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Intellectual field or Faith-based Religion: Moving on from the idea of 'digital natives'

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Introduction

For the past decade the general notion of 'digital natives' has attracted considerable attention in both academia and the popular media. While proponents of the idea use a variety of labels, such as 'Net Generation', or 'millenial learners', the claim they make is essentially the same: younger generations have grown up with digital technologies as part of their everyday worlds and so behave and think differently to older generations to whom these technologies have been introduced later in life (Howe & Strauss, 2000; Palfrey & Gasser, 2008; Prensky, 2001; Tapscott, 1998; 2008). This claim has led to the argument that supposedly old-fashioned teachers and outdated education systems are failing to meet the needs of these younger generations of learners (eg., Prensky, 2010; Tapscott, 1999, 2008). This chapter critically examines the idea of 'digital natives' by identifying findings from research that can shed light on questions about young people's aptitude for and interest in digital technologies. We analyze the key features of claims about digital natives and consider

their possible implications for education and educational research. In short, we argue that most claims made about digital natives lack a rigorous and transparent empirical basis and do little to progress educational thinking or policy. It is time, we argue, to move this debate on, not simply to more nuanced versions of the idea, such as 'digital wisdom' (Prensky 2009), but rather beyond the very notions and ways of thinking that underpin claims made about digital natives. Indeed, we suggest that moving on from the grounds of this debate is necessary to provide firmer foundations for educational technology research as a serious intellectual field and avoid becoming akin to a faith-based religion.

Research about Digital Natives

Amongst the host of claims made about young people in relation to technology, the most widespread stem from Prensky's (2001) article in which he describes young people as 'digital natives' who are immersed in the world of digital technology and compares them to older 'digital immigrants' who struggle to adapt to this brave new world. This simple typology has exhibited widespread appeal and been influential in the way arguments over the impact of digital technologies on young people have been shaped (eg., Barnes, Marateo & Ferris, 2007; Brooks-Young, 2006; Gaston, 2006; Gros, 2003; Long, 2005; McHale; 2005; Skiba, 2005). (Here we are discussing the version of Prensky's claims that has influenced debates; we discuss his recent ostensible revisions of these ideas further below). Its appeal appears to lie in apparently commonsense confirmation by casual (and highly selective) observations of the behaviors of young people. However, Prensky's ideas have evoked intense criticism by scholars for their lack of rigor, exemplified by the absence of empirical

evidence in the 2001 article. Nonetheless, his claims have stimulated a body of research that comprehensively dispels many of the sweeping generalizations made by Prensky and others and which has alerted educators and institutions to the diversity of technology practices among what may appear at first glance to be homogenous generational groups. Added to the existing tradition of research concerned with technology adoption inside and outside education (eg., Buckingham, 2007; LaRose, Mastro & Eastin, 2001; Teo; 2009), this work is providing some valuable and often counter-intuitive insights into the potential role of technologies in education.

In discussing the findings of this body of research, it is important to note that we shall focus here on the results of empirical studies that are publicly reported in ways that allow scrutiny of the basis of their claims; that is, the authors provide details of the selection or recruitment of participants, data collected, instruments used, means of analyzing data and how these relate to the conclusions made. For this reason, we do not include some popular non-fiction books on the topic (eg. Palfrey & Gasser, 2008; Tapscott, 2008) because, though they may describe their claims as based on empirical research, they offer insufficient detail of that research to evaluate the veracity of those claims. Thus, where we describe claims as 'unevidenced', we mean they either lack empirical support or at least transparent empirical evidence that can be evaluated by others.

A useful starting point for discussing the body of academic research are studies concerned with young people's access to various technologies. Access to technology in schools has long been of interest to educational technology researchers, as access is the obvious precursor to use (eg., CEO Forum, 1999). Furthermore, because it is

relatively easy to measure with self-report items, many recent surveys have collected this information from school and university students. Such surveys show high levels of access among much of the student population to what would now be considered baseline technologies of desktop/laptop computers, broadband Internet and, in the case of older students, mobile phones (Kennedy et al, 2009; Margaryan & Littlejohn, 2008; Oliver & Goerke, 2007). More expensive, specialized devices have been shown to have lower levels of ownership (Bennett, Maton & Carrington, in press; Maton & Bennett, 2010; Salaway & Caruso, 2008). These results support the notion that technology is highly accessible and therefore *potentially* well-integrated into young people's lives.

An important finding emerging from access studies of school-aged children - which are better at capturing a broad cross-section of the population than studies of university students because of the social profile of the latter - is that socio-economic status is a factor in technology access even in affluent societies (eg. Aslanidou & Menexes, 2008; Eamon, 2004; Facer & Furlong, 2001; Jenkins, 2009; Livingstone & Helsper, 2007; OECD, 2010; Otto et al, 2005). Other studies of the ways access is managed in and outside school settings also highlight the various ways access can be provided or restricted according to the positive or negative values placed on digital technologies as a learning or recreational tool (Downes, 2002; Kerawalla & Crook, 2001; Thrupp, 2008; Youn, 2008). Taken together, these findings call into question the claim that *all* young people have equal access to digital technologies.

Access, however, is not usage. So, to explore technology practices beyond access, some researchers have begun to investigate the prevalence of different technology

uses. The purpose is to develop a more sophisticated understanding of how different types of technology-supported practices feature in young people's lives. Several important themes emerge from these studies. Firstly, some activities are more widespread and more frequent than others. For example, a greater proportion of survey respondents in studies (e.g. Kennedy, et al., 2009; Maton & Bennett, 2010) indicated they use digital technologies for communicating and consuming information than for creative or gaming activities. Studies across age groups also suggest that different types of technology uses are prominent at different developmental stages (Helsper & Eynon, 2010; Kent & Facer, 2004; Livingstone & Helsper, 2007). On the basis of this type of data Green and Hannon (2007) have characterized different ideal typical users ('digital pioneers', 'creative producers', 'everyday communicators' and 'information gatherers'), and Kvavik (2005) has posited that students like to use technologies for convenience, communications and control.

Overall, the findings suggest that rather than an homogenous population of always connected digital natives, young people's technology activities and interests are widely varying, beyond a core set of common activities involving communication and information retrieval. A significant body of research also suggests that factors such as socio-economic status, gender, educational background as well as age influence the extent and type of technology supported activities (Brown & Czerniewicz, 2008; Hargittai & Hinnant, 2008; Helsper & Eynon, 2010; Jones et al, 2010; Kennedy, Wellman & Klemant, 2003; Korupp & Szydlik, 2005; Li & Kirkup, 2007; Selwyn, 2008). Qualitative studies are beginning to provide insights into the reasons for these variations, pointing to differences in opportunity, value, disposition and perceived need across different contexts (eg. Thrupp, 2008; Waycott et al., 2010).

Moving beyond technology use, research is also exploring the notion of ICT-related skills as an indicator of whether young people fit the image of tech-savvy digital natives. Again, research findings challenge this claim, suggesting that while some individuals may be skilled across a range of technologies, many are adept with only a limited set of common technology skills (Margaryan & Littlejohn, 2009; Salaway & Caruso, 2008). Furthermore, studies highlight disparities among young people in proficiency with digital technologies due to socio-economic background, location, school computer use and home computer use (eg., Ainley et al, 2010). Research focusing on what seem to be highly developed skills, such as information seeking, go further to demonstrate the dangers of assuming that everyday skills are a sufficient basis for making about educational skills. For example, many young people may have the ability to find information using digital technology but lack the information literacy skills to make effective decisions about the information sources they find (Coombes, 2009; Singh, Mallan & Giardina, 2008). Considered together, these studies are a further reminder of the diversity of young people's technology skills and helps move us away from the unhelpful stereotype of the cyber-kid that casts young people as natural and always successful computers users (Selwyn, 2003).

In summary, it is clear that the claim that young people are digital natives has little or no basis in empirical evidence and that blanket statements about generational differences, however nuanced, provide little if any insight into current or future educational needs (cf. Bennett *et al*, 2008; Bennett & Maton, in press). Instead, there exists a range of access, use and skills and it is this diversity that may pose far more significant challenges to educational institutions and systems than a proclaimed wave

of homogenous ‘digital natives’. It is evident that we need to develop a much better understanding of young people’s technology use and experiences if we are to effectively respond to their needs, and unevidenced claims do not add to that understanding. In order to help create the conditions for that understanding, we now consider how such claims have become so widely cited despite their lack of an empirical basis, and then explore the implications of the nature of the debate for education and educational research.

The Nature of the Debate

The clear disparity between the confidence with which claims about a new generation of ‘digital native’ students have been made and the lack of empirical evidence to support such claims raises the question of why they have gained such currency. Why have arguments based on a series of questionable assumptions and leaps of logic become so widely disseminated? There are, of course, vested interests at play in the dissemination of claims. Commentators and academics are eager to raise their academic and media profiles, consultants and technology vendors wish to promote their services and products, and educational administrators desire easy, quick and simply understood policy ideas. Claims made about ‘digital natives’ also fit the profile of what, in another context, Pearson (1983) described as ‘respectable fears’ - where older generations view the activities of the young as new, fast-changing and undermining the status quo - making them attractive to the popular media. There are a host of such interests working to portray educational problems and their solutions in terms of technology (Bayne & Ross, 2007; see also Buckingham, 2007 for a more general argument). Here, however, we shall focus on something often overlooked

when discussing the promulgation of ideas (Maton 2000): the form taken by the debate itself.

As we have argued in a previous paper (Bennett, Maton & Kervin, 2008), much of the debate over digital natives can be understood as an academic form of a 'moral panic' (Cohen, 1972). A moral panic is a form of public discourse that arises when a group is portrayed as representing a challenge to accepted norms and values in a society. The concept is widely used in sociology and cultural studies to explain how this public concern gains prominence and momentum far beyond the evidence to support it. The idea originated in Cohen's study of 1960s youth subcultures, which were seen as undermining the social fabric at the time. According to the model, intense media focus, couched in sensationalist language, amplifies the apparent threat posed by a group (such as a youth subculture), prompting calls for authorities to take action. Any action taken or publicly considered, and then the media reporting and debate over this, in turn amplifies the threat in a self-reinforcing cycle as it brings the activities of group into greater public prominence. This 'deviancy amplification spiral' (Cohen, 1972) creates a moral panic about the group until the need for more 'news' sees it replaced by a new focus for concern. Often the focus of previous panics may resurface in a new guise, such as debate over 'illegal immigrants' or 'boat people' returning as concern over 'asylum seekers' or 'economic migrants'. (Similarly, the moral panic over 'digital natives' could be superseded by a moral panic over those lacking 'digital wisdom' if Prensky's latest assertions are given attention).

Many of these features can be found in the digital natives debate. Arguments are couched in dramatic terms, emphasize generational differences, appeal to

commonsense rather than to research evidence, declare an emergency situation, and call for urgent action and fundamental change in order to meet this clear and present danger. For example, Prensky (2001) claims:

> Today's students have not just changed incrementally from those of the past… A really big *discontinuity* has taken place. One might even call it a "singularity" - an event which changes things so fundamentally that there is absolutely no going back. (p.1)

Though in the case of 'digital natives', the notion of a fundamental change requiring urgent action has been primarily promulgated through academic and professional literature rather than the popular media, the effect is similar; it is thus an academic form of a moral panic (see Bennett *et al*, 2008).

We should emphasize that claims about a 'singularity' are themselves anything other than a singularity. Such claims are common in social science. Fundamental social change has been variously described as creating a 'status society', 'service society', 'postindustrial society', 'postmodern society', 'knowledge society', and so on. Indeed, Beniger (1986) lists seventy-five such announcements of fundamental social change for the period 1950-1985. Similarly, successive generations of students have been regularly described as fundamentally dissimilar and ascribed different characteristics - 'babyboomers', 'generation X', 'generation Y', etc. Indeed, moral panics over new students are a recurrent paradigmatic phenomenon in education (Hickox & Moore, 1995; Maton, 2004). During the late nineteenth century, for example, the expansion of formal state education was accompanied by concerns over the entry of middle-class and female students (Lowe, 1987). Similarly, policy debates in higher education during the early 1960s focused on the knowledge, interests and

aptitudes of new working-class students that expansion was expected to bring into universities (Maton, 2004, 2005).

What is problematic about declarations of fundamental change in the digital natives debate, such as Prensky's claim quoted above, is that they embody 'historical amnesia' (Maton & Moore, 2000). That is, they obscure such past examples of claims of generational difference and calls for change in education. They proclaim a rupture or radical break with the past that:

> renders the field unable to address the very claim upon which this phenomenon is based, namely social and intellectual *change*. By erasing the past, social and intellectual change is rendered an article of faith rather than constructed as an object of inquiry. ... it sets the present adrift from the past, which indeed becomes a 'foreign country' – in fact, an *incommensurably* different culture. The old and the young... are held to literally inhabit different worlds. (Maton & Moore, 2000)

Prensky (2001), for example, claims that "digital immigrant instructors... are struggling to teach a population that speaks an entirely new language". This is said to be "obvious to the Digital Natives - school often feels pretty much as if we've brought in a population of heavily accented, unintelligible foreigners to lecture them". Only those suffering from amnesia about the history of education could view such sentiments (even if they were proven to be true, which they have not been) as an entirely new phenomenon. They are the same kind of claims made, for example, about a generation of students immersed in the emerging commercial culture of the late 1950s and early 1960s. In the UK, concern was widespread about the effects of a perceived gap between children's everyday and school lives which meant they were having to "live with a foot in both these worlds" (National Union of Teachers, 1960,

p. 26). When such precedents are erased in the digital natives debate, the apparent 'newness' of the current situation is further amplified and accordingly the apparent threat appears even more powerful.

In similar fashion to the 'deviancy amplification spiral' of moral panics, the debate has also often been characterized by what can be termed a 'certainty-complacency spiral' concerning empirical evidence (Bennett & Maton, in press). Here, belief and commonsense perceptions replace evidence and rigorous research. Rather than being advanced as conjectures to be tested, claims are made without evidential support and then repeated unquestionly as if they were proven facts. Citations (in the form of quotes and referencing) then give the impression of pointing to evidence rather than to unevidenced assertions. Repetitions of the claims made about digital natives thereby iteratively amplify and reinforce the sense of certainty that evidence for this group, its defining characteristics and experiences of education actually exists. Through sheer weight of repetition, the notion that there are digital natives and the argument that education needs to change to accommodate them can thereby come to appear to have bases that a reading of the research literature shows does not exist (Bennett *et al*, 2008). Such complacent, uncritical acceptance of the veracity of claims in turn encourages further certainty, as the number of publications adopting the term grows. So, as the number of articles, conference papers, blogs, or newspaper articles using the term 'digital natives' grows, the more certain and the more complacent those adopting the term can become that it connotes a real phenomenon based on empirical evidence.

This is not to say that everyone using the term reinforces complacency - real research, as illustrated above, has done much to question assumptions underlying the notion of ‘digital natives’. However, the term was disseminated and claims widely repeated before the results of such research were able to bring a calmer and more rational tenor to the debate. This difference between the speed with which unevidenced or insufficiently based claims can be made and the time required for rigorous research and peer-reviewed publication has proven problematic for reasoned discussion. Sensationalized, ungrounded claims can get halfway around the world before research has a chance to gain ethical clearance. In the resulting intellectual vacuum, rational debate is sidelined by the urgency and stridency of calls for change. Those who pause for thought or raise questions can be described as unwilling to face the impending crisis or as reactionaries in denial. This certainty-complacency spiral is thus underpinned by the *doxa* of a field of research - its taken-for-granted assumptions that ‘go without saying’ - and the shared interests of its members (cf. Maton, 2005), such as the centrality of technology for solving contemporary educational problems. Couching this case in terms of fundamental change also privileges those who make the claims:

> To question the break is to be assigned to the other side of the divide and thus have no access to legitimate knowledge of the post-apocalyptic world. Those who cannot see what they see... have by definition nothing to say about it. ... One either ‘gets it’ or one doesn’t. (Maton & Moore, 2000)

We are not suggesting a conscious suppression of skepticism is taking place, in fact the sociological concept of ‘doxa’ highlights the *unconscious*, shared assumptions of social fields of practice. Nor do we claim that everyone involved in the debate exemplifies this position. Indeed, the research discussed earlier above provides

examples of scholarly work not characterized by these features. Rather, we are arguing that the claims that energize and underpin the debate as a whole are characterized by these structural features of historical amnesia, moral panic, and a certainty-complacency spiral, which serve to restrict the space for rational debate and downplay the need for a transparent evidence base on which to make claims.

Understanding the form of the debate is not merely an academic exercise. Rather it highlights some of the reasons why the notion of 'digital natives' has become widely repeated despite its flimsy foundations and why it has been difficult to move discussion onto a more rational, empirically-grounded footing. We are not claiming that the notion of 'digital natives' is entirely unfounded, if beset with a host of appropriate caveats. There may indeed be a small subset of young people who are highly adept with and interested in digital technologies, but there is mounting evidence to suggest that patterns of access and use are varied and complex, influenced by a range of factors including but certainly not limited to age. We are, therefore, calling for a much more measured approach. If we are to ascertain whether 'digital natives' do indeed represent an educational emergency, a moral panic, both or neither, we need systematic research. To paraphrase and invert the famous eleventh thesis on Feuerbach by Marx, all too often people have tried to change education in various ways. The point, however, is to understand it, so we know what requires change, what is possible to change, how to change it, and with what effects for whom.

Implications for Education and Educational Research

Having discussed the lack of evidence for the original claims made about ‘digital natives’ and explored how these have become prevalent, the question remains of their implications for education and educational research. Clearly the debate as a whole has been useful, albeit secondarily and inadvertently, in drawing attention to the high degree of variability in ICT access, use, skill, knowledge and interest amongst young people (eg., Helsper & Eynon, 2010; Kennedy *et al*, 2009; Livingstone & Helsper, 2007; Margaryan & Littlejohn, 2008; Maton & Bennett, 2010; Salaway & Caruso, 2008. The available evidence suggests that policymakers and educators need to be mindful of diversity within the student body and wary of generalizations about technology skills that have the potential to do significant harm if they cause that diversity to be overlooked. In particular, educators must be aware of the different types of opportunities and technology experiences students have had. Furthermore, while young people may be confident in using technology, their understandings of how that technology works and how it might help them *learn* may be extremely limited (eg., Coombes, 2009; Kennedy *et al*, 2009; Singh, Mallan & Giardina, 2008). These findings raise questions about what schools can and should be doing in response to these differences. It also raises the possibility that responding to the diversity of technology access, use, experience and orientation may in fact be a greater challenge than if younger generations were indeed more homogenous in their composition.

Another effect of the wider debate, related to but distinct from the digital native argument, has been to amplify the argument that emerging technologies are changing society in ways that education need to account for. Web 2.0 technologies are a case in point. It is argued that freely available online software tools, collectively termed ‘Web

2.0' (Cormode & Krishnamurthy, 2008), are providing new opportunities for collective knowledge creation through networked collaboration, eroding differences between producers and consumers to create a new breed of 'produsers' (Bruns, 2008; Goggin, 2004), and so creating new notions of authorship and sources of authority (Manovich, 2001). Recent studies suggest that a significant number of young people do engage in this type of knowledge creation as part of their daily lives, creating blogs, wikis and multimedia to share online with family, friends and their networks beyond and participating in online communities (Conole *et al*., 2006; Green & Hannon 2007; Lenhart *et al*., 2007). The perceived popularity of these activities has led to concern that education is not keeping pace with shifts in broader society, prompting claims that these forms of knowledge creation should be integrated into teaching and learning (eg. Green & Hannon, 2007). This is not, however, simple. Recent studies of integrating Web 2.0 technologies into educational settings suggest that despite the 'newness' of the technologies and their apparent departure from previous forms, there are challenges in re-purposing everyday technologies for formal education (eg. Kennedy *et al*, 2009). Some may argue that the integration undertaken in these case studies falls short of radically changing education to be more like the everyday world, but the very issue highlighted by such studies is that the context of formal education, with its particular values and practices, is different to informal and non-formal learning contexts. This point has been forcefully made for some time in the sociology of educational knowledge: knowledge practices such as learning in formal education have a different form, related to their different purpose, to knowledge practices outside those contexts (see Bernstein 2000; Maton & Moore 2010). Wishing away this difference by arguing for the simplistic transfer of everyday practices into educational contexts does little to solve educational problems. From

what we know of the history of technology in education (eg., see Cuban, 2001), it is far more likely that if Web 2.0 and other emerging technologies are incorporated into education it will be as another tool rather than a impetus for radical change. It may be that the most significant implication of these technologies for education lies in the need to incorporate their use into an expanding set of literacies needed by young people to become active participants in society (Buckingham, 2007; Jenkins, 2009).

This moves the focus of the discussion to what formal education should be, which is the underlying point made by Prensky, Tapscott and others. They are right in that the characteristics of students and how they learn should inform processes of teaching and educational organization, but they are misguided in using the digital native idea as the basis for their argument. Many commentators and researchers have argued for a re-imagining of education, much of it based on a call for constructivist pedagogies. Such approaches, however, are far from proven techniques and debate and research continues to call into question blanket assumptions that discovery learning and facilitative approaches are effective for all students across all areas of education (Chen *et al*, in press; Hattie, 2009; Kirschner, Sweller & Clark, 2006). Ultimately it is well-founded, transparent empirical research which promises to provide the best guidance for how education should occur rather than unsubstantiated or unclearly evidenced claims. It is not merely an academic penchant for nuance and accuracy that demands this. It should be the very least we demand of a high quality education system.

This is, however, more than just a call for more empirical evidence. The 'digital natives' debate is not only based on highly limited evidence, it is based on

fundamentally flawed premises: the significance of generational difference over other social factors, a technologically deterministic and asociological account of how people are shaped by their upbringings, an ahistorical account of social change, and a reductionist account of educational change. Attempting to finesse or nuance an idea that is based on such deeply fundamental flaws is simply to repeatedly wallpaper the walls of a house when the cracks that keep appearing are due to faulty foundations. What is required is a reframing of the debate away from the notion of 'digital natives'.

This brings us to more recent attempts by instigators of the debate to maintain its momentum. Do they actually move us forward? Typically they are taking the form of proclaiming that familiarity with technology rather than age is the key feature announcing a new kind of learner (e.g. Dede, 2005; Oblinger & Oblinger, 2005; Prensky, 2009). The claim is that technically adept learners (of any age) possess characteristics that distinguish them from the rest of the population. This is the idea of digital natives in a new guise. The form taken by the argument also remains the same: insufficiently evidenced and often difficult to falsify assertions based on an extremely simplistic, asociological understanding of social structure and its impact on the consciousness of individuals. Prensky, for example, has recently proclaimed:

> as we move further into the 21st century when all will have grown up in the era of digital technology, the distinction between digital natives and digital immigrants will become less relevant.(2009: (¶ 1).

For Prensky (see also, chapter 10, this volume), it is not that the distinction is less relevant because empirical evidence shows it to be so, but because now everyone is fulfilling the conditions of being a 'digital native', namely growing up in the era of

digital technology. He argues we need to ‘imagine a new set of distinctions’ (¶ 1), this time based on ‘digital wisdom’. Though ‘digital wisdom’ is extremely vague, the central tenet of Prensky’s claims is clearly stated:

> the brains of wisdom seekers of the future will be fundamentally different, in organization and in structure, than our brains are today.(¶ 1).

This will be due, he asserts, to interaction with and enhancement by digital technology. The new kind of person (which he labels ‘homo sapiens digital’ rather than ‘digital native’) will be, he claims, capable of all kinds of insights and understandings unavailable to those with ‘unaided minds’ (¶ 7).

The question we asked is: does this move the debate forward? Again, empirical evidence is extremely limited; rather than a projection of potential futures based on a careful analysis of existing trends, this is an astrological forecast based on imagining - it is research as science fiction (which is name-checked; ¶ 7). Again, technological determinism remains central to assertions: digital technology is the primary driver of biological, psychological, epistemological and social change. Again, claims exhibit historical amnesia, ignoring precedents to which they bear a remarkable similarity, such as McLuhan’s well-known accounts in the 1960s of changes potentially wrought by the rise of new media (1962, 1964). Again, these assertions draw a strong line between those in the know and those who are about to be left behind. And, again, those who question the fundamental break are portrayed as relics of a soon-to-vanish world, this time with a religious twist pronouncing the need for conversion: ‘I believe it is time for the emerging digitally wise among us, youth and adults alike, to embrace digital enhancement and to encourage others to do so’ (¶ 7).

This is not only the digital natives debate relabeled; it models educational technology research as a faith-based religion (see Maton, in press). Engaging seriously with such assertions is thus to also proffer a particular understanding of how the intellectual field should operate (*Ibid*). Rather than state what the contents of a future research program should be for the intellectual field, our point here is to highlight the basis for generating such a program. While studies taking the notion of 'digital natives' as a launching pad have offered insights into the diverse nature of educational access and use, and do serve as models of reasoned, evidence-based research, the notion itself has shed little light on issues of education and technology. There is little in attempts to relaunch these ideas with different names to suggest that they would serve as a more fruitful starting point for research. More significantly, to take seriously such claims is to take seriously not simply such vague notions as 'digital wisdom' but also the idea that the research agenda of an intellectual field should be driven by unevidenced (or opaquely evidenced) and unfalsifiable claims that erase the past and emphasize belief and faith over reason and rigour.

It would be remiss, however, to close without making at least one suggestion for reframing research in ways that could advance understanding and inform educational practice. A key issue that studies of young people's experiences with technology highlight is the question of how these are integrated into the array of different contexts and practices in daily life. More specifically, this is partly a question of similarities and differences between everyday and educational practices using technology. This necessarily shifts the focus of research from generational issues to questions of knowledge and experiences. It also takes into account differences between these various and varied social contexts, rather than assuming that whatever

is (proclaimed as) happening in wider society should be reflected inside education. This would provide a more sophisticated understanding of different opportunities and choices available, which both explain variation in young people's technology experiences and influence their future experiences. In doing so formal education would comprise a series of contexts that are part of a young person's world, and avoid the dichotomous inside/outside education thinking that dominates much of the current discussion (Bayne & Ross, 2007). Educators can almost certainly do more to leverage off technology experiences from formal settings, but understanding formal educational contexts in relation to the myriad contexts of young people's lives requires more sophisticated thinking than the pitting of one against the other.

Conclusion

The argument that technology is changing our society is the weakest of truisms on which to rest arguments for radical change to current systems and practices. It may not be as sexy to proclaim evolution rather than revolution, or to highlight diversity rather than paint stark differences, because such notions require measured, rational and sophisticated thinking, and a tolerance for ambiguity and careful consideration rather than sloganeering. Yet this is what the evidence points to and this is the thinking demanded of us. Moreover, such thinking needs to be based on research rather than merely imagining.

This chapter raises three keys points. First, the notion of 'digital native' is a misperception of young people's technology use that idealizes and homogenizes their

skills and interests. Available evidence of young people's technology access and use is limited in scope and depth but suggests diversity rather than conformity. Secondly, the impact of these overgeneralizations has been to generate an academic form of moral panic which disregards the past and encourages intellectual complacency. The effect of this has been to discourage genuine debate about significant issues. Finally, the implications for education and educational research are likely to be better understood by establishing a more sophisticated footing for discussion and expanding the research effort. This requires abandoning not only the notion of 'digital natives' but, just as importantly, the basis of such claims, whatever the terminology (or relabeling) they are couched in.

The consequences of developing a better understanding through sound and transparent research is that we have a basis for demanding and designing change, and so will avoid the rush to implement solutions to problems we do not adequately understand. The consequences of *not* developing a better understanding are far greater, because with this comes the risk that we will ignore subtle digital divides that do threaten the quality of our education systems.

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