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**‘Young people and their information needs in the
context of the information society’**

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0 - Overview and executive summary

- The information needs of today's generation of young people are seen to be influenced significantly by the development of information and communications technologies (ICTs) such as the computer, internet and mobile telephony. Whilst significant disparities persist, these digital media now form an integral part of the 'information spaces' of young people throughout Europe, as well as underpinning effective and successful participation in the information society. Whilst the use of new digital media is certainly not a pre-requisite to a young person *surviving* in twenty-first century Europe, it is almost certainly an integral element of *thriving* in twenty-first century Europe.
- ICTs are seen by many commentators as a ready means of empowering twenty-first century youth. Young people are seen as a distinct generation of 'digital natives', at ease with the information and communications saturated environments they live in. Digital media are now presented by many commentators as a ready 'technical fix' to young people's information needs across all domains of their lives. Yet these issues should not be seen as being unproblematic. Instead ICTs and digital media present a distinct set of new challenges for youth policymakers, practitioners and other concerned stakeholders with the potential to exacerbate rather than alleviate social inequalities as the twenty-first century progresses.
- The potential of digital media continues to be compromised by entrenched inequalities in young people's access to ICTs - not just in terms of hardware but also the other material, temporal, mental, social and cultural resources required to effectively use digital media. These multiple dimensions of ICT 'access' are patterned by a number of social and demographic characteristics, leaving specific social groups of young people significantly less likely than others to benefit from ICT use. The groups of young people most likely to be 'digitally excluded' within European countries are most commonly delineated in terms of gender, age, income, race, educational background, geography and disability. Moreover divisions in ICT access between young people in technological 'centres' such as Finland and Estonia and those in relatively peripheral countries such as Greece and Italy is apparent. Such national inequalities are exacerbated by a number of factors - not least the continued use of English as the *lingua franca* of ICT-based information. In this sense the information utility of ICTs for young people in Europe continues to be mediated by cultural as well as technical and social issues.
- Aside from issues of access to ICTs, young people's ability to make effective *use* of digital information is not automatic. Young people are more likely to benefit from digital information when they are responding to self-directed rather than imposed information needs. Use of digital information resources is also dependent upon the nature of the information being sought - with young people more likely to seek online information about sports, entertainment, leisure and humorous content, but less likely to look for information pertaining to health, medical care or travel. Questions

are therefore raised regarding the ability of some young people to make full use of the information available to them via ICTs. Although the majority of young people report being confident online information finders, many find information searching problematic and can be characterised as relatively unsystematic and ineffective users of information tools such as search engines. Crucially even if young people have the functional expertise required to locate and acquire information, they may lack the 'critical literacy' that is required to interpret, understand, critique and manage that information.

- Recently young people's interaction with digital information has encompassed the creation, refinement and distribution of shared content and information via so-called Web 2.0 applications such as blogging, wikimedia and social networking sites. Whilst these uses reflect a significant shift in the nature of young people's engagement with digital media the passive retrieval of information remains the most popular internet-based activity amongst young people, with content creation less widely practiced. Moreover, many young creators of content and information lack the receptive audiences with whom to share information with and therefore make the process of creation and communication meaningful and sustainable. A further limitation to young people's communicative and creative uses of digital media is that of 'e-safety' - i.e. the increased potential for young people to be at risk when using ICTs via inappropriate uses of the internet such as interpersonal victimization, disclosure of personal information, aggressive behaviour, talking with people met online, sexual behaviour, and downloading images using file-sharing programs. Concerns are growing over young people's ability to use emerging creative and communicative web applications carefully, appropriately and safely.
- A fundamental issue underlying the successful solution of these problems is **deciding the degree to which reliance on state invention rather than market forces** is appropriate. Clearly there remains a strong role for state involvement in the information needs of young people - both as an enabler and as a regulator in the production and provision of digital information to young people. Whilst much state intervention regarding digital media has taken place to date via formal educational settings such as schools and libraries, it would seem pertinent to explore the potential for non-formal and informal educational settings such as youth work and community media. Within formal education settings such as schools, the promotion of digital media as curriculum topic (rather than as resource) also requires further consideration, as does the role for the development of peer education.
- Aside from the state, a crucial issue facing all concerned stakeholders is **deciding who else is responsible for addressing the information needs of young people in the information society**. Whilst young people should be encouraged to assume more responsibility for their actions within the increasingly individualised information society, institutional contexts such as the family, school, community and voluntary organizations as well as the IT sector remain key to ensuring that young people make best use of information. Whilst the state has a responsibility to work with private sector bodies working in the area of ICTs and information provision, the trans-

national nature of the activities of many IT firms and information providers requires an element of self-regulation within the IT industry itself. Conversely, given the continued importance of informal personal networks and contexts in young people's engagement with information and technology, there is a need to better define what can be expected from citizens and communities in domestic and voluntary contexts. For example, to what extent is developing technical and critical media literacy skills part of the parenting role in the twenty-first century? What responsibility and rights do parents and other family members have in relation to the e-safety of the young people in their care? How can parents and extended family members be supported by the state, public and private information providers in these activities?

- A number of generic issues require sustained attention and debate from public and private actors. Perhaps most pressing is **ensuring that young people have adequate access to hardware and software**. A primary role for the state in this respect is regulation affecting communal modes of youth access to ICT hardware and software. To date government infrastructure policies across Europe have largely focused on the provision of communal internet access points in public locations. However it would seem pertinent that other options are considered, especially given that ICT resources now span beyond desktop computers and fixed internet connectivity. For instance, there could be a place for more direct forms of government intervention in areas of ICT provision where there has been 'market failure' to distribute ICT access to young people. Such intervention could take the form of direct state provision of ICT resources to under-served populations, or else the use of tax incentives or reduced tariffs on ICT goods to stimulate the domestic and education markets for ICTs. There are other 'low-cost computing' strategies which could also be revisited such as the redistribution of reconditioned hardware and software to underserved populations of young people.
- Young people's effective engagement with information is also predicated upon **ensuring that individuals having adequate access to meaningful and relevant content and services**. To date strategy in this area has focused largely on the online provision of public services and information - seeking to encourage young people's interaction with organisations through supply-side means. Whilst the need for bespoke information and services is important the question remains how the production and distribution of such information and services can be made relevant to the information needs and contexts of young people? A further concern is how the production and distribution of such information and services can be underpinned by social justice principles and promotes open access to information and knowledge which is genuinely relevant to the information needs of young people. A key area for debate here is the relative virtues of 'top-down' provision of information and services *for* young people as opposed to the 'bottom-up' creation of content *by* young people. It could be that the official production of information and services should move beyond its primary foci of education, employability and engagement with government services. Instead similar levels of government support could be given to ICT practices which are based around more creative (and therefore less controllable) uses of technology. 'Top-down' official content could be reshaped in a bespoke fashion for

different groups of young people. Efforts can be made to better support young people's creation and communication of information, for example by supporting community online networks and other forms of bespoke content production by individuals.

- A final important area of debate which requires sustained consideration is how best to **ensure that the social contexts surrounding digital information allow young people to be informed about their choices, and offers young people with trustworthy support when engaging with information.** Here there is a need for additional training of young people with regards to digital information - not least addressing the gaps that exist between the rather basic needs of young people and the complexity of the information resources they use. Efforts need to be made to explore how critical digital literacy can be promoted and developed within young people. In this respect there is clearly a need to realign the provision of ICT use in schools with young people's uses of ICTs in their real lives. Moreover, other organisations such as public service broadcasters, internet service providers and other youth media providers should also be encouraged to engender young people's critical engagement with digital media and digital information through their content provision and interactions with users.

1- The information needs of young people

There is now growing recognition of young people as autonomous consumers of information, with distinct needs in relation to those of adults¹. The divergent nature of the information needs of young people derives, in no small part, from the specific demands of childhood, adolescence and early adulthood - with young people striving to make sense of themselves and the social and physical worlds in which they live through these life stages. As such, young people have a wide range of information needs, which encompass a number of domains of the self (see table one). As Agosto and Hughes-Hassell (2006a, p.1394) reason, these domains include “information of all types - from factual information that can help teens understand how the physical world works, to practical information that can help them understand health and survival issues, to philosophical information that can help teens ponder deeper questions and problems relating to the world and their role as future productive citizens”.

Social self	Friend/ peer/ romantic relationships Social activities Popular culture Fashion Social/legal norms
Emotional self	Familial relationships Emotional safety Religious practice
Reflective self	Self-image Philosophical concerns Heritage/ cultural identity Civic duty College Career Self-actualisation
Physical self	Daily life routine Physical safety Goods and services Personal finance Health Job responsibility
Creative self	Creative performance Creative consumption
Cognitive self	Academics School culture Current events
Sexual self	Sexual safety Sexual identity

Table one. An empirical model of urban teens’ everyday life information needs (Agosto and Hughes-Hassell 2006b)

Young people draw upon a wide range of sources to meet these information needs - from intimate personal networks, wider networks of friends, family and community contacts, mass media and institutional sources. Whilst some young people benefit from altruism-rich, care-giving family environments (Kelly 2006) others rely more on 'larger social matrices' which can include locally developed social norms and perceptions about risks and benefits (Chelton and Cool 2004). Across all these personal contexts, talk and discussion is often integral to young people's information gathering (Wells and Dudash 2007), although news media, school and other 'formal' sources of information continue to play an important role. Indeed television continues to be cited by young people in surveys as their trusted source of information (Coleman 2007, Livingstone *et al.* 2007, Vromen 2007). Where young people fulfil their information needs is seen to vary according to the nature both of the information and the individual - not least whether young people are internally or externally motivated to seek information (i.e. seeking information to reduce uncertainty versus seeking information to be rewarded by others). In cases other than for the most externally-motivated information it is acknowledged that young people will start their information search via the most accessible information sources (Madden 2007 *et al.*).

Questions have long been raised by those concerned with the information needs of young people over the limited ability of young people to locate and use information effectively. Here it is argued that young people's key decisions (such as career or health decision making) are often made on the basis of restricted information and are often lacking in rationale or intuition (Julien 2004). In this sense young people are felt to lack the information literacy and critical awareness which may allow them, for example, to assess the credibility of information sources (Wells and Dudash 2007). Such concerns notwithstanding, young people's information needs remain little understood and poorly catered for by information providers - deficits which stem, in part, from the complex and chaotic nature of young people's information seeking (Chelton and Cool 2004, p. ix). Despite warnings over the last twenty years of "the limited nature of research into young people's information-seeking" (Shenton 2004, p.243) there has been little sustained investigation of young people and information seeking; leaving it an issue which has attracted by 'piecemeal coverage' within the empirical academic literature (Madden 2007 *et al.*).

The brevity of the research literature to date belies the fast changing nature of young people's information needs as the twenty-first century progresses - not least as the so-called information society becomes established and information and communications technologies (ICTs) such as the internet, mobile telephony and digital broadcast technologies continue to be integrated into everyday life. Yet as with all discussion of the information society it is important to maintain a balanced and objective perspective on what can appear at first glance as a substantial transformation of social relations. Any review of young people's information needs in contemporary society should therefore adopt what Kling (1996) referred to as a 'heads-up' rather than 'heads-down' perspective on the influence of new technologies on everyday life. With this in mind the present paper will now go on to examine critically the issues underlying young people's information behaviours within the context of the information society.

2 - Understanding ICTs and the information society

The notion of the ‘information society’ denotes a contemporary recasting of social relations borne of recent economic, cultural, political and technological changes over the past four decades. Underpinning these changes has been the growing importance of the production, management and consumption of information and knowledge - with information rather than other forms of capital now at the core of much economic productivity and societal development. Clearly one of the key accelerators of these new forms of society and economy has been the rapid development of new telecommunications and computerised technologies from the 1970s onwards. The global flows of data, services and people which characterise the knowledge economy have been underpinned by a rapid development in ICTs. From ‘e-commerce’ to ‘e-learning’, ICTs such as the internet now provide major conduits for life in twenty-first century society.

A defining characteristic of ICTs has proved their ability to bring people and places together, thus fuelling the general ‘time/space compression’ and acceleration of everyday life (Harvey 1989). In his influential analysis of the rise of the information society, Manuel Castells (1996) outlined how the dominant functions and processes in contemporary society are organised increasingly around networks rather than physical boundaries. As well having significant implications for the economic and political character of society, these changes have had a considerable bearing on the lives of young people throughout Europe. For instance, the past decade has seen significant changes in the place, space and pace of life; an increased individualisation/ personalisation of activities and practices; and the decreasing influence of institutions and social structures.

Whilst debates continue over whether young people in the early twenty-first century are experiencing necessarily better or worse ways-of-being than before, we can be certain that they are experiencing *different* forms of everyday life. In particular the changes outlined above imply a new set of expected practices and ways of operating within a less linear, structured and predictable logic of society. In the world of work, for example, the expectation of a ‘job for life’ has long passed. A young person’s employability is now seen to rest on their ability to adapt to different demands and circumstances on a ‘just-in-time’ basis. Employees are expected to be flexible in their working practices – operating when and where required and drawing on a range of ‘charismatic’ skills such as team working, creativity and adaptability as opposed to working regular, fixed hours in the same location. Practices such as remote teleworking, video-conferencing and flexi-time are now common features of the twenty-first century workplace.

Similarly, in terms of education and training, young people are now expected to learn different skills and knowledges as their situation dictates. Regardless of their age or educational background, individuals are required to cast themselves as lifelong learners who are willing and able to engage with learning as and when appropriate throughout the life-course. This can involve learning through formal educational institutions, remote learning, or learning from others in non-formal and informal settings. Some educational opportunities will be personalised and tailored to the individual’s needs and requirements,

whilst others will take the form of mass instruction. The notion of a young person 'finishing their education' at the age of 16, 18 or 21 years is now an outmoded concept.

Finally, ICTs now lie at the heart of many of the activities which are seen to constitute civic and democratic engagement - from playing an active role in one's neighbourhood and community to engaging with government and public services via digital media platforms (Loader 2007). The civic significance of ICTs has recently been reinforced by the migration of many government and public services to digital platforms. Technologies such as the internet, digital TV and mobile telephony are now important means of accessing and interacting with local government, health and welfare services, criminal justice systems and other areas of government. In all these instances, ICT use is implicated increasingly in what it means for young people to be engaged politically in twenty-first century society.

All of these new practices and 'ways-of-being' imply a revised set of expected competencies and abilities which are required of today's generation of young people if they are to be 'effective' and successful members of society. In a physical sense, young people are required to be more mobile now than ever before (Urry 2000). Alongside the basic skills of numeracy and literacy, young people are required to develop different forms of information and technological literacies (Bawden 2001). Negotiating successfully the fast-changing opportunities and choices on offer requires the development of a capacity for constant self-evaluation and self-awareness (Beck-Gernsheim 1996). The successful young citizen is therefore required to be reflective and reflexive, building upon past experiences and reacting to new opportunities and circumstances as they navigate their way into adulthood.

Digital media are seen to be integral elements of these new ways-of-being, playing important roles in underpinning a young person's reflexive judgement, decision making and subsequent social action. The life of the reflexively modern individual is likely to be bound up with an array of technological possibilities from mobile-phone based communication to the online sharing of information. Through these technologically-facilitated channels, life is therefore "no longer about distanced decision-making [now] there is no distance at all between knowledge and action" (Lash 2002, p.156). Of course many of the competencies seen as essential to contemporary life - such as communication, reflexivity, team-work, adaptability and so on - are underpinned by decidedly non-technological practices and contexts. Nevertheless, the fact remains that ICTs provide an integral context for these actions. As Bynner (1999, p.434) asserts, "in the information society access to, and competence in, the use of information technology becomes the defining feature of economic and personal advance". Whilst the use of new digital media is certainly not a pre-requisite to a young person *surviving* in twenty-first century society, it is almost certainly an integral element of *thriving* in twenty-first century society. As Alvermann (2004, p.78) concludes:

"Youth of all ages, from the preadolescent to the adolescent, use media in conjunction with various ICTs - for example, the Internet, instant messaging, and e-mail - to communicate with their peers and relatives, to stay current in what

matters to them, to shop, to relax, to create personal Web pages, and yes, to complete homework assignments, among other things. For these youth, being a participant in the 21st century equates to being literate in media and ICTs in ways that exceed what many [adults] know or even consider worth knowing”.

From this perspective the information society should be seen as both an opportunity *and* challenge for young people in contemporary Europe. On one hand, we should be wary of seeing these changes as heralding a total transformation of young people’s lives. As Steve Woolgar (2002) reminds us, many of these ‘online’ developments replicate rather than replace existing ‘offline’ practices and activities. Yet the information society does present a qualitatively and quantitatively different terrain for today’s young people to negotiate - not least with regards to the more decentred and individualised ways of being within globalised, networked, knowledge-focused societies. Free to live beyond the confines of the nation-state, local community or family, the onus is placed increasingly on the individual young citizen to make their way in the world. For some commentators these changes are wholly beneficial, ‘freeing’ young people from the interference of the nation-state and other regulatory bodies and allowing the (re)distribution of services and wealth along more efficient and market-driven lines (see Stromquist 2002). Whilst the globalised nature of contemporary society can prove empowering for some young people, it can also lead to increased fragmentation, marginalisation and dis-empowerment. Whereas some young people may well benefit from their new-found agency, others may fare less well from being decoupled from the familiar anchors of the welfare state, nuclear family and so on. In this sense we cannot afford to see contemporary society as offering homogenous benefits for all. Young people can be as connected *or* isolated, as advantaged *or* disadvantaged in the globalised technology-driven age as before. Crucially these inequalities are being reconfigured along different lines – in particular *within* as well as *between* social groups.

3 ICT as a ‘technical fix’ to the challenges of the information society: a critical perspective

These concerns notwithstanding, ICTs are being presented by many commentators as a ready means of empowering twenty-first century youth. As the earlier quotation from Alvermann implies, young people are seen as a distinct generation of ‘digital natives’ - attuned and accustomed to the information and communications saturated environments they live in (see also Prensky 2005). For many commentators and policymakers the information needs of today’s ‘gen.com’ are therefore best met by the application of ICTs in almost every sphere of their lives (Carpini 2000). For instance, ICTs are presented as a ready ‘technical fix’ to young people’s information needs across all domains of their lives - from career counselling (Hoyt and Maxey 2001), drug education (Di Noia *et al.* 2003), understanding of science (Libutti and Valente 2006), to building community engagement (Pasek *et al.* 2006), adolescent health issues (Brindis *et al.* 2007) and even discouraging sedentary lifestyles (Cheuk and Chan 2007). In short, ICTs are felt to offer “an important

way to reach young people” (Flicker *et al.* 2004). Yet, as we shall now go on to argue there are a number of caveats to such optimistic portrayals of digital media as a straightforward conduit to inclusion in the information society. Indeed, we would argue that these issues present a distinct set of new challenges for youth policymakers, practitioners and other concerned stakeholders as the twenty-first century progresses. These issues are now discussed in specific terms of: i) young people’s access to information; ii) young people’s consumption and use of information; and iii) young people’s creation and communication of information.

3.1 – ICTs and young people’s access to information

Many commentators have welcomed the technology-led transformation of young people’s access to information sources - not least the instantaneous, affordable and apparently limitless access to online resources. ICTs such as the internet are often assumed to enhance the quantity *and* quality of the information accessible to young people. Yet the dichotomous notion of either having ‘access’ or not having ‘access’ to ICTs (and thereby having ‘access’ to information) simplifies the multiple components underpinning engagement with technology. Any notion of ‘ICT access’ or ‘ICT use’ refers to much more than access to a desktop computer, having basic operating skills and a familiarity with software applications. Crucially, young people’s access to information via digital media can take place via a range of different technological platforms. The convergence of new media platforms such as digital television, mobile telephony, games technologies and other portable devices has led to a multi-modality of technology access. There is now a range of ICT devices upon which a young person may, for example, access different forms of online information. Moreover, the technical and social qualities of information access varies considerably across different platforms – as can be seen, for example, in the difference between searching the worldwide web on a desktop PC and via a mobile telephone. Besides the variety of ICT hardware available, ‘plugging in’ to digital information sources is now contingent on a broad range of types of connection. Whilst the connectivity debate during the late 1990s and early 2000s centred around the necessity of ‘broadband’ rather than ‘narrowband’ access to the internet, other spectrums of connectivity now exist (such as wireless, microwave and satellite-based) all with varying speeds and quality of data transmission and suitability for different types of users and different forms of information.

From these technical perspectives alone, a number of commentators have begun to map out multi-dimensional definitions of ICT access which determine young people’s access to digital information. For instance, Yu (2006) focuses on the varying skills, literacies, support and outcomes of ICT-based activity and practice (such as the differences in outcomes between ICT-based entertainment as opposed to education). Similarly, Lievrouw and Farb (2003) propose four core elements of ICT access above and beyond matters of physical access to resources – namely skills, content, values and context. Also of use is Jan van Dijk’s (2005, p.21) distinction between the motivations behind engaging with ICTs, possession of operational, information and strategic ICT skills, and the nature of usage (e.g. usage time, the number and diversity of applications). From this

perspective, van Dijk sees the effectiveness of ICT access as contingent on the following aspects of resourcing:

- Temporal resources (time to spend on different activities in life);
- Material resources above and beyond ICT equipment and services (e.g. income and all kinds of property);
- Mental resources (knowledge, general social and technical skills above and beyond specific ICT skills);
- Social resources (social network positions and relationships – e.g. in the workplace, home or community);
- Cultural resources (cultural assets, such as status and forms of credentials).

All of these frameworks highlight the importance of the social, cultural and cognitive contexts which surround the activity that ICTs are being used for. This combination of technological possibilities, user capabilities and understandings, and wider social contexts is sometimes described in terms of the ‘affordances’ of ICTs (Norman 1999). In this sense facilitating the informational affordances of ICTs for young people relies both on technology providers (e.g. to produce and provide hardware and content which is of use to the user) and the individual users themselves (e.g. to perceive content to be useful and feel compelled to make use of it). Aside from issues of user cognition, these individual perceptions and understandings of the affordances of ICT use are likely to be socially and organisationally based (Cushman and Klecun 2006). As such this literature reminds us that ICT use is not just based on young people being able to ‘understand’ the potential benefits of ICT use, but how well ICT-based activity ‘fits’ with the wider contexts within which they are operating.

These differences in what it means to have access to ICTs and to information are important when we consider the inequalities present in young people’s engagement with digital media. There is considerable evidence that the dimensions of ICT ‘access’ outlined above are delineated by a number of social and demographic characteristics, thus leaving specific social groups of young people significantly less likely than others to benefit from ICT use (e.g. Roe and Broos 2005, Dutton *et al.* 2005, Kaiser Family Foundation 2005, Chinn and Fairlie 2004, Holloway 2005, Chakraborty and Bosman 2005, Demoussis and Giannakopoulos 2006, Roe and Broos 2005, Peter and Valkenburga 2006, Cotten and Jelenewicz 2006). The recurring importance of variables such as age, socio-economic status, education, household composition, gender and geography, led the US Pew study to conclude that “demography is destiny when it comes to predicting who will go online” (Pew 2003, p.41). Indeed, the groups of young people most likely to be characterised as being ‘digitally excluded’ are most commonly distinguished in terms of gender, age, income, race, educational background, geography and disability. For instance, recent studies in Europe show that levels of ICT use are lower amongst rural youth, female youth, those from families with low levels of parental education and younger children (Vandewater *et al.* 2007, Looker and Thiessen 2003).

Moreover in terms of a EU-wide analysis, significant differences in ICT access and use are apparent *between* countries as well as *within* countries. In this sense, the worldwide division in internet access and use between ‘the rich North and the poor South’ (Suoranta 2003) is replicated to a lesser extent within the European nations. As shown in the *Mediappo* and *EU Kids Go Online* projects, for instance, young people’s access to ICTs such as the internet varies from technological ‘centres’ such as Finland and Estonia to more technologically peripheral countries such as Greece and Italy. Whilst the global ‘digital divide’ is certainly underpinned by differences in income (Chinn and Fairlie 2007), such international inequalities are exacerbated by a number of country-specific factors. Perhaps most notable is the continued use of English as the *lingua franca* of ICT-based information. For instance, whilst 72 percent of the world’s internet pages are in English, only 7 percent are in German; 3 percent in Spanish; 3 percent in French; and 2 percent in Italian or Dutch (McKenzie 2007). In this sense the information utility of ICTs such as the internet continues to be mediated by cultural as well as technical and social issues.

3.2 – ICTs and young people’s consumption and use of information

Concerns of inequality of access notwithstanding, information and services accessed through digital media are often perceived to have an intrinsic appeal and utility for young people (e.g. Korn *et al.* 2006, Shah *et al.* 2001, Bystrom and Dimitrova 2007, Teresco 2007). Yet even if young people enjoy relatively unproblematic access to digital media, further issues remain with regards to their ability to make effective *use* of such information. Whilst at a basic level successful engagement with digital information is obviously predicated upon the individual young people either having or not having adequate *access* to the necessary hardware, software and network connections, attention needs to be paid to issues surrounding the dynamics of the *use* of ICTs and ICT-based information. As Mark Warschauer (2003) observes, the key issue here is not unequal access to ICTs and information *per se*, but rather the unequal ways that ICTs and information are used.

In this sense a crucial influence on the effectiveness of young people’s use of digital information remains their engagement with the information itself rather than the technology itself. Gross (2004) distinguishes between ‘imposed’ and ‘self-generated’ motivations for young people to seek to use digital media for information purposes - with young people more likely to benefit from digital information when they are pursuing self-directed information needs (see also Dresang 2005). Other studies have highlighted how the use and perceived usefulness of different types of information resource varies depending on the nature of the information being sought (Madden *et al.* 2007). For instance, the recent Oxford Internet Survey found young people to be more likely than employed or retired adults to seek online information about sports, humorous content and employment but less likely to look for information pertaining to health, medical care or travel (Dutton and Helpser 2007). This study also found that young people were significantly less likely to read online newspapers (although, interestingly, were most likely to be unique readers of online newspapers). Similarly, the US Pew study found

younger internet users to be less likely than their adult peers to use ICTs to obtain information on health-related topics, travel or religion (Pew 2005a). According to another Pew (2005b) report, online entertainment information seeking (i.e. pop culture and entertainment information about movies, TV shows, music groups and or sports) remains the most popular use of the internet for teenage users - especially amongst females. Conversely, looking for 'information on a topic that is hard to talk about' ranked as the least popular web activity for young people aged between 12 to 19 years (Pew 2001).

These data point towards a number of constraints underlying young people's successful consumption of digital information - not least the ability to develop an understanding of and make full use of the information available to them via ICTs. Although most studies find the majority of young people to report being confident online information finders, upon closer inspection many young people also indicate that they find information searching to be problematic. For example, young people have been observed to be relatively ineffective users of search engines and browsers. As Buckingham (2005, p.10) reports, "one conclusion that can be drawn from this, therefore, is that children's reported confidence may presently exceed that of their expertise, and that further development is needed to enable children to gain more competence". Some studies in this area suggest that young people often engage in little systematic planning when searching for online information (Schacter et al, 1998). Studies of web search behaviour, for example, have found young people's searches for information to be "frequently are met by frustration, if not failure" (Large 2004, p.294). As Bilal (2004, p.274) concluded, young people often seek "specific answers... rather than developing an understanding of the information found. The fact that most children did not go beyond the first or second page of text to locate information". Thus despite an abundance of the quality of information that can be accessed via ICTs problems of information quality and information understanding remain - prompting growing concern amongst some commentators that young people are failing to make full use of the richness of digital information. As Dresang (2005, p.181) concludes:

"the bottom line of these general meta-analyses of information-seeking behaviour related to children's *use* of digital media might be that young people are missing much of the richness of an environment saturated with information because of poorly developed information seeking skills or a propensity to take the easiest path possible".

Even if young people have the functional expertise required to locate and acquire information, concerns remain over the 'critical literacy' that is required to interpret, understand, critique and manage that information. In short it is argued that being able to use digital media effectively and efficiently is reliant on a variety of competencies and literacies above and beyond the basic technological literacy of being able to operate common ICT tools effectively. Of course, these criticisms are not unique to digital media and online information, and should be situated within general calls for young people's need to develop "critical awareness of how all authored texts (print, visual, and oral) situate them as readers, writers, and viewers within particular cultural and historical

contexts” (Alvermann 2004, p.78). Indeed, from one perspective, ICTs are merely one element of the general requirement for basic information literacy amongst young people. Yet it is beginning to be acknowledged that “the hypertextual, multilayered and graphic interfaces” underpinning digital information (Dresang 2005, p.180) also necessitate the need for new forms of digital literacies and skills. For example, as Pantaleo (2004, p.17) reasons, different navigational and reading strategies and skills are required for digital information than are required for traditional printed texts. This broader conception of digital ‘multi-literacies’ sees individuals requiring the language, number and technical skills which give them access to the evolving digital world, alongside a set of creative and critical skills and understandings required to engage productively with technology use in their lives (New London Group 1996). Crucially, then, the various forms of ‘digital literacies’ required of the young people in the contemporary information society both mirror but also go beyond the traditional twentieth century literacies of ‘lettered representation’ (Kress 2003, Lankshear *et al.* 2000, Marsh 2006). As Thoman and Jolls (2005, p.4) conclude:

“No longer is it enough to be able to read the printed word; children, youth, and adults, too, need the ability to both critically interpret the powerful images of a multimedia culture and express themselves in multiple media forms”.

3.3 - ICTs and young people’s creation and communication of information

A final set of issues surrounding young people’s interaction with digital information relate to the growing importance of the creation and communication of information. This reflects the important distinction between young people’s passive *consumption of* information as opposed to their active *engagement with* information. This distinction underpins the current enthusiasm for ‘Web 2.0’ applications and the so-called ‘read/write’ web. These new applications are seen as being distinct from preceding ‘Web 1.0’ applications which facilitated the largely passive delivery of content. In contrast, Web 2.0 applications are seen to allow users to participate directly in the creation, refinement and distribution of shared content. For instance, through the labelling of excerpts of text, images or other forms of code users are able to sort and share content with each other whilst also appropriating and re-using existing content in the production of their own resources. There are many internet applications which are seen to embody these Web 2.0 qualities. For example, photograph and video sharing websites such as *Flickr* and *youtube* allow users to share visual content with others, categorise it through the attachment of ‘tags’ and pass comment with other users. Much attention has also been given to the online dissemination of self-produced content through web-logs (where users self-publish episodic journal-style content in the form of *blogs*), or else the ‘pod-casting’ of audio and video excerpts in easily distributed digital formats. Other notable Web 2.0 applications include so-called ‘wiki’ applications reliant on community produced and mass-edited content.

Although currently attracting a considerable amount of hyperbole these new ICT applications do reflect a significant shift in the nature of young people's engagement with digital media. For example, in terms of the use of digital media to create information there are signs that young people are taking the opportunities to engage with the creation of information in a variety of ways. A recent Pew report (2005c) found that more than half of young internet users had created some kind of online content, be it a blog, personal webpage or sharing original content in the form of artwork, photographs, music or videos). Recently these creative practices have evolved into blending, remixing, chopping and 'mashing' original and existing content, therefore constituting new contemporary forms of 'bricolage'. As such there is growing reason to believe that ICTs are altering fundamentally many young people's relationships with information.

Nevertheless, the potentially empowering nature of these changes in media practice is tempered by a number of salient issues. Firstly, it is important not to over-estimate the penetration of these web 2.0 practices throughout all young internet users. The recent Mediapro (2006) study of EU youth found that passive retrieval of information remains the most popular internet-based activity amongst young people, with content creation a less widely practiced activity. Moreover, many young creators of content and information lack the receptive audiences with whom to share information with, and therefore make the creation process meaningful and sustainable.

A further limitation to young people's communicative and creative uses of digital media is that of 'e-safety' - i.e. the increased potential for young people to be 'at risk' when using ICTs, not least by exhibiting a range of 'risky' behaviours themselves via 'inappropriate' and 'challenging' uses of the internet. These behaviours are seen to include interpersonal victimization, disclosure of personal information, aggressive behaviour, talking with people met online, sexual behaviour, and downloading images using file-sharing programs (Ybarra *et al.* 2007). Questions have also been raised over young people's ability to use emerging web applications carefully, appropriately and safely. For instance, a recent Pew (2005d) study found 79 percent of young internet users to concur that they are not careful enough when sharing information online. Similarly, in terms of young people's own challenging online behaviours Berson and Berson (2005) found a significant number of adolescent girls to report engaging in risky activities including disclosing personal information, sending personal photos to online acquaintances, and arranging face-to-face meetings. That said there is a considerable body of counter-evidence that young people are not wholly at risk when using ICTs. The Europe-wide Mediapro project, for example, reported "wide evidence of self-regulation by young people" (Mediapro 2006, p.14), suggesting that young people are more considered and empowered users of online contexts than is sometimes assumed.

4 Future trends and implications for policy-makers, practitioners and providers

4.1. Summary of issues

It is clear from even this brief review that the contemporary information society marks a distinct shift in the lives of young people throughout Europe and, more specifically, marks a distinct shift in their information needs. Underpinned by rapid developments in digital media and telecommunications technology, young people are moving from being passive consumers of pre-defined information to active creators and distributors of their own forms of information. Whilst the significance of web 2.0 technologies can be overstated, the fact remains that today's generations of young people are experiencing qualitatively and quantitatively forms of engagement with information than previous generations. Yet we should be wary of over-emphasising the apparently transformative nature of ICTs. As we have pointed out throughout this review, the majority of young people in Europe do not necessarily use digital media in the empowering, creative and active ways that some commentators presume. Instead much technology use by young people remains relatively low-level, mundane and often banal. Moreover, ICTs continue to be used primarily by young people to engage in practices which they are already engaged in rather than supporting any prompting 'new' patterns of behaviour *per se*. Thus many of the pressing issues surrounding the information needs of young people remain the same as they have throughout the past thirty years, albeit with an additional technological dimension.

That said there are a number of noteworthy issues concerning information, technology and young people which derive from the shift from industrial to an information society. As we have seen, young people's access and use of information is now shaped (and often curtailed) by range of issues concerning inequalities in 'access' to hardware and connectivity, technical skills and the development of critical media literacies. Thus efforts must be made to ensure that young people possess a deep understanding of technology-mediated information - knowing, for example, how to use information safely and diminish the risks of operating within online environments. Above all young people require support in becoming discerning consumers and producers of information, and developing the ability to know when to use and when not to use ICTs. There is also a need for producers and providers to ensure that digital information is meaningful to the needs and contexts of young people. In part this can be addressed by supporting young people in the creation and communication of their own information and content. Yet we should not lose sight of the fact that the retrieval and passive consumption of information looks set to remain the dominant use of ICTs for many people in the near future.

As such there are a number of issues which should be prioritised within current debates concerning youth, information and contemporary society. Young people's engagement with digital information should be equitable and empowering. Digital information should be engaging - both in terms of capturing the initial interest of young people and in terms of being relevant to the information needs of young people. The need for relevant and

appealing information spans all forms - from information relating to young people's social selves to their sexual selves, as well as information relating to governmental concerns with young people as emerging citizens and employees. Governments, providers and other bodies also need to take a 'glocal' approach to the digital information needs of young people - contextualising digital information within local and community identities, practices, modes and contexts of young people's lives, whilst not losing sight of the potential for more expansive, global applications. With these priorities in mind, we conclude this paper by outlining briefly some of emerging issues and factors which should be borne in mind by those concerned with the provision of youth information.

4.2 Defining the role of policy-makers, information providers and practitioners in the information society

A fundamental issue underpinning our discussion so far is deciding upon who is responsible for addressing the information needs of young people in the information society. As intimated at the beginning of the paper, contemporary society is predicated increasingly upon the notion of the individual assuming responsibility for their own life-choices and decisions, accompanied by the decreased significance of many of the established institutions which have traditionally provided a supporting role. Yet whilst young people should be encouraged to assume more responsibility for their actions, we would contend that institutional contexts such as the family, school, community organizations remain key to ensuring that young people make best use of information.

Clearly there remains a strong role for state involvement in the information needs of young people - despite a noticeable withdrawal in many EU countries of state intervention in the areas of information and technology provision in favour of a neo-liberal market-driven approach. Throughout all the issues identified in this paper the state has a clear role to play both as an enabler and as a regulator in the production and provision of digital information to young people. Whilst much state intervention to date has often taken place via formal educational settings such as schools and libraries, it would seem pertinent to explore the potential for non-formal and informal educational settings such as youth work and community media. Within formal education settings such as schools, the promotion of digital media as curriculum topic (rather than as resource) also requires further consideration, as does the role for the development of peer education. Whilst the state has a responsibility to work with private sector bodies working in the area of ICTs and information provision, the trans-national nature of many IT firms and information providers requires an element of self-regulation within the IT industry itself, regardless of the attention of national governments. Finally, given the continued importance of informal personal networks and contexts in young people's engagement with information and technology, there is a need to better define what can be expected from domestic and community contexts. For example, to what extent is developing technical and critical media literacy skills part of the parenting role in the twenty-first century? What responsibility and rights do parents and other family members have in relation to the e-safety of the young people in their care? How can parents and

extended family members can be supported by the state, public and private information providers?

4.3. Ensuring ready access to hardware and software for young people in the information society

Thus there are a number of generic issues which require sustained attention and debate from government in the information society. As Mackenzie (2007, p.10) asserts:

“Young people are extremely active participants in the global flows of information. What then should be the priorities for governments to take full advantage of this involvement? The main ICT priority for governments is to ensure a good investment climate that allows private companies to serve the growing demand for ICT services, by enacting regulations that provide for easy entry and competition. For youth it is particularly important to also provide good regulatory conditions for modes of communal access, such as village phones and internet cafes. Governments also need to experiment with ways to provide youth with the skills needed to best take advantage of new technologies, through teaching global languages, providing support for local language content development, and developing ways to teach youth responsible and safe use. Rigorous evaluations of such policies are needed to find out what works and to share lessons across countries”

As we have established, perhaps most fundamental of these issues is ensuring that young people have adequate access to hardware and software - with access continuing to be a pre-requisite to ensuring the inclusive and empowering use of digital information. As McKenzie (2007) suggests, a primary role for government in this respect is regulation affecting communal modes of youth access to ICT hardware and software. To date government infrastructure policy has focused largely on the provision of communal internet access points in public locations such as schools, libraries, museums and other community settings. Such a ‘community technology’ approach has achieved varied success in widening meaningful access to those individuals and social groups otherwise lacking internet and computer access in domestic or educational settings (see Smith and Cook 2002, Hall Aitken Associates 2002, Selwyn *et al.* 2005). Thus it would seem pertinent that other options are considered, especially given that the scope of ICT resources now span beyond desktop computers and fixed internet connectivity.

In this sense we would suggest that there are a number of alternative options to the community technology approach which should now be considered. For instance, there could be a place for more direct forms of government intervention in areas of ICT provision where there has been ‘market failure’ to distribute ICT access to young people. Such intervention could take the form of direct state provision of ICT resources to under-served populations, or else the use of tax incentives or reduced tariffs on ICT goods to stimulate the domestic and education markets for ICTs. There are other ‘low-cost

computing' strategies which could also be revisited (James 2001), not least the redistribution of reconditioned hardware and software to underserved populations of young people. Indeed, the area of socially-motivated recycling looks set to increase in significance in light of the EC Waste Electrical and Electronic Equipment directive which provides an incentive for the re-use rather than disposal of hardware. Whilst it remains only one aspect of the information society, ensuring adequate quantity and quality of ICT access for all young people remains an important issue to address.

4.4. Ensuring ready access to relevant content and services for young people in the information society

As indicated throughout this paper, young people's effective engagement with information is also predicated upon individuals having adequate access to meaningful and relevant content and services. To date government strategy in this area has focused largely on the online provision of public services and information - seeking to encourage young people's interaction with government through supply-side means. Whilst many of these initiatives have been targeted towards those of a voting age, efforts have been made to produce citizenship materials for children and adolescents by organisations as varied as UNESCO to Amnesty International (see Selwyn 2007). Certainly the need for bespoke information and services is important. As Bilal (2004, p.272) "children have cognitive developmental abilities, problem-solving skills, and information needs that vary from those of adult users. Yet the question remains how can we best ensure that the production and distribution of such information and services is relevant to the information needs and contexts of young people? Moreover, how can we best ensure that the production and distribution of such information and services is underpinned by social justice principles and promotes genuinely open access to young people relevant information and knowledge? A key area for debate here is the relative virtues of 'top-down' provision of information and services for young people as opposed to the 'bottom-up' creation of content by young people. Should the official production of information and services move beyond its primary foci of education, employability and interaction with government services? Is there a role for the official provision and support of ICT uses which are based around more creative (and therefore less controllable) uses of technology?

In terms of internet-based information, questions therefore remain whether individual users are best served by 'supersites' such as those provided by the BBC and MSN *or* the use of community generated local content? Alternatively could 'top-down' official content be reshaped for different groups of young people? Many of the studies reviewed in this paper "imply the development of different technologies better shaped to young people's information needs" - suggesting the need for the development of bespoke information and services for young people. For example, should digital content emanating from middle-class organisations be repackaged for peripheral groups of young people (see Hargittai 2003)? Questions also remain as to how best support young people's creation and communication of information and their involvement in "the process of designing, implementing and evaluating" the information and services

themselves (Dillon 2002). For example, how can young people be included in the design process of digital information, not only in terms of information interfaces but also content structures (Bar-Ilan and Belous 2007)? What role is there for community online networks and other forms of bespoke content production by individuals (Borgida *et al.* 2002)?

4.5. Ensuring that young people's use of information is supported in the information society

One further important issue which requires further consideration is how best to ensure that the social contexts surrounding digital information allow young people to be informed about their choices, and offers young people with trust-worthy support when engaging with information. Of course, many of the research findings in this area point towards “the need for additional training” of young people with regards to digital information (Bilal 2004, p.275) - not least addressing the ‘chasm’ that is seen to exist between ‘the rather basic needs of the students and the complexity of the [information] resources’ they use (Chelton and Cool 2004, p.x). Here there is a need for additional training of young people with regards to digital information - not least addressing the gaps that exist between the rather basic needs of young people and the complexity of the information resources they use. Efforts need to be made to explore how critical digital literacy can be promoted and developed within young people. In this respect there is clearly a need to realign the provision of ICT use in schools with young people’s uses of ICTs in their real lives. As the Mediappro project concluded:

“perhaps the most striking conclusion of the whole study is the marked gap between home and school use of the internet. This gap, across all the countries ... was evident in terms of frequency of use, access, regulation, learning and skill development, and type of activity/ The data indicate a great gulf opening up, in which all the functions important to young people exist outside of school, as well as most of the learning (albeit self-teaching or peer learning), while schools restrict access, un-necessarily forbid certain practices, fail to understand the communicative function of the internet and, worst of all, fail to teach the skills of information retrieval, search, site evaluation and creative production that are presumably most important to them” (Mediappro 2006, p.16).

Moreover, other organisations such as public service broadcasters, internet service providers and other youth media providers should also be encouraged to engender young people’s critical engagement with digital media and digital information through their content provision and interactions with users. In this sense perhaps the most consistently reported conclusion from the research literature is the need to realign the provision of ICT use in schools with young people’s uses of ICTs in their real lives.

4.6 Coda

Whilst all of the challenges highlighted in this paper look set to gain significance in the near future we must not lose sight of the continued importance of the rather more prosaic and entrenched non-technological issues that continue to underpin the unequal use of information by young people in contemporary society. In concluding this brief discussion it is worth reminding ourselves that digital information must not be approached by governments, policymakers and other concerned stakeholders as a technical fix to long-standing social problems. Indeed, many of the issues underlying the information needs of young people in the information society have little or nothing to do with digital media *per se*. As we have highlighted in the opening section of this report, the problems of limited access, ineffectual searching skills, lack of critical awareness and so on are long-standing issues relating to young people's use of information in general. Moreover, decidedly non-digital issues of poverty, lack of housing, disengagement, low levels of literacy and so on continue to underpin many of the issues of inequality raised in this paper. Thus there is a continued need for policymakers to concentrate on finding non-technical, social solutions to these offline issues as well as developing new sets of strategies to counter the emerging issues of information use in the information society. Any digital efforts have to be part of, rather than instead of, more fundamental 'offline' social policy interventions.

ENDNOTE

[1] Throughout this paper 'information' refers to ideas or thoughts that individuals contribute, seek or obtain from discussion, investigation or study (Dresang 2005)

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