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Key findings from Europe

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Abstract

This paper analyses comparative empirical data from across Europe on gender differences in children's internet use, and through a new interpretive framework on young people's experiences, seeks to add new findings to this growing international knowledge base. Linking feminist theory on gender and technology with theories of youth gender identity construction, four key areas are investigated. Firstly, the impact of increased internet access and use in schools and in homes on gender equality is examined. Secondly, youth communication and content creation practices are investigated to explore whether the internet is facilitating flexibility in gender identity and the transcendence of traditional gender roles. Thirdly, gender differences in skills and perceptions of expertise are discussed. Finally, internet activities which demonstrate overtly gender-stereotypical masculine attributes – pornography and action/violent game playing - are discussed. We argue that gender remains a salient factor in researching the complexity of young people's internet use and call for multiple theoretical perspectives to contribute to further research on this topic.

Keywords: children, gender, ICT, internet, technology.

Authors bios:

Helen McQuillan, postdoctoral fellow at Dublin Institute of Technology, researches in digital inclusion, young people and new media, and gender and ICT. Helen has been involved in digital inclusion research and practice for almost ten years and is research advisor to DIT's Digital Communities programme and Limerick City Community ICT steering group.

Brian O'Neill, Head of the School of Media at Dublin Institute of Technology, is a founder member of the *Teachers' Association for Media Education.* He has contributed to the Broadcasting Commission of Ireland on media literacy in the public sphere (2008) and media education (2007 for the Radharc Trust), and for UNICEF on journalism training. He is Deputy Head of the IAMCR Audiences Section.

Gender Differences in Children's Internet Use:

Key findings from Europe

Introduction

Digital media and the internet now form an integral part of most young people's communication practices and information spaces across Europe. Popular representation depicts young people as being naturally predisposed to new technologies. Yet, the rhetoric of the "net generation" (Junco & Mastrodicasa, 2007) or "digital natives" (Prensky, 2001) masks the diversity of young people's experiences with ICT and the dynamics of a changing media environment. Assumptions of natural aptitude and interest among all young people in engaging with internet technologies have been questioned by Bennett, Maton, & Kervin (2008) who suggest that poorly evidenced claims of natural affinity camouflage the complexity of young people's relationships with ICT.

Young people's internet access and use is growing steadily across Europe. The EU27 statistics for home and school internet access are 65% and 57% respectively (Eurobarometer, 2008), although average usage figures disguise considerable disparity between countries – from a low 47% in Italy to a high 94% in Finland. Certainly, young people's internet access and experience varies according to age, socioeconomic status, geography, gender, and culturally-specific factors. Our main concern in this paper is with gender. Optimistic information society discourse and the increasing prevalence of new digital media technologies have led to the perception that internet use is now more participatory and equitable than traditional media, and in many instances, gender is no longer considered a salient factor in discussions of digital divides.

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As gender differences in young people's internet access shrink, we ask can gender be ignored as an independent variable in accounting for different experiences, practices and challenges for girls and boys? Recent evidence suggests that the gender gap in internet access has diminished but that more subtle gender differences in online activities are emerging, particularly among children (Pew Internet, 2005; Livingstone, Bober & Helsper, 2005). To explore some of these subtleties, this article draws on empirical data from comparative analyses of gender differences in children's internet use and experiences across Europe, adds new findings to a growing international knowledge base, and provides a theoretical framework for understanding the complexity of young people's new media use and experiences.

Theorising gender, identity, equality and difference

Gender and technology, their complexities and their interrelationship, have been the subject of feminist research for over three decades, producing a rich theoretical framework for understanding gender-technology relations and exploring changing patterns of technology development and use. Relevant discussion of equal opportunities and gender equality has arisen in the context of research on the (in)visibility and historical contribution of women in science and technology (Stanley, 1993) and women's status and under-representation in ICT (Trauth, 2006; McQuillan & Bradley, 1999). Despite criticisms of gender essentialism, technological determinism and the focus on attempts to encourage girls to "catch up" with boys, the concept of equal opportunities continues to dominate debate, and has been supported in European education, social and employment policy resulting in positive action programmes in schools.

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Concerns about equity in access to ICT between the sexes were broadened in debates about expertise, knowledge and power and institutional practices. Researchers investigating the gender politics of ICT (Webster, 2005; Greenfield et al, 2003) and the discourse of expertise (Menzies, 1996; Cockburn, 1987) debated the gendering of ICT knowledge and expertise, and males' automatic insider and elite status in any technological domain. A focus on women, communication and cultural expression highlights the dynamic cultural and ideological association between gender and ICT (MacKenzie & Wajcman, 1999; Turkle, 1997). An even more optimistic account of the fluidity of gender, technology and culture is offered by cyber-feminists (Kirkup, 2000; Plant, 1997) in their utopian predictions of cyberspace which they predicted would free women from the constraints of gender. Although initially dismissed as promoting dichotomous gender essentialism, their ideas may provide a basis for investigating gender differences in computer gaming, particularly those involving fantasy, escapism, alter egos and extreme violence – elements of gender identity not overtly encouraged in schools or homes, but extensively performed within gaming communities, particularly by boys.

Wajcman's (2004) analysis shifts the debate away from differences between men and women to an understanding of the social, cultural, and political context of technological development shaping users' relationships with and experiences of ICT. The strength of Wajcman's argument for "technofeminism" lies in the synthesis of the many diverse voices engaged in gender-technology research and analyses of changes in the interrelationship of gender, technology, knowledge, and power. The diversity of feminist perspectives on gender and technology illustrates the challenges in exploring young people's internet use and shows the need for an interpretive framework which recognises gender as a dynamic process, the complexity of a changing media

environment and the diversity of experiences of young peoples' new media experiences.

Paechter (2007), an educational researcher, also explores gender as a dynamic process. According to her, gender identity is constructed, learned, negotiated, performed and constrained in multiple communities of masculinity and femininity practice. Within these communities, typical versions of masculinity and femininity can be individually and communally constructed, where boys and girls can both "do" or contest their gender according to communal ideals and values. Thus, she argues that different identities can be constructed and performed in different settings, at different times– depending on dominant group conceptions of gender and power/knowledge relations within communities of practice. Although Paechter's conceptual framework does not specifically address new media, it has implications for exploring young people's ICT usage and interpreting differences and consistencies in gendered patterns of young people's use of the internet. It demonstrates how the varied communities of practice which the internet embodies, and different contexts of internet use (both physical and virtual) with different social norms and power relations, can influence gender identity, internet practices and patterns.

Drawing on these diverse theoretical perspectives, a number of research questions arise in relation to the gendered dimension of children's internet use. Drawing on the cross-national empirical data reported in Hasebrink, Livingstone et al (2009), we examine the evidence for a diminishing gender gap in access to the internet across Europe (RQ1), or why despite equal access, gender differences persist in boys' and girls' internet activities and opportunities, resulting in different skill sets and perceptions of ICT expertise (RQ2). We further explore the extent to which new patterns of communication reflect the more flexible and collective communicative

practice of the internet, transcending prevailing social norms and values (RQ3), while also examining how certain elements of young people's internet practices reflect the hegemonic power structures of both gender and technology, and these are slow to shift, resulting in persistent gender differences (RQ4).

Method

Meta-analysis of national reports from twenty-one European countries participating in the EU Kids Online research network was conducted by the authors in February 2008 for the report *Comparing children's online opportunities and risks across Europe* (Hasebrink, Livingstone, Haddon & Olafsson, 2009). Comparative analysis of gender differences in children's access, use of the internet, skills and activities was conducted, based on available empirical research in each country. Direct cross national comparisons were difficult because of gaps in the availability of data, a lack of comparative data, varied methodologies, variables and sampling frameworks, and different age groups studied. Despite extensive interest in young people's internet use and an increase in research on the subject, analysis of the EU Kids Online research database highlighted the fact that very little attention is paid to gender in European research.

Discussion about youth and new media has been enriched by interdisciplinary academic research, media attention (both positive and negative), and public discourse (Herring, 2008). However alongside this increased attention is a loosening of terminology and a growing imprecision of analysis. "Technology," "ICT," the "internet" and even "youth" and "gender" enjoy a familiarity in popular discourse which has had the effect of blunting the range of meanings, interrogations, and

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H2: Despite equal access, gender differences persist in boys' and girls' internet activities and opportunities, resulting in different skill sets and perceptions of ICT expertise.¶
H3: New patterns of communication reflect the fact that the internet represents more collective practice and communities, which are flexible and transcend prevailing social norms and values.¶
H4: Certain elements of young people's internet practices reflect the hegemonic power structures of both gender and technology, and these are slow to shift, resulting in persistent gender differences.

complexities implicit in these terms. There are, in other words, differences in the ways in which these terms are operationalised in research and reported in the public domain. While we acknowledge the problem that terminological differences pose for research and comparative analysis, it is beyond the scope of this paper to critique these thoroughly.

Equality in access and use?

Research across Europe provides evidence that gender gaps in access to the internet are closing in nearly all countries, as home and school access becomes more commonplace. Although in most countries the percentage of boys using the internet is slightly higher than girls, in only three countries are the differences statistically significant: Austria (boys: 62%, girls: 45%), Italy (boys: 41%, girls: 30%), and Germany (boys: 52%, girls: 43%) (Eurobarometer 2008). As internet diffusion has increased, these differences disappear, as demonstrated by the similar figures for girls (68%) and boys (68.6%) in countries categorised as high internet use countries by the EU Kids Online project (Hasebrink, Livingstone, et al 2009).

Schools play a significant role in promoting equality of access to ICTs. Eurobarometer (2008) reports little variance in girls' and boys' internet usage in school among the 12 to 17 age group (87% vs. 83%). Mediappro (2006) is more critical of schools' approach to ICT, reporting that school use of the internet is severely constrained by policy priorities that focus primarily on ICT lessons and skills, and prohibit internet use for communication (chatting, e-mail, instant messaging), and leisure uses such as games and music. By limiting these activities, schools may well be constraining more gendered internet activities and inadvertently promoting equal opportunities.

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Girls respond well to encouragement to succeed academically, a message that is central to equal opportunities values imparted in schools and homes. Girls' use of the internet for educational purposes reflects this. Across Europe, with the exception of Norway and Sweden, where educational use of the internet was reported (Bulgaria, Germany, Italy, Spain, the Netherlands, UK), girls are more likely than boys to search for information on the internet for educational purposes. Indeed, educational diligence has become a salient feature of girls' gender identity in the past decade, demonstrated by improvements in academic performance, compared with boys' dis-improving academic performance – an element of boys' gender identity causing considerable public concern.

Households with school-going children are most likely to have computers and internet connectivity, with investment in ICT often premised on current and future educational benefits for children (Cranmer, 2006). More than a third (34%) of young people have their own computer and the trend towards lone internet use continues (Eurobarometer, 2008). Again, there is considerable variance in this phenomenon across Europe. For example, despite relatively high (88%) home internet use by young people in Ireland, only 9% have their own computer. Here, a family computer is still the norm, unlike Denmark, where two thirds (67%) of young people have their own PC. We cannot conclude from this that solitary use of the internet is asocial, because as indicated below, the increase in use of the internet for peer to peer communication for both boys and girls is growing steadily.

Gender gaps in internet access and use are closing across Europe as the diffusion process speeds up. European public policy supports and encourages equal opportunities, particularly in the area of ICT. Boys and girls have equivalent resources and similar motives for going online. They both use the internet for information, for

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education, for entertainment and leisure. Research across Europe suggests that gender differences in access to the internet decrease as diffusion and familiarity increase. Evidence from the UK in particular suggests that where internet is commonplace, supported by robust public policies on ICT in schools and digital inclusion activities at local level, that gendered practices are less evident. This may be because media literacy is an important part of the curriculum, curricular content has been developed that promotes gender equity, ICT is equally established as an educational and entertainment tool, public service broadcasters have a major online presence with quality content, or because there is a more robust research on young people's internet use – approaches encouraged by equal opportunities policies and legislation.

Communication practice, content creation and gender identity

European and international research on the internet and digital media points to new patterns of communication emerging. Lemish, Liebes and Seidmann (2001) highlighted the more prevalent 'gaming culture' of boys in comparison to the 'communication' patterns favoured by girls. Increasingly young people's communication practices are becoming multi-modal, characterised by connectedness, immediacy, flexibility and interaction using a mix of SMS, voice, chat, face to face and digital content creation and sharing (Richardson et al, 2007). The expression of young people through chat and messaging, social networking, blogs, and personal pages has entered an active phase for many of them but analyses from Mediappro (2006) suggest that these practices are still at their "babbling stage". Oliver & Goerke (2007) also report that young people's use of emerging technologies is limited, arguing that new media practices, similar to traditional broadcast media, remain highly mediated processes, with a dominant focus on consumption rather than

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creativity. Yet textual and multimedia formats, weblogs, personal homepages and social networking sites present a range of opportunities for young people to express themselves (Stern, 1999).

Thiel (2002) suggests that new online communication practices are methods for experimenting with identities and sexuality and have implications for the way young people communicate and conceive of themselves in their transition to adulthood, although in many instances new media are used to communicate with existing friends and peer groups. For many young people, creating content and networking online is becoming a central part of managing their identity, lifestyle and social relations (Livingstone, 2008). The gendered nature of computer-mediated communication and identity formation is an important area of communication studies (Herring, 2003; Stern, 1999). Research by Gross (2004) reported that the online communication activities of adolescent boys and girls have become similar rather than different. Both describe their online interactions as communicating in private settings, interacting with existing friends, and confined to what Gross describes uncritically as mundane and familiar topics such as friends, gossip, relationships.

Contradictory findings emerge in EU cross-country comparisons of gender differences in online content creation. Whereas in Iceland and Cyprus, web publishing and blogging is more popular with girls, this trend is reversed in Sweden, Italy and the UK. In Norway and Estonia, high internet usage countries, gender differences in online content creation are minimal. Gendered patterns in online content creation are more evident in the US. American studies have tracked teen internet activity since 2002. Lenhart et al (2007) report that girls are more active in content creation than boys, with girls now dominating the teen blogosphere. Boys in the US dominate one area - posting of video content online. Online teen boys are nearly twice as likely as

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online girls (19% vs. 10%) to have posted a video online where someone else could see it. Similarly, in Estonia, girls are considerably less likely to create or publish videos on their homepage (40% of girls vs. 53% of boys) (Kalmus et al, 2009).

Web publishing is emerging as a preferred activity of boys more so than girls and research on gender indicates significant differences in content between boys and girls. Adolescents often consider appearance as the core of identity. Personal homepages demonstrate how young people construct their identity online through the use of cultural materials at hand, in many cases, symbols of consumer culture (Stern, 1999). Weber & Mitchell (2008) note that even in cyberspace, young people understand that identity is embodied. By posting photos of themselves, they suggest that young people are addressing, modifying, and adorning their appearance. Stern's research focused exclusively on girls' homepages and found that girls' narratives were personal and intimate, with stories of relationships, friendships and emotions. Lenhart & Fox (2006) also note gender stereotypical blogging content, reporting that males are more likely to discuss technology, sport, politics and money, whereas women are more likely than men to be expressive and write about their personal lives.

Kalmus et al's research in this issue (2009) give further insight into young people's online content creation. Their Estonian research on home page publishing notes that girls are much more likely than boys to publish personal information about themselves (50% girls vs. 17% boys), and self-publish poems and stories (29% girls vs. 11% boys). A greater number of girls publish photographs they have taken (79% vs. 46% boys). Girls are considerably less likely to create or publish videos on their homepage (40% of girls vs. 53% of boys).

While studies point to gender differences in preferences and practices in content creation, there has been little investigation of whether this reflects differences

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in interests or in competencies. As Web 2.0 technologies become more prevalent and multimedia packages simplify web publishing and content creation, we can no longer assert that differences in technical competencies account for differences in genre preferences, but rather that gender identity construction processes and socialisation practices, which are different for boys and girls, have become somewhat more negotiated and flexible. While not exhibiting the cyber-feminist utopian prediction of an online world free of the restrictions of gender, it is evident that in the internet era, young women are as equally vocal and visible as young men, reversing the historical trend.

Skills and perceptions of expertise

Online skills and self-efficacy are important determinants of effective and beneficial use of the internet. However, self assessment of computer skills has been questioned within the research literature, particularly in relation to gender differences in perceptions of confidence and expertise. Banwell & Gannon-Leary (2000) note that overestimation of skill levels or reluctance to admit to a lack of knowledge and skill when using the Internet may affect how young people approach learning new skills. Buckingham (2005) warns that young people's reported confidence in using the internet may well exceed their actual expertise. This may well be the case for boys, whose gender identity has historically been intimately tied with technological competence, according to feminist researchers.

Consistently, gender is reported as a significant variable with respect to self-perception of skills and expertise (Hargittai & Shafer, 2006), with boys expressing higher self-perception of ICT expertise. Comparative analysis of empirical data reporting gender differences in children's skills across Europe was conducted for EU

Kids Online (Hasebrink, Livingstone et al, 2009) and provides a number of pertinent examples. Across Europe, with the exception of the UK, in countries where young people self-report and self-evaluate their internet skills (Estonia, France, Poland, Italy, Germany, and Bulgaria), boys tend to rate themselves higher than girls. Boys tend to describe themselves as more expert and claim to have more technical and advanced skills. Comparable research in Italy and Poland reports higher skills levels for boys in four functional ICT activities: downloading files, using PowerPoint, creating web pages and sending email attachments. In Italy, a significantly higher percentage of boys than girls (56% vs 35%) demonstrated high level digital skills. In France, more than twice as many boys (57%) than girls (26%) consider themselves as the most skilled member of their household. Research from the Netherlands also notes that a lot more teenage boys than girls say they are skilled in activities such as installing anti-virus programmes, upgrading software or replacing a hard drive. Austrian research links boys' higher skills levels with their more frequent use of the internet. In Sweden boys' greater technical skills are considered to result from their use of a wider range of applications including downloading, Skype, and web development, although a similar level of skill is not apparent in their self-protection or safety skills.

Technical skills alone are not sufficient to use ICT effectively. A range of skills and competencies are necessary, including operational, information and strategic skills (van Dijk, 2005). The ability to use the internet effectively and safely is increasingly becoming a key skill. It is unclear whether the confidence expressed by young people in their internet skills leads to greater safety awareness or practice. In fact, research from Poland and Bulgaria suggests that it may have the opposite effect. Research from Bulgaria reports that boys boast of being more knowledgeable, more skilled and also more daring than girls. Kirwil's (2002) Polish study shows how this

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can have consequences for boys' greater exposure to risks. In this study, young teenage boys (aged 13-15 years) report knowing how to disable internet filters blocking access to pornographic websites and also how to set them up again after disabling them.

Caution needs to be expressed in drawing conclusions on gender differences in skills for several reasons. Where evidence is available, it is difficult to compare. There are inconsistencies in skills measurements, and much data refers to self-perceptions of skills levels rather than tested or demonstrated skills. As feminist researchers remind us, technical skills have long been attributed to boys, thus inferring higher status. Possibly too, girls' preferences for communication and information searching are seen as lower-level skills and may not be valued as a result. Evidence also suggests that ICT skills gaps are narrowing. Girls are as interested, confident and skilled as boys, and in some cases, more so. A worrying trend persists however. Despite increased access, usage, interest, skills, and confidence, and a broader range of creative applications offered by the internet, only a minority of girls choose to pursue further and higher education in ICT (OECD, 2006) – a persistent trend, despite equal opportunities programmes and closing gender gaps in usage. This impacts on the gendering of higher level skills, technology development and expert status in the ICT disciplines.

Content, gender stereotypes, and patriarchal social values in game playing
Since their inception, there has been intense debate about whether video/computer games are good, bad or benign in their effect on children. To date, most computer game research has focused on how games impact academic and social outcomes. Critics of youth gaming argue that violent games normalise violent and aggressive

behaviour (Anderson, Funk & Griffiths, 2004), promote sexual stereotypes or encourage asocial leisure (Brenick et al, 2007). The range of genres spanned by the most popular games played by teens indicates they are not simply playing violent first-person shooters or action games. However, boys are more likely than girls to report playing violent M-rated games. Dill and Thill (2006) highlight gender stereotyping in computer games, which they suggest is even more exaggerated in advertisements for games. Their content analysis of these advertisements identified four worrying characteristics: violence was consistently the norm for both sexes; female characters were sexualized, scantily clad and the subjects of eroticized aggression; female characters were extremely thin with curvaceous busts; male characters tended to be hyper-masculine, dominate female characters and were accessorised with weapons.

More positive aspects of game playing are reported in relation to social interaction in multi-user games, suggesting they provide a rich learning experience, and they have been placed on a "ladder of online experiences" (Hasebrink, Livingstone et al 2009). Comparative European research revealed that in every country where this was examined, more boys than girls are gamers, enjoy gaming and spend more time at this activity. Although computer console games have traditionally been targeted at boys, recent years have seen a greater number of games appealing to girls and this is increasing girls' game-playing, although Europe lags behind the US in the number of girl gamers. Lenhart et al (2008) report that game playing has become widespread in the US, with nearly all (97%) young people aged 12-17 playing games on computer, web, console or mobile. US statistics disprove the stereotype that gaming is a male activity, with girls a growing part of gaming audiences and culture. Whether this is attributable to a wider choice of games and genres serving the

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diversity of young people's interests, or whether games development is becoming more feminised to increase market share, remains unclear. What is clear is that the youth market for games has increased significantly, for both boys and girls.

Pornography

Another market segment which has seen huge growth is internet pornography. Research on children and online pornography is growing, but DeAngelis (2007) notes that this research area is limited in many countries because of its morally-loaded nature, the methodological challenges of studying internet pornography's effects on an underage population, and the difficulty in showing whether exposure to online porn actually changes sexual attitudes and behaviour. Such research is all the more important given that young people's exposure to pornography on the internet is now so common that it can be described as a normal experience (Sabina, Wolak & Finkelhor, 2008). Research from European countries which investigated young people's exposure to pornography indicates that in every country boys are more likely than girls to seek out sexually explicit material, be sent links to pornographic web pages or to insert key words in search engines related to sex and erotica. Flood's research (2007) in Australia echoes this, reporting that 38 percent of boys deliberately access pornographic content online, compared with only 2 percent of girls. Whether pornographic websites are considered as problematic by young people is less clear (Sutter, 2000) although girls are more likely than boys to report discomfort, embarrassment and offence. Svedin & Åkerman's (2006) Swedish research on young people's exposure to pornography found that boys' use of the internet for accessing pornographic material was almost three times that of girls. The most common ways to look at pornography among 18 year old boys is via the internet (86 %), cable TV

(81%) and pornographic magazines (75%). Among girls of the same age, the most common ways to come into contact with pornographic material is cable TV (61%), porn magazines (40%) and the internet (30%). High consumers of pornography were also more likely than other boys to look at violent pornography, child pornography and animal pornography. Svedin & Åkerman's research points to the gap in our knowledge about the impact of exposure to online pornography and violence on boys' and girls' development. As pornography becomes more accessible online to even younger children, as unsupervised internet use becomes more commonplace, and video capability of phones improves rapidly, the general ambivalence to pornography exposure and consumption needs to be challenged by researchers.

Conclusion

This application of feminist perspectives on gender, technology, and identity to European comparative research on gendered patterns in young people's internet use reveals a number of issues. Although synthesising the results of diverse studies from different disciplines which used inconsistent methodologies and different definitions and research variables is a difficult task, it serves as a starting point to critically examine gender, youth, and the internet.

We set out to explore patterns of internet use by exaiming four broad research questions on gender differences. With respect to RQ1, examining gender gaps in access to the internet, we find that information society policies across Europe with an emphasis on internet diffusion, allied to equal opportunities policies and initiatives, have contributed to equalising access for boys and girls, although this is not universal. With respect to RQ2, findings on gender differences in young people's ICT skills are inconclusive, partly because there are significant differences in how 'ICT skills or

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expertise' is defined. Although it seems that girls can no longer be termed the "deficit" gender in relation to confidence with new media, successes in improving access, increasing opportunities for participation through communication, content creation and game playing have yet to translate into an increase in numbers of girls studying ICT at higher level (OECD, 2006). Our third research question explored whether changing online communication practices, involving more collective practice and communities, enable a transcendence of traditional gender roles. This is not supported by evidence, although there is evidence of emerging positive trends and flexibility in gendered practices - for example, changes in boys' communication practices with more chatting. Boys' gender identity has long been intimately tied to technological competence. Changing communication practices for boys, illustrated in a consequent rise in online chatting, indicates that both gender and technologies are cultural processes which are fluid and flexible, rather than fixed. The final research question that elements of young people's internet practices reflect the hegemonic power structures of both gender and technology, is the most difficult to support empirically.

Feminist critiques of gender and ICT remind us that technology is never neutral and embodies knowledge, power and gender hierarchies. Such structures are slow to shift, resulting in subtle, and yet persistent gender differences. Paechter (2007) reminds us that the internet embodies individual users, varied communities of practice, and diverse contexts of use with different social norms and power relations – all of which influence gender identity, internet practices, and patterns. Young people's engagement with ICT in schools and homes involves mostly individual consumption (for example, internet searching for leisure or education) and so encourages conformity to gender identity consistent with equal opportunity values. Findings

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across Europe on access and use suggest diminishing gender gaps, with equality of access the norm in almost every country (Eurobarometer, 2008). Online communication, social networking and content creation, monitored and moderated by peers, allow a greater degree of flexibility and co-construction of masculine and feminine gender identities. Here we see cross-cultural as well as gender differences. Consumer driven, more covert internet activities, conducted in private settings, such as extremely violent gaming and pornography use, which promote and encapsulate capitalist and patriarchal values, represent communities of practice where overtly gender-stereotypical masculinities are performed, encouraging hegemonic masculinity, which exploits and dominates women and other groups deemed to be less powerful.

Our analysis, even with its limitations, indicates that gender remains a valid and vital lens to explore changes, continuities and complexities in new media use and environments. The evidence base, although limited, paints a picture of complex and changing content preferences, communication practices, skills and learning processes and exposure to risks on the part of both boys and girls. While most commentators assert that everything in the digital future will be different, does this hold true, we ask, for social relations of gender? Transcendence of traditional gender roles requires a seismic shift in gender, knowledge, and power hierarchies – not automatically achieved by the introduction of new media tools and technologies, or equal opportunities programmes.

Several issues emerged in the research analysis which have important implications for future research. For example, perception of skills and expertise remains a complex question which requires more careful and detailed analysis, especially when related to young people's further education and career choices, and

falling numbers pursuing ICT at third level. Internet gaming has experienced phenomenal growth in its youth market. Gaming research, from sociological, cultural and ICT development perspectives, could gain valuable insights from research which not only explores motivations and experiences, but also acknowledges and challenges the patriarchal values and power hierarchies embodied in many games and in pornography. The popularity of the internet for young people is undoubtedly attributable to its diverse information, entertainment, and communication capabilities. We need to be wary of assumptions that virtual spaces, practices and communities are value-free, egalitarian or more participatory than traditional broadcast media. Likewise we need to avoid myths of young people's natural affinity with new media. The benefit of research on gender is that it illustrates the diversity and complexity of young people's internet use, the social and cultural contexts of use, mediation processes, and how individuals and their communities of practice choose to participate, or not. Any attempt to consider gender and ICT as more than a basic or binary manifestation of a digital divide is a good starting point for considering the complexity of young people's ICT use within a rapidly changing and convergent media environment. Young people's new media use throws up new questions and assumptions about gender, about technology, about knowledge and expertise, about power, and about the inter-relationships among these, calling for a re-energising of gender-technology research for the twenty-first century, with young people as the focus.

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