of society hence the introduction of digital technology, and particularly the internet, ushered in a new age of inequality in these fields too, and the history of the disparity in those schools which are slow to adapt has frequently been reported (Lecomber, 2014; National Center for Educational Statistics (NCES) 2001; Warschauer,

2003) however it is possible to argue that even if technology access were equal the power relations in society will maintain the subtle social stratifications in existence.

In 2009, OFCOM (UK) reported "30 per cent of people stated that the Internet was too expensive or that they didn't have the knowledge or skills to use it" (p.3). From this statement it would appear apparent that economic capital is the overriding factor, but as Bourdieu (1986) says "it is in fact impossible to account for the structure and functioning of the social world unless one reintroduces capital in all its forms and not solely in the one form recognized by economic theory" (p.15). That is, it is the attachment of importance or recognition of the enabling properties of access to technology that will motivate the agent to prioritise the acquisition of technology as a means of improving their position in a field. That said, socio-economic status continues to be highlighted as a significant barrier to access to technology. It was reported, "forty-nine percent of households making less than $25,000 used the internet at home, compared to 96 percent of households making $100,000 or more" (U.S. Department of Commerce, 2014, p.15). So while it would be easy to identify financial circumstances as a barrier to technology use and appropriation it is important to recognise that different patterns in technology acquisition and use are being reported, in different demographic groups (NCES, 2006). It is through this additional cultural and social capital that attitudes are formed, and technology (in its different forms) are recognised.

This barrier to technology acquisition induced by socioeconomic status and the reduced cultural capital associated with technology within an agent has been recognised but this position is self-perpetuating. Cultural capital is required to recognise the importance of acquisition but economic capital is required to acquire the object, so without the cultural capital one cannot experience the 'need' or importance of acquiring cultural capital which in turn may limit the economic capital of an agent. The strength of this reproduction is slowly being overcome and access to technology can be seen to be improving (Office for National Statistics, 2015), but it is not yet ubiquitous. It is for this reason that governments have been recommended to continue using schools as a means for ensuring equal opportunities for technology access (Becker, 2000). This well-intentioned policy shift allows for greater access and technology experiences, and hence cultural capital acquisition. What has not been accounted for is the shift in methodology, the rapid adoption of technology in schools has allowed for a number of different models for the inclusion of technology into current teaching practises but they are restricted to the traditional structures of our enduring education system. **That is to say, regardless of the opportunities technology affords a student must still pass through the process of education that is biased towards the habitus of the dominant.** It can be seen that access to technology is insufficient, if the aim is to break down the inequalities of education, greater adoption of technology is in fact only reinforcing current power relations in educational structures.

Access in Schools

According to the European Commission (2013) over 90% of students have access to the Internet and the NCES (2001) claim that 98% of schools have access to the Internet. Additionally the

NCES (2001) has stated "unlike in previous years, there were virtually no differences in school access to the internet by [public] school characteristics (e.g., poverty level and metropolitan status)" (p.1). Accessing the internet requires a device and there has long been a push to increase the number of computers in schools (Lecomber, 2014; NCES 2001), the European Commission (2013) determined "there are now between three and seven students per computer on average in the EU" and in the US the national ratio of students to computers has dropped from 125:1 in 1983 to 4:1 in 2002 (Russell, Bebell, & Higgins, 2004) but had not yet become truly ubiquitous in 2010 (Bebell and Kay, 2010). At first glance, the near 'ubiquitous' access and huge investment in schools (Office of Science and Technology Policy & The National Economic Council [US], 2009) paint a positive picture for the state of equal technology access but there is still concern about the digital divide.

Schools are transitioning to technology integration and in so are identifying the best patterns of use for educational technology but concerns over usage trends remain and the digital divide has transitioned from a dichotomy of haves and have-nots into a complex hierarchy of access and amongst those with access (Toulouse, 1997). Warschauer (2004) identified two schools with similar processes for reform, including the use of technology but he suggested, "underlying differences in resources and expectations served to reinforce patterns by which the two schools channel students into different social futures". Additionally Wenglinsky (1998) "found that the greatest inequities did not lie in how often computers were used, but in how they were used" (p.3), specifically highlighting different expectations for different students. Wenglinsky (1998) states:

> "For eighth-graders only, Black students were less likely to be exposed to higher order uses of computers and more likely to be exposed to lower order uses than White students. Similarly, poor, urban, and rural students were less likely to be exposed to higher-order uses than non-poor and suburban students" (p.3).

In these cases students are being exposed to different expectations and it is through this that a slightly different style and form of cultural capital is being transferred. Students with the right know-how coupled with the right dispositions are able to take full advantage of the capital afforded to them. But by altering the school experience means a slightly different habitus is being deposited in different students which will impact a student's final destination in their fields beyond education, thus contributing to inequality but additionally reinforcing the stronger position of those with the dominant aspects capital.

Beyond school, it has been said that "high socioeconomic families may not only have the economic resources for acquiring computers, but may also create a particular cultural environment for their use" (Koivusilta, Lintonen, and Rimpelä, 2007). In 2003 a report on computer and Internet use by students' highlighted that "private school students are more likely than public school students to use computers at home" (NCES, 2006, p.4). Becker (2000) found that students of low socioeconomic

status (SES) with computer access at home were less likely to access which would invariably impact both direct academic progress and subtle acquisition of cultural capital associated with owning and using a computer with internet access. As schools rely more and more on technology this is clearly going exacerbate the inequality amongst students, simply stated "as schools put emphasis on technology use, students without Wi-Fi at home could be at a disadvantage" (Kasperkevic, 2014). This is further compounded by the fact that it has been identified that "there is no active, formal connection being made between information technology use at home and school" (Sutherland-Smith, Snyder and Angus, 2003).

As the education community continues to build policy focused on building access to technology it should certainly be considered the method in which the cultural capital is being appropriated, as Bourdieu (1986) states:

> "To possess the machines, he only needs economic capital; to appropriate them and use them in accordance with their specific purpose (defined by the cultural capital, of scientific or technical type, incorporated in them), he must have access to embodied cultural capital, either in person or by proxy" (p.20)

Thus, if the Internet does become truly ubiquitous, we should be considering the underlying issues in social and educational inequality. The biggest innovation in technology is the access to potentially unlimited information but as agents experience differing the different approaches they will develop a distinct habitus defined by these prior perceptions, appreciations, and actions (Bourdieu and Wacquant, 1992, p.16), so as Selwyn (2002) states "the danger is that by focusing solely on issues of basic access the government are overlooking the quality of that access and, it follows, the quality of access to information and services once [agents become] experienced on-line" (p.10).

An Enduring Education System

It is easy to see why governments and policy makers focus on access to technology, as this becomes a highly visible achievement and arguably without access one cannot consider other underlying aspects of inequality relating to technology adoption. When the quality of access is analysed in current educational systems there is a consistent outcome, what is apparent in a review of a number policy documents is there is a "widening gap between the promise and potential of technology and the ways in which technology actually gains traction in school settings" (Culp et al, 2005, p302). Culp et al (2005) conducted an analysis of U.S. research in educational technology policy implementation and highlighted six policy recommendations "that have remained highly consistent over time, and a seventh that has emerged as a result of the growth of telecommunications technologies" (p.286). The recommendations were:

1. "Improve access, connectivity, and requisite infrastructure;
2. Create more high-quality content and software;

3. Provide more sustained, high-quality professional development and overall support for teachers seeking to innovate and grow in this domain;

4. Increase funding from multiple sources for a range of relevant activities;

5. Define and promote the roles of multiple stakeholders, including the public and private sectors;

6. Increase and diversify research, evaluation, and assessment; and

7. Review, revise, and update regulations and policy that affect in-school use of technology, particularly regarding privacy and security." (pp. 286-287)

Culp state these recommendations "remain highly consistent over time" (Culp et al., 2005, p.286) despite the potential for digital technology to radically reform education. There has been an acceptance that technology should supplement and support current structures and Koivusilta et al (2007) suggest that "encouraging children to use computers for educational purposes would represent a form of transmission of upper- and middle-class values, so-called cultural capital, which is a major factor in educational success" (pp. 101-102). It is this unconscious submission to the dominant structures that Bourdieu refers to as symbolic violence, and this forms the basis for the strength of the current education system to replicate and inculcate a habitus. This paper does not seek to discount the inclusion of technology in education, but it does seek to explore the underlying Bourdieusian theoretical principles that may be limiting the impact of educational technology policy in education.

It is school action "which reproduces the dominant culture contributing thereby to the reproduction of the structure of the power relations within a social formation in which the dominant system of education tends to secure a monopoly of legitimate symbolic violence" (Bourdieu and Passeron, 1977, p.6). A key element of the resistance to educational reform and adoption of technology within the current constructs of our educational system is the strength of social reproduction. It is in the habitus of the empowered that we are able retransmit a set of core values, and the strength of a habitus is testament to the dominant who have been able legitimise the symbolic violence that enables reproduction of the associated values. Bourdieu identified the actualisation of symbolic violence through a series of mechanisms identified as pedagogic action, pedagogic authority and pedagogic work hence any consideration of an education system that is resisting change in order to reproduce a habitus should be in done in these terms. In so doing we can continue to give thought to the ideas of capital, habitus and field.

Pedagogic Action

Pedagogic Action is "the imposition of a cultural arbitrary by an arbitrary power" (Bourdieu and Passeron, 1977, p.5) and is not limited to teachers but to anyone with legitimised power to inculcate a cultural arbitrary. Through the examination of teachers attitudes and approaches to including technology into their pedagogic action we might gain insight into the reasons for the

adoption of technology into the current, and dominant, education system opposed to a radical reformation of attitudes and approaches.

Teacher acceptance of technology has long been seen as the greatest challenge to technology acceptance in education (Ackerman, 1982), and if a teacher does not favour the use of digital technologies then there is no transmission of capital or inculcation of an associated habitus. Where technology has been successful it has been predominantly done so within the established doxa, that is to say that technology supports the established doxa. Since the 1980s technology acceptance models (TAMs), have been developing a means for investigating technology acceptance. Davis (1989) built upon the hypothesis that the variables of perceived ease of use and perceived usefulness were determinants in user acceptance of computers. Davis found that

> "from a causal perspective, the regression results suggest that ease of use may be an antecedent to usefulness, rather than a parallel, direct determinant of usage" (p.334).

This simply highlights that if technologies were embraced it would be done so in the terms of the pedagogic actions that are familiar. Ultimately 'ease of use' and 'usefulness' are only determined within the boundaries of familiar pedagogic action. This research on TAMs has since been adapted into the Unified Theory of Acceptance and Use of Technology (UTAUT) shown in figure 1, which is a consolidation of eight models of user technology acceptance. The UTAUT can be summarised by

- three direct determinants in intention to use: performance expectancy, effort expectancy and social influence; and
- two direct determinants of usage behaviour: intention (and thus it's contributing factors) and facilitating conditions (Venkatesh et al. 2003).
- Age and experience, amongst other factors were confirmed as significant moderators of acceptance and use within the UTAUT.
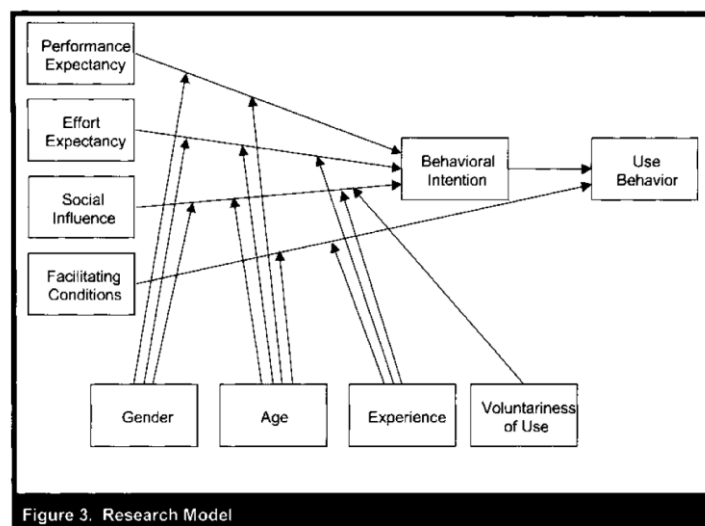

Figure 1: The UTAUT Model (Venkatesh et al, 2003)

The direct determinants in intention to use technology, again, relate to expectancy to fit current boundaries of pedagogic action, but additionally there is the element of social influence. It is in this sense that we can consider technology as an element of one of Bourdieu's elementary capitals, which is social capital. It would appear that in order for teachers to intend to embrace technology into their pedagogic action (even within current boundaries) the influence of social capital, as with the discussed impact of economic capital, is of great importance. It is with social capital that one is able to aggregate all forms of capital and disperse and reinforce the habitus. Herein lies the problem since social capital is required to influence the acquisition of technological cultural capital. However the symbolic capital attached to this pedagogic action may not yet be present in critical amounts for the dominant to desire it, but as a the character traits of those involved in educational technology policy creation changes, we may see a shift symbolic capital.

Those born after 1982 are known as millennials (Howe and Strauss, 2000) and this generation brings with them a number of widely acknowledge traits that include the tendency to multitask, the desire to collaborate and importantly millennials are considered comfortable with technology (Sweeney, 2006). Immediately it can be seen that there is a greater association with social capital and technology itself. Additionally this 'digitally native' generation may have different perceptions on ease of use that has been seen to be a direct determinant in intention to use technology (Venkatesh et al. 2003). As Millennials enter education, their values may be transmitted into the institution and while this may be cause tension with those comfortable in the established doxa (Murray, 2011), it has potential to 'shake-up' approaches in education.

In November 2012, United Kingdom's Department for Education (2013), found that "23.6 percent of the Full Time Equivalent (FTE) full and part-time regular teachers were aged under 30" and as such part of this generation of Millennials. The US noted that 22% of teachers were less than 30 in 2011 (National Center for Education Information, 2011) and in Australia, the New South Wales Government reported that in 2014 9.5% of the teaching workforce were under 30 (NSW Department of Education and Communities, 2014), this highlights that the millennial generation are a notable minority in education but as the youngest of the Millennial generation are about to enter the teaching workforce the percentage of digitally native teachers can only increase. The next generation's name and traits are still to receive significant research attention but one trait is clear, they will be increasingly technologically comfortable, even if their digital habits will have changed.

Kapitzke (2015) states "Bourdieu argues, the acquisition of cultural capital in the form of technological competence takes time" (p.58) and this is something that no conscious decisions or actions can immediately change. While it may seem that the advent of the millennials (and subsequent generation) may help to close the digital divide it will depend on how the technology is used. Only time will tell how the proportion of Millennials and successive generations changes and impacts the general attitude. In the meantime a number of theorists have identified taken to identifying the

mechanisms by which existing teachers accept and resist technology. The question remains whether this will also apply to the Millennials.

Lortie (1975) developed the theory of the "apprenticeship of observation," in which he hypothesised that teachers' attitudes are formed through their own schooling experiences, to this Bourdieu (1977) declares:

> "an ES [educational system] where the agents responsible for inculcation possess pedagogic principles only in implicit form, having acquired them unconsciously through prolonged frequentation of masters who had themselves mastered them only in practical form: 'People say that the young teacher will be guided by his memories of his life at the lycee and as a student. Don't they see that this is to decree the perpetuity of routine? Tomorrow's teacher can only repeat the gestures of his teacher of yesterday, and since the latter was merely imitating his own teacher, it is not clear how any novelty can find its way into this unbroken chain of self-reproducing models' (Durkheim)" (p.61).

Since teachers are rooted to the values of the generation of teachers before them, this could explain why there is slow progress in terms of technology implementation to significantly change subject content. Furthermore it raises the interesting question as to whether, even with the increase number of technologically familiar agents, the Millennials, will we be able to overcome this perpetual inculcation of the dominant habitus? It may just remain that through pedagogic action and adherence to the recommendations highlighted by Culp et al (2005) teachers remain agents for social reproduction, reinforcing and further legitimising the existing power structures.

Pedagogic Work

Bourdieu (1977) suggests that pedagogic action requires pedagogic work and that pedagogic work is "the product of internalization of the principles of a cultural arbitrary capable of perpetuating itself after PA [pedagogic action] has ceased and thereby of perpetuating in practices the principles of the internalized arbitrary" (p.31). In an education system this could refer to the content of the curriculum but also to the attitudes and values implicitly instilled, such as the symbolic importance attached to those able to 'achieve' in the formal and recognised forms of assessment. It is these recognised, and valorised, forms of assessment in disciplines with greater symbolic capital that upholds the ideals of the cultural arbitrary and providing barriers to many who under different circumstances may be equally capable. This academic system has endured generations of agents and as such has crafted a durable habitus, and this habitus holds the educational system in esteem. The desire to acquire this symbolic capital remains through multiple generations, but Bourdieu would suggest that in order to be successful one must also acquire the cultural capital. Additionally, pedagogic work can be seen to culminate in summative examinations, so even if technology was to permeate education thoroughly, what advantage is there for those without the previous cultural capital?

A representation of the technology and content dualism can be seen in the introduction of calculators which were widely available by 1975 but it took another 10 years for exam boards to make calculators necessary for exams (Banks, 2011) and it remains today some authorities choose limit the use of calculators in assessments. This slow change in mind-set represents the strength of the reproduction of attitudes in education, and the reluctance to allow technology to replace repetitive calculation in mathematics (Levasseur, 2003). Technology allows us to change the content of our curricula (Prensky, 2014) and further some teachers have been able to transform their teaching, "allowing students, regardless of socioeconomic background, to utilize the myriad of sources available on the Net" (Van Hover et al., 2004, p.108). Unless it is possible to overcome this 'durable habitus' that currently dominates education we may not be able to truly take advantage of the equality provided by unlimited information available via the Internet.

In limiting access to information we are not only limiting knowledge acquisition but we are limiting the access to a new type of cultural capital. Chadwick says "it is true that the computer offers an almost endless amount of information to student, but what good is all that information if they cannot give it meaning, if they do not have the required background, the structure, and the judgement required to interpret and apply the information?" (Chadwick, 2002, p.36). Different schools have access to differing levels of technology, different levels of curricular freedom and teachers with different attitudes towards technology, allowing for a different habitus is being formed. This can be seen particularly in the gap public schools and wealthier independent schools who invest heavily in ICT and thus are able to "enhance their attractiveness and value on the educational market". (Thunman and Persson, 2013, p.166). It has also been suggested that independent schools could pilot instructional innovation with technology (Ark, 2014), further legitimising a two-tier system, where different schools have different policies and those different circumstance for learning. Ultimately many educational systems require demonstration of understanding in an examination without the use of technology, but those with regular access are not only gaining the symbolic capital attached to credentials but additionally cultural capital, and it is in the cultural capital acquired that we can assess the quality of access to technology over simply access. This reproduction of inequality demonstrates that where technology is embedded into the current system, under different conditions, it facilitates social stratification in maintaining the current power relations.

Pedagogic Authority

Pedagogic action and pedagogic content have been discussed as limited by individual factors but we should also consider the institutional constraints. It is the institution and its relative autonomy that determines educational policy, and thus as Bourdieu (1977) suggests pedagogic action "implies, as a social condition of its exercise, pedagogic authority" (p.31). In accepting a cultural arbitrary we bestow upon an educational system, and specifically the teacher, a "recognized authority, because he is the agent of a moral body greater than himself" (p.63). It is this body greater than the individual that provides limitations, and even the independent are tied to a set of value inculcated within through a

perception of required content. In deferral to a dominant body we are awaiting a set of guiding principles that allows teachers to somewhat rely on technology, instead what we are seeing are recommendations of how technology can be incorporated into learning skills (Culp et al, 2005).

Different authorities produce different policies. Some schools tied to traditional examinations might report improved results (Beland and Murphy, 2015) by banning mobile phones, but other schools have consistently identified positive benefits [of digital technology] on learning (Higgins, Xiao and Katsipataki, 2012). It is in these subtle institutional differences that we, again, see a difference in transmission of cultural arbitrary - but it is in the pedagogic authority that we rely to develop a set of policies to promote equality in education. As institutions seek autonomy (seen particularly important for universities) the effect of pedagogic authority is further fragmented, and the impact of differing policies diversified. It is in this diversification that we are producing stratification, particularly as we seek to embed the cultural capital required to profit from the capabilities of technology. Bourdieu (1986) states "this embodied capital, external wealth converted into an integral part of the person, into a habitus, cannot be transmitted instantaneously (unlike money, property rights, or even titles of nobility) by gift or bequest, purchase or exchange" (p.18), leading to the conclusion that a reformation of education, that provides equality through overcoming the existing power structures, also cannot be achieved instantaneously. Furthermore as competing institutions exercise different levels of autonomy it may transpire that stratification of institutions remains. Consequently, this could offer the opportunity for authorities with independence to respond to perceived market needs allowing those with the necessary capital to choose an educational system that is likely to propel them into a dominant position of society.

An analysis of pedagogic action, work and authority as defined by Bourdieu outlines a number of issues with current technology policy. The aforementioned recommendations highlighted by Culp et al (2005) have been overlaid into existing structures and the strength of the inculcated habitus is such that technology is not able to subdue the attitudes and instilled values held by the educational stakeholders. What is missing is a recommendation that requires stakeholders to question the current structures, and investigate the possibility of breaking down the policies and attitudes that are permitting the current level of inequality. In questioning the status quo we would also need to consider if it is possible to overcome the esteem to which the current system is held.

Online Learning and Symbolic Capital

It was thought that by increasing access to education online, institutions could contribute to reducing inequality. Schools that have adopted technology have done so on the continuum of blended learning, that is somewhere between no technology whatsoever and an entirely online experience. As technology is sufficiently widespread, schools with Internet access for students can no longer be considered and entirely zero technology school. At the other end of the spectrum, some institutions have engaged in online learning to enhance their courses, or to reach a new audience altogether. This is actively being promoted by some recommending bodies (Department of Business, Innovation and

Skills, 2014), but while it may reach a new audience it do so on the terms of the established education system, nonetheless it does show a change in attitude by some providers.

Massive Open Online Courses (MOOCs) are one approach to open and unlimited access for learning using the Internet. This brings about an interesting paradox in that in the spirit of openness equality has been lost and successful completion does not mean recognised credit, it has been said "the line between an online certificate and a degree from any particular institution shall be drawn by the admissions office" Touve (2012). It is the admissions office that remains a barrier as successful admittance invariably requires capital and thus validates Bourdieu's ideas that the educational system maintains the power relations in society, and thus inequality is preserved. Bourdieu (1984) states:

> "When class fractions who previously made little use of the school sys-tem enter the race for academic qualifications, the effect is to force the groups whose reproduction was mainly or exclusively achieved through education to step up their investments so as to maintain the relative scar-city of their qualifications and, consequently, their position in the class structure" (p.133)

Graham (2012) states "it is not hard to imagine a day when a face-to-face education could be a privilege of the elite" (p.B22) while the majority would be educated online, and Waters (2006) highlights how the 'spatial mobility' of the middle-class households allows the middle-class to exercise greater choice in the international market which could drive this split. This could prove instrumental in the response to increased availability of online learning giving access to "class fractions who previously made little use of the school sys-tem" (Bourdieu, 1984, p.133). Ultimately Brown (1995) states we may be "heightening the inherent tension within capitalist democracies between an ideological commitment to the creation of an `open' (if not equal) society and the desire to extend social privileges to family members" (p.29).

Widening access to higher education has been a goal for many governments but relying solely on online learning may not be enough as in some studies show how the rich and tertiary educated are benefiting the most (Doody, 2015; Ostrow, 2013). Further, access to a bricks and mortar school and the ability be on campus can be seen as an advantage (Czerniewicz and Brown, 2009) and the influence of social capital on academic success is known to researchers (Seale, 2015). It may be that technology is not able to able to provide sufficient capital when compared to a physical presence at an educational institution. This begins to show the extent to which importance is placed on the social, cultural and symbolic capital obtained via a physical presence in education, one which may be the ultimate insurmountable hurdle for technology's ability to truly equalise education.

Recommendations

The difficulty in educational reform lies in the legitimised power bestowed upon educational systems. Bourdieu (1977) states,

"the dominated classes have an interest in pushing back the limits of doxa and exposing the arbitrariness of the taken for granted; the dominant classes have an interest in defending the integrity of doxa or, short of this, of establishing in its place the necessarily imperfect substitute, orthodoxy." (p.169)

from this we can hypothesise that a critical mass of dominated is required to push the boundaries of what is acceptable. Educational reform should continue to be sought which at the very least permits the universal, equitable and creative use of the information that technology affords. As digital technology advances, access to new technologies should continue to be supported but under the conditions that permit the unlimited and uninhibited use of information and ideas. It is in this way that technology can provide new opportunities to the otherwise excluded, and technology should not be regarded as silver bullet with the power to provide equality under the constraints of the current system. Policy makers will need to consider the impact of the four types of capital outlined by Bourdieu (1986) before solutions can be found to the abolition of inequality in society through education.

Conclusion

Bourdieu (1977) measures the productivity of the pedagogic work as "the degree to which the habitus it produces is transposable, i.e. capable of generating practices conforming with the principles of the inculcated arbitrary in a greater number of different fields" (p.33) and the strength of the current educational system is apparent. Educational technology has long been seen as a mechanism for innovation however history shows it is always 'just around the corner', Buckingham (2007) summarises this well:

"Computers have been in schools for more than thirty years, and it is possible to trace a history of failed technological innovation in education that dates back almost a century. It seems absurd to maintain - as some do - that the revolution is just around the corner, if only we had *more* computers, if only we could use *this* latest technological innovation, if only *all* teachers could use technology in the way we believe they should…" (p. 1986)

Policy for technology in education is principally concerned with addressing inequity of access, but it also relates to integrating technology into current structures in order to improve and equalize the learning experience of students. Looking beyond the digital divide in terms of a dichotomy of haves and have-nots, and into a complex hierarchy of access and usage patterns amongst those with access we can seen there are a number of key elements embedded into the culture and structures of education that are the limiting equality.

A reproduction of the long-standing culture in the education system is being achieved through symbolic violence, and particularly by three mechanisms, pedagogic action, pedagogic work and pedagogic authority and this is limiting the impact of educational technology on educational reform.

This academic system has endured generations of agents and as such has crafted a durable habitus, and this habitus holds the educational system in esteem, which compounds the structural inequalities. These inequalities are visible in an educational system that has recognised forms of assessment in disciplines with greater symbolic capital. The habitus is continuously reinforced by the current educational system, resulting in a slow process for adopting change enabled by technology.

Online learning and MOOCs are growing in response to the inequity of access in education but as they become more prominent it drives the wealthy middle classes to increase their investment in education to maintain the relative scarcity of their qualifications (Bourdieu, 1984) and as Graham (2012) states "it is not hard to imagine a day when a face-to-face education could be a privilege of the elite". It is in this sense that the strength of the current habitus can be seen, and the resulting social reproduction leads Selwyn (2002) to argue "that we would perhaps do better to see the future as an equally flawed and unglamorous version of the present".

There is no doubt that elements of technology can enhance and support learning but educational technology policies are obscuring deeper structural inequalities (Selwyn, 2002) and for true educational reform that results in equality one must look beyond simply providing access to technology to support education in its current form. We should move toward educational reform that allows technology to support equal access to information and the opportunities this affords. To achieve this an understanding of the strength of the habitus currently being reproduced is needed, and an appreciation of the social, cultural and symbolic capital attached to bricks and mortar schools is required. Ultimately, any reform of inequality in education through the use of technology can only be achieved with consideration for the power structures that are facilitating this reproduction.

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