Children's use of the internet: reflections on the emerging research agenda

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Running Head: Children's use of the internet

Abstract

As domestic access to the internet reaches the mass market in industrialised countries, this article identifies and evaluates the emerging research agenda, focusing particularly on children and young people. The nature of children's use of the internet generates public anxieties which both guides and undermines research, complicating the already challenging study of children within the privacy of the home. The body of empirical work reviewed is still small, but already key questions of academic and policy significance are being addressed regarding the opportunities and dangers of internet use. Such opportunities include communication, identity and participation, and education, learning and literacy; dangers arise from exclusion and the digital divide, and from certain kinds of use relating to inappropriate or undesirable contact, content and commercialism. In each of these domains, the research strengths and gaps for future research are identified. The article concludes by noting areas of theoretical consensus and uncertainty that frame the research agenda in this field.

Keywords: children and young people, internet, domestication of new media, education and literacy, pornography, digital divide, research agenda.

Introduction

In most Western countries and increasingly elsewhere, the internet is ceasing to be a medium only for the privileged 'early adopters' and is reaching the mass market, although access remains heavily stratified (Office of National Statistics, 2001; UCLA, 2001; NUA, n.d.). As work, leisure and educational markets continue to expand, over the coming decade the internet will become taken for granted in our homes, meaningfully embedded in the routines of daily life across the industrialised nations. Particular attention among policy-makers and the public centres on children and young people. This group, supposedly 'the digital generation', is claimed to represent 'the future', it be 'in the vanguard'; yet it is also seen as vulnerable, 'at risk' from new information and communication technologies (ICT).

The speculative hype surrounding children and new media requires a critical stance from the academy, all three terms here being catalysts for public anxiety. However, it is problematic that little independent research has yet been conducted to ground public debate, although curiously, the policy community often appears unaware of the thin empirical base on which their claims rest. Of those projects exploring the social contexts and consequences of internet use surprisingly few address young people, even though in households with children access is more common than in those without children, making young people 'pioneers' of new media cultures (Drotner, 2000). In the UK, recent surveys show that among 7-16 year olds 75% have used the internet, a figure double the adult population figure of 38% (Wigley & Clarke, 2000).[1] It is also problematic that the academy tends to regard 'children' as a special object of study, as a homogenous

category, rendering them marginalised within ‘general’ discussions of the internet. Few political science studies on e-democracy address young people. Little in the public domain, though much commercial research, charts the growing online youth market. Few technological analyses consider young users, though abstract concepts of the user, the citizen and the market are widely discussed.

However, several empirical projects on children and young people’s internet use are now underway, making this a timely moment to identify and reflect upon the emerging research agenda. The present article reviews this new literature in order to ask: (1) What empirical research has been conducted on children’s use of the internet? (2) How should this research be evaluated? (3) What does the academy need to do next?[2]

On the nature of internet use

Numerous commercial surveys chart children’s favourite websites, showing that children value this new medium for information and entertainment, for relieving boredom and, their preferred activity, for communication (chat, email, instant message). BMRB’s Youth TGI (2001) showed that the most common uses are studying/homework (73%), email (59%), playing games (38%), chat sites (32%) and hobbies and interests (31%) (see also Media-Awareness, 2000; Valkenburg & Soeters, 2001). Few use it for shopping (Nie & Erbring, 2000). Many seek out ‘Americanised’ - i.e. commercial, global, branded - websites (Holloway & Valentine, 2001). Language matters: a German survey finds that the paucity of German language sites restricts children’s use (Gehle, 1999). By contrast, the internet has already established a pivotal role in American teenagers’ social life, encompassing both ‘serious’ and ‘frivolous’ online communication (Pew, 2001b).

In going beyond listing popular uses, qualitative academic research primarily takes a 'domestication of new technology' approach (Silverstone and Hirsch, 1992), focusing on how families are appropriating the internet into the home, contextualising this new object of consumption within domestic practices of space, time and social relations (Facer, et al, 2000; Van-Rompaey, Roe, & Struys, 2002) and integrating it within the already-complex media environment (Drotner, 2000; Livingstone and Bovill, 2001). For many families, the internet is still a fragile medium, experienced as unfamiliar, confusing, easier to get wrong than right, far from taken for granted. Parents are developing strategies to manage and regulate the internet within the home, framed by educational aspirations for their children; meanwhile children prefer online entertainment centred on fandom transferred from already-established media – music, stars, sports, television programmes (Livingstone, 2001). The resultant struggle between parental strategies and children's tactics suggests a 'digital generation gap' in which children and teens play a key role in acquiring and understanding the internet, including explaining it to their parents (Ribak, 2001). However, although becoming the computer expert offers children practical and symbolic advantages within the family, the nature and extent of such expertise is easily overestimated (Facer, et al, 2001; Livingstone, 2001).

Research on the social contexts of internet appropriation and use is beginning to move beyond the descriptive, identifying ways in which, for children and young people, the home is changing, becoming the site of content production as well as reception, of education and work as well as entertainment and leisure. This raises new questions about the links between children's different activities, as learning becomes fun, as play may (or may not) be educational, as online chat may 'count' as civic participation or may rather

represent a withdrawal from community. It also raises new questions regarding the links between the institutions that regulate children's lives, particularly the relations between home and school, informal and formal learning, parents and teachers. At present, however, few answers are forthcoming: much of this research has yet to engage thoroughly with the internet *qua* medium (or, more correctly, a diverse bundle of information and communication technologies): often it fails satisfactorily to discriminate between the computer and the internet, treating the computer *qua* object in the living room or bedroom as more significant than it does children's engagement with specifically online contents, services and activities.

Of course, researching users' engagement with content relies on analysing online content, and this in itself poses a significant challenge. New media researchers have no stacks of neatly labelled video tapes on their shelves; rather they barely know how to track their 'texts' given the three-fold problems of overwhelming volume of material, temporary existence of material, and its 'virtuality' (hypertext being dependent on users to 'actualise it'; c.f. Eco, 1979). Unsurprisingly, therefore, not only have few textual studies of content favoured by children been undertaken, but even fewer have related these to the interpretative activities of their audiences or users, although 'reception analysis' is now central within television studies (Buckingham, 2002; Livingstone, 2002; Mayer, 1998). For example, there is developing work on defining, and designing, interactivity (Downes & McMillan, 2000), but this has yet to be applied to the ways children use the internet (although see Green, Reid, & Bigum, 1998)?

But the field is young. At present, research on the contexts and consequences of children's internet use is significantly driven by policy imperatives attempting to balance

the opportunities and the dangers associated, whether potentially or actually, with the internet. And this is not unexpected, for it has always been characteristic of research on children and new media that the policy agenda – at least in the early years - drives the academic agenda (Wartella and Reeves, 1995; Cunningham, 1992). Hence, the key question is how should the academy and, indeed, society, conceptualise the value of the internet for children and young people? The starting point for answering such a question might follow children's own interests, this leading to a focus on questions of communication, identity and participation in social networks, or it might take the perspective of adult society, asking primarily about educational (and labour market) benefits. Each approach to the question of value is associated with a prominent set of concerns, for questions of education also raise anxieties about exclusion from educational opportunities – i.e. the dangers of non-use, while questions of communication and identity also raise anxieties about exploitation of childhood innocence and vulnerability – i.e. the dangers of use.

Much more than for the question of opportunities, research on the supposed dangers of the internet has attracted considerable public attention and concern, although neither question has been substantially researched empirically as yet.. In considering the risks and dangers, the academy has attempted to distance itself from the Jekyll and Hyde image of the medium (Turow, 1999), arguing strongly for a critical analysis of the terms in which these debates are conducted (e.g. Facer et al., 2001; Kinder, 1999), itself concerned that the stress on dangers is biasing the policy agenda away from a constructive exploration of the benefits of the internet (Oswell, 1998). Although the debate will only advance when it transcends the futile oppositions between optimists and

pessimists or technophiles and technophobes, this rough categorisation of opportunities and dangers, from both children's and adults' perspectives, organises what follows.

Opportunities for communication, identity, participation

Although children may find it difficult to articulate the value of the internet (Hall & Newbury, 1999), new opportunities to communicate represent children's major interest in going online. Key questions for the research agenda include: how are social networks and peer culture changing as online communication becomes more commonplace (Slater, 2002; Turkle, 1995)? How important, and for whom, are forms of identity play (anonymous or deceptive communication, use of multiple identities, etc) or online participation (including personal revelation, self-help and civic participation)? How far does online communication sustain local networks or are children developing more distant relationships? Can the internet support children's creativity in relation to content production?

Thus far, few projects have examined these questions. One point of consensus is that the popular opposition between online and offline, or virtual and real, communication is inappropriate. Rather, young people integrate on and offline communication to sustain their social networks, moving freely between different communication forms (Drotner, 2000; Pew, 2001b; Slater, 2002). This suggests that most contacts are local rather than distant (or 'virtual'), though research supporting this claim is largely qualitative. Despite the survey findings of the HomeNet project (Kraut et al., 1998), it seems that for all but the already-isolated, the internet fosters rather than undermines existing social contacts (e.g. Mesch, 2001).

A more contested question is how significant online communication can be for the formation and expression of young people's identity and relationships. Several projects inspired by Turkle's (1995) analysis of a 'culture of simulation' pursue the argument that children use computers to experiment with themes of sexuality, politics and selfhood (e.g. Stald, 1998; Stern, 2002). This research suggests that the internet offers a comparatively safe yet private place for children to experiment with identity. What is less clear is how creative, or subversive, such communication is. One account of three young web authors found children to be sophisticated in the skills they bring to bear but uncreative in their ambitions, preferring to mediate the work of others (Abbott, 1999; although see work on hackers by Nissen, 1998). This confirms Miller and Slater's argument (2000) that in practice, when people produce online content they do so according to social norms already established offline. By contrast, Danet (2001) argues that young people's online communication uses playful language to innovate in relation to identity (see also Crystal, 2001, on online language), this playful creativity being precisely what young people value.

The further step, from communication to participation in a community or public sphere, is even more strongly contested. The most that can be said is that a few studies are charting interesting initiatives involving young people's participation using the internet, holding out the promise of new opportunities through instances of 'best practice', although it remains unclear how and by whom these could be evaluated or more widely implemented (e.g. Leonard, 1999; McNeill, 1999; Montgomery, 2001). For example, teenage girls use the internet as a source of health information (Borzekowski & Rickert, 2000), and young people value opportunities for participation when offered, although

these are often restricted in scope and tightly controlled (Sundin, 1999). The Center for Media Education in the USA is prominent in arguing for the creation, and economic viability, of a 'youth civic media' online (CME, 2000). Here one might draw on parallels with television and its putative role in sustaining and extending public culture. The internationally-endorsed Children's Television Charter (Feilitzen & Carlson, 1999), which takes a rights-based approach to the contribution and responsibilities of television, asserts children's rights to self-expression, creativity and participation, in effect to cultural citizenship. Could this be applied to the internet, inviting a parallel vision of online cultural citizenship, or perhaps an online 'public service ethic'? Potentially countering such optimistic visions, it should be noted that critical perspectives systematically analysing the economics of the youth market for new media products (Kinder, 1999) have also yet to be extended from television and computer games to the internet.

Opportunities for education, learning and literacy

It is well known that parents state education as their main reason for investing in the internet (Buckingham, 2002; Mumtaz, 2001). The possible educational benefit of domestic internet access, together with the implications of extending education itself further into the home, raises some important questions. Are children as expert as they seem and is there is a generation gap in ICT competence? What support are parents receiving as they re-invent the home as an informal learning environment and how does this interface with school? Are children turning away from traditional sources of knowledge, with new literacies developed through interactive play?

Parents themselves seem conflicted about the value of computers, and in some ways they are also in conflict with their children. This conflict centres on the potential educational value of computers, on the use of so-called 'educational' applications, and on the grey area of 'edutainment' (Buckingham, et al, 2001; Downes, in press). On the one hand, they see children becoming expert, confident learners in the new information age; on the other hand, they worry about the loss of traditional skills, competencies and values. Children experience parallel ambivalences. For them, computers are about mastery, whether or not this opens up personal paths to learning or the evolution of new learning cultures (Papert, 1996). At the same time, children find it difficult to use online information resources, being unskilled in the process of searching, using keywords, and so forth, this being partly a matter of training and partly a matter of interface design (Fasick, 1992).

Parents' and children's hopes and doubts derive from the 'uncertain pedagogy of the computer' (Buckingham, 2002; Kellner, 2002). It is a common theme that computers and the internet are used differently at home and at school (Kaiser Foundation, 2000; Loveless & Ellis, 2001), making policies centred on an effective home-school link particularly fraught. This is partly because children prefer to play games at home while at school they word-process or use data bases, and partly because at school, children's use of computers is generally closely supervised by teachers, while at home – the main location of use (Pew, 2001a) - parents supervise rather little (Kerawalla & Crook, 2002). More intriguing, but least researched, is the possibility that different styles of use and different, even conflicting, forms of competence are being developed in these different locations.

Free exploration at home may mean that school competence lags behind that learned through play at home (Downes, in press; Facer, et al, 2001). Significantly, if unsurprisingly, young people claim to learn about ICT more from their friends than from either parents or school (Schmidbauer & Lohr, 1999). If ICT at home is, in policy terms, intended to compensate for the deficiencies of formal education, this raises difficult questions about the changing responsibilities of parents and the growing 'curricularisation of leisure' (Buckingham, 2000). Some worry that parents will try to impose their own, outdated learning styles on children (Papert, 1996); others worry that this new responsibility will overburden mothers, introducing new problems even as it resolves others (Bird & Jorgenson, in press). One might also argue that, if free exploration really supports new means of learning, far from attempting to extend school-based learning into the home, educational technology policy should attempt to extend informal, playful learning processes from the home to the school (Beavis, 1998; Kellner, 2002); this would be particularly important for children without a computer at home.

It is a curious omission, given the progress of such debates, that little direct evidence exists to evaluate the widespread assumption that the internet will in fact benefit children's education. One study shows that having a computer at home improves test scores, especially for middle class children (Attewell & Battle, 1999); and there is some indication of an improvement in specific cognitive skills after playing computer games (e.g. Tarpley, 2001); however, these studies use conventional, curriculum-based measures of educational achievement rather than investigating any of the grander claims for new forms of literacy and knowledge representation. Some have forcefully argued that case for harm, namely that computers pose health hazards, create developmental problems,

stunt the imagination, isolate children from the adult world and so forth (Alliance for Childhood, 2000); yet here too little evidence is cited in support.

More radically, researchers are beginning to ask questions about internet literacy. Here they draw on a well-developed tradition of analysing print literacy and audiovisual media literacy (Snyder, 1998; Tyner, 1998). Arguably, by representing knowledge in a different manner from that of the traditional book or the familiar genres of television, the internet - with its multimodal, hypertextual, heterarchical, diverse forms of online knowledge representation - is transforming conventions of literacy, authority, knowledge and creativity. Literacy is, of course, a source of social power (Luke, 1989), and so we must ask here not only about changing conceptions of knowledge and learning, but also about the political economy of institutional infrastructure and resources for these changing conceptions of knowledge and learning.

Dangers of exclusion and the 'digital divide'

Access to the internet is heavily stratified, with significant inequalities across and within households in all nations studied: research is now examining the complex interrelations among economic, cultural and social inequalities (Rice, 2002). However, while the 'digital divide' in access is clear, the existence of a more subtle but potentially more pernicious digital divide in quality of use remains controversial. Some suggest that, given access, disadvantaged groups make equivalent use of ICT, so that redressing access is sufficient (Compaine, 2001; Nie & Erbring, 2000); others suggest that inequalities in use are more persistent and difficult to resolve than those of access (Rice, 2002); still others suggest that providing domestic access to ICT may actually increase rather than decrease

inequalities in class, gender and ethnicity precisely because of inequalities in the nature of ICT use (Furlong, et al, 2000).

Perhaps the story is different for different sources of inequality. Most research on domestic use has considered gender as a source of inequality. Domestic access is often more or less equal, and there are few gender differences in motivation for internet use. However, there are considerable differences in the experience of use (Schmidbauer & Lohr, 1999): boys may control their sisters' access to ICT in order to express, and so reproduce, their masculine identity (McNamee, 1998); mothers may collude in constructing the computer as 'male territory' within the home (Van-Zoonen, 2002); and fathers may be threatened by their sons' expertise with computers (Ribak, 2001). While it is hardly surprising if well-established social contexts and values of family life mean that children's use of the internet is still patterned in traditional ways, perpetuating or even increasing social divisions within society, this conclusion does not substantiate some of the radical claims made for the internet; nor can it be grounded until more research on inequalities in social class, ethnicity and region is forthcoming. Lastly, it should not be forgotten that a significant minority of young people lack access to the internet altogether, because their families are unable or unwilling to provide it, though once more, little research has asked why some young people are low or ambivalent users of the internet (although see Facer & Furlong, 2001).

One hope is that the school can redress inequalities at home. Yet, in schools too, the mere presence of ICT in schools is proving insufficient to transform the learning process. Critics of the UK's National Grid for Learning are concerned that the gap between info-rich and info-poor schools is widening rather than narrowing (Grey, 1999), and

educational providers face considerable challenges in devising appropriate use of the internet within and beyond the curriculum (although see Clark, in press; Schofield, et al, 1997).

Dangers of content, contact and commercialism

Concerns regarding the internet relate to commercialism, privacy and, most of all, sexual material (Turow, 1999; UCLA, 2001; Williams, 2000). Parents are developing rules for managing their children's use of the internet, although many lack confidence and/or understanding in guiding their children (Wallace, 1999). Such rules can polarise parents' and children's perspectives, for while anonymity and playfulness, privacy and deception, have always been vital to childhood and are therefore crucially what children value about the internet, it is precisely these that give rise to fears for children's safety. Inevitably, definitions of 'risk' are value-laden - while some worry about commercial exploitation of children online (Montgomery, 2001), the industry is commissioning academics to explore children's use of online financial services (Webley, 1999). On the other hand, it would be irresponsible to deny that some of these fears are justified.

By far the most public concern has centred on the growing incidence of unwanted or inappropriate sexual contact made to teenagers by adult strangers. The Pew Internet and American Life Project (2001b) surveyed 12-17 year olds in December 2000, finding that nearly 60% of those online had received messages (of any kind) from strangers. In the UK, NOP's Kids.net survey found that 29% of children using the internet would give out their home address and 14% their email address. The *Chatwise, Streetwise* Report (Internet-Crime-Forum, 2000), which charted mounting evidence of actual crimes against

children, suggested that incidents of adult sex offenders meeting children online and gaining their trust are increasing in both the UK and USA (see also Arnaldo, 2001), the key group at risk being girls aged 13-17. Beyond the use of opinion polls, however, little research has explored the nature of such unwanted sexual contact nor young people's responses to it.

How far inappropriately sexual or pornographic websites are experienced as problematic for young people and their families is less clear (Sutter, 2000). Following the earlier-noted absence of textual analysis in this field, matters are confused because little attention has been paid to the definition of pornography, failing to distinguish images which are upsetting, censored from television or illegal. Nonetheless, although estimates, and definitions, vary widely, at least one study mapping online pornography identify much that is upsetting or embarrassing for children (Feilitzen & Carlsson, 2000). Opinion polls support such a conclusion: a Canadian survey of parents suggests 1 in 5 children have found undesirable sexual material online (Media-Awareness, 2000); the American Kaiser Family Foundation survey found that one in three teens have seen pornography online and that children are more likely than adults to trust online information (Kaiser Foundation, 2000); in the UK and elsewhere, reliable surveys are yet to be conducted, though the Kids.net survey found up to a quarter of children aged 7-16 may have been upset by online materials and that few reported this to an adult (Wigley & Clarke, 2000).

Less attention has been paid to the commercial 'dangers' of the internet, though there is growing criticism over ways in which children's rights to privacy may be violated by online advertising and unfair or deceptive practices. The Center for Media Education identifies several new forms of online marketing practices targeted at children, including

'branded communities', 'viral marketing', etc, expressing particular concern over the economic pressure towards alliances between civic sites and commercial ventures (Montgomery, 2001; Turow, 2000). Little research, however, has examined the user's perspective to discover how teens respond to such sites and whether they can recognise and/or distance themselves from commercial approaches.

Does internet use result in harm to children and young people? In responding to this question, we must learn from the lengthy and expensive search for television's harmful effects (Livingstone, 1996; Seiter, 1999). For the link between risks, incidents and actual harm is genuinely tenuous: not all risks taken result in worrying incidents, not all worrying incidents result in actual or lasting harm. Just as with television's effects, some of the questions asked of the internet - does inadvertent exposure to pornography produce long-term harm, does playing violent games online make boys more aggressive, does immersion in a branded consumer culture produce a more materialistic generation, is the internet changing the way children think and learn? – seem impossible to 'answer' in any simple fashion. This assertion does not suit the policy agenda, of course, and nor does it satisfactorily account for the media's role – however minor, however context-dependent - in the reproduction of harmful or exploitative representations and practices. Hence, while remaining critical of the ways in which questions of harm are framed in public and policy discourses, this issue must be reframed so as to remain firmly on the research agenda.

Research priorities

Researching children's internet use

While it remains imperative that research should continue its critical scrutiny of the questions asked and the terms in which they are asked, it is also imperative that a wide range of empirical projects are initiated to address the many questions raised above. Before drawing conclusions about emerging research priorities, one should note the methodological preferences and difficulties faced by this new field. At present, researchers are responding to the challenge of opening 'the black box' of the home by adopting a variety of methods.

Broadly speaking, North American research – constituting the majority of empirical studies - is particularly strong on quantitative research, conducting rather few qualitative projects. Such research has strengths in producing reliable and representative data to identify statistical frequencies, differences and patterns of use, but it rarely explores a topic theoretically or in depth (although see Clark, in press; Turkle, 1995). By contrast, the smaller body of European research tends to be spread evenly across qualitative and quantitative approaches, using small samples selected to capture the variety of experience and so making for insightful ethnographic accounts of the contexts and nature of internet use, but less able to support claims about representativeness, demographic distribution or scale (although see ERICA, 2001; Livingstone, 2002). For quantitative data on internet use, European researchers and policy-makers must rely on data provided by commercial bodies (namely 'headline' findings which are expensive and which lack depth and context) or typically underfunded academic research which often uses weak sampling techniques. This is in striking contrast with the USA, where universities such as Stanford,

UCLA and Pennsylvania and foundations such as Pew provide independent, representative surveys often conducted on an annual basis.[3]

Interestingly, although the combination of qualitative and quantitative research is widely valued – for 'triangulation' allows one to identify and address differences in findings or interpretation arising from the use of different methods – it remains the case that little such research has been published. Conducting research within the home poses yet further challenges, particularly in relation to children. There is a thoughtful new literature on research with children which raises specific issues not always adequately addressed in the new media literature (Graue and Walsh, 1998; Greig and Taylor, 1999). Notably, researchers are barely more likely to ask children directly about their access and use than to ask parents to report on their children's use, even though it is central to childhood to generate tactics to live within, or circumvent, the strategies by which adults attempt to guide or constrain children (Seiter, 1999), making adult reports unreliable. More simply, in the terms used by children differ from those of adults, challenging adult-centric perspectives. Most importantly, researchers must address the ethics of research on children's internet use, particularly insofar as they hope to discover evidence of young people's private uses of the internet – their chat, flirtations, confessions, embarrassments or uses of pornography.

Theoretical uncertainty and consensus

From this reading of research to date several conclusions may be drawn regarding areas of theory in which consensus has (not) been reached. Interestingly, the two key terms defining the field remain contested. First, are children a special group? As already noted,

most research on the social uses and impacts of the internet neglects children, too easily presuming them included in discussions of 'the population' or unproblematically 'spoken for' in surveys of parents. And, paralleling earlier research on television's effects (Davies, 1997; Dorr, 1986), it seems difficult in practice to legitimate research on children's internet use without somehow inflaming moral panics by emphasising parental anxiety or children's vulnerability (Drotner, 1992; Wartella and Reeves, 1985). Second, is the internet a distinctive technology? Too much work refers to 'ICT', 'computers', 'new media' or 'computer-based media' without addressing the technological and social specificity of the internet. Of course, no technology is wholly new, yet balancing long-term continuities and innovative features remains difficult, exacerbated by an uncertainty over whether to regard 'the internet' as a singular technology or whether to treat separately the different forms of communication it enables. Also contentious is the continuing fraught relation in media and communications between critical and policy-relevant research, though the degree of harmony or tension varies cross-nationally. Some researchers attempt to produce 'neutral', largely descriptive 'information'; others attempt to legitimate a balance between protectionist and rights-based regulation; still others adopt a critical position.[4]

While these remain issues for the field, other issues are treated in a more-or-less consensual manner: here research on children and young people's use of the internet draws upon, and is shaped by, several established literatures, the most influential being the nature (Goodman, 1983) and consequences (Calvert, 1999) of children's television viewing; the process of diffusion and appropriation of new domestic technologies (Rogers, 1995; Silverstone and Hirsch, 1992); the incorporation of educational technologies into the classroom (Loveless and Ellis, 2001;Tyner, 1998); and the new field

of internet research in general (Jones, 1997; Kiesler, 1997; Lievrouw and Livingstone, 2001). In combination, these have provided three broad assumptions to guide the field.

First, following the sociology of childhood (James et al, 1998) as well as audience research (Buckingham, 2000; Seiter, 1999), it is argued that children themselves play a key role in establishing the emerging internet-related practices. In attempting an approach which is primarily child-centred rather than technology- or media-centred, researchers avoid construing children as passive or vulnerable, as incomplete adults rather than as agents in their own right. And in arguing that children are active interpreters of online content, an agenda is emerging in which the parallels between audience reception and more interactive forms of engagement, together with the literacy required to decode online texts, can be productively pursued (Mayer, 1998; Livingstone, 2002).

Second, research on children and the internet must go beyond access to examine the nature of internet use - its nature and quality, social conditions, cultural practices, personal meanings. By contextualising internet use within everyday life research seeks to counter the technologically determinist assumption that the internet is external to, and so impacts on, society; rather, it is longer, multidimensional processes of social change - in the family and childhood, in leisure and lifestyles, in work and education and in social values - that shape the introduction of technology (Lievrouw and Livingstone, 2002). The internet, like earlier media, heralds a far-from-dramatic transformation of children’s lives, contributing one element among many which furthers wider social trends towards the privatised, media-rich home and the individualisation of leisure. Thus media culture, youth culture, consumer culture are increasingly intertwined, creating generation gaps

and gender differences in everyday culture (Drotner, 2000; Fornas, 1995; Kinder, 1999; Livingstone, 2002).

Third, in an increasingly media-rich environment, it is argued that new media supplement rather that displace older media. Consequently, the arrival of each new medium is associated with an expansion in media use, increasing the amount of time spent with media overall (Livingstone, 2002; Stanger & Gridina, 1999). Particularly, it is characteristic of young people's leisure that media are used simultaneously rather than sequentially.[5] The principle of remediation develops this view by arguing that when a new medium is introduced into an existing media environment, the uses and meanings of all media are adjusted (Bolter and Grusin, 1999): the internet can therefore be expected not only to add to the existing mix but also to transform the way in which the television, video recorder, computer games and radio are used.

In conclusion, it has been argued that while the body of empirical work conducted on children and young people's use of the internet is still small, the first steps have been taken in addressing key questions of theoretical, empirical and policy significance. Here categorised in terms of the potential opportunities and dangers of internet use, these questions have been identified in terms of (1) communication, identity and participation, (2) education, learning and literacy, (3) the dangers of exclusion and the digital divide, and (4) the dangers of use, particularly contact, content and commercialism. To guide research on these issues in the years to come, this article has also identified an emerging theoretical framework together with the pressing methodological and policy-related challenges facing the field.

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Endnotes

[1] In the UK by 2000 nearly 3 in 4 children had a computer at home and of these, 2 in 3 had internet access (ChildWise, 2001); hence among 7-16 year olds, 1 in 2 have internet at home; most have access of some kind at school (DfEE, 2000). Overall, more use the internet in school (57% of all 7-14 year olds) than at home (42%), though they use it for longer and more freely at home; one fifth uses it at a friend's or relative's house (BMRB, 2001).

[2] Because the internet has reached a mass market mainly in Europe and North America, and because this is generating a significant body of research in English, this article focuses on research in these regions.

[3] Surveys are needed which pursue several ways of asking difficult questions (e.g. about pornography or other harms), which collect contextual information (for example, breaking down types of use by location of use), and which provide information on social inequalities (ethnicity is generally neglected, and some surveys fail to analyse findings by socioeconomic status). While government statistics seek evidence of inequality, they generally address adults/ households rather than children.

[4] Indeed, at times it appears easier to critique policy than to produce evidence to guide its choices. On the other hand, it is also problematic that the questions asked by the policy community (e.g. do parents or children read content labels or read privacy policies or notice online advertising? what are parental practices regarding safety or children's practices in following such rules?) are not always interesting academic questions.

[5] The argument for displacement of media is largely paralleled by that of face-to-face communication and other social activities. Here, however, the evidence is less clear-cut, with some evidence of a reduction in time on the telephone or in social activities (Anderson & Tracey, 2002).