# ict & me

A research study examining how young people's use of ICT and the amount of screentime impacts on GCSE attainment

National Children's Bureau (NCB)

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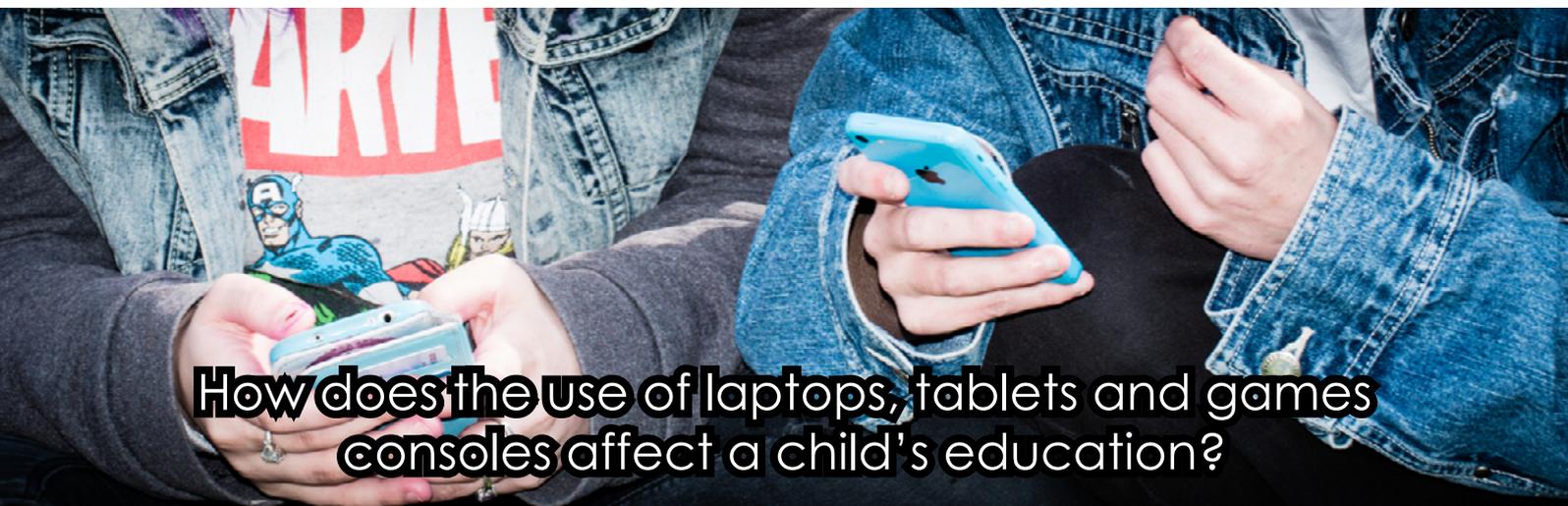
How does the use of laptops, tablets and games consoles affect a child's education?

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National Children's Bureau: working with children, for children

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- The members of the project Advisory Group for their feedback on research instruments, draft reports and the progress of the research project (see Appendix A for details of the members of the Advisory Group).

About NCB NI

The National Children's Bureau Northern Ireland (NCB NI) is a leading research and development charity working to improve the lives of children and young people, reducing the impact of inequalities.

NCB works with children, for children, to influence government policy, be a strong voice for young people and front-line professionals and provide practical solutions on a range of social issues.

This is done through working in partnership, sharing knowledge, resources and services. There is a particular focus on the participation of children and young people in issues that affect their lives and work to ensure that their voices are represented where appropriate in the work of NCB.

Executive Summary

Background to the study

In January 2012, the National Children's Bureau Northern Ireland (NCB NI) were successful following a bid submission to an open research call by the Office of the First Minister and Deputy First Minister (OFMDFM). The funding was awarded for a research project to undertake the first ever piece of longitudinal research to study the link between young people's[1] levels of access to, and usage of, Information and Communication Technology (ICT) and how this subsequently impacts on GCSE attainment.

Published statistics looking specifically at young people's levels of access to a computer/laptop or other electronic devices (e.g. games consoles) at home are not available on a regular basis in Northern Ireland. The most recent published statistics from the 2013 Kids Life and Times survey reported that 99% of young people had at least one computer or laptop at home. However, despite the high levels of access to ICT (computer hardware, software, and internet) in young people's homes in Northern Ireland, relatively little is known about what skills young people have to make best use of the ICT available to them, how they are actually using ICT (whether for homework or non-homework purposes) and the impact that this has on young people's attainment at GCSE. This is set against a background of increasing concern amongst policy makers and education professionals (e.g. school staff) in relation to the extent of online activity young people engage in alongside a particular concern for their safety.

This study aims to plug a number of these gaps by looking specifically at a cohort of young people who live in some of the most deprived areas of Northern Ireland to see whether affordability is an issue and whether, and to what extent, lack of access might impact on pupil attainment. This is important as previous research has highlighted that lack of access to ICT can reinforce existing disadvantages (e.g. lack of family income) and contribute to poor educational outcomes. This research also looks at a range of other areas (e.g. extent of online activity, e-safety) and how these areas impact on attainment.

Headline findings

- Access to a computer/laptop at home is not an issue for the vast majority of young people with at least 95% reporting having access. However, despite the fact that only 5% report not having access to a computer or laptop, when scaled up across the top 40 schools in terms of deprivation, c.1,000 young people are potentially without access, placing them at significant disadvantage.

- Young people spend a significant amount of time online each day with one-third of young people spending four hours or more online in Year 1 rising to 40% in Year 2 of the study.

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[1] The terms young people, children and pupils are used interchangeably throughout this report.

- Social networking and gaming were identified by parents/carers and teachers as activities that could most negatively impact on young people's attainment. Findings from this research confirm a link between extent of gaming and GCSE attainment, e.g. only two-fifths (41%) of pupils who reported using a portable games player a couple of times a day achieved 5A*-C GCSE grades compared to over three-quarters (77%) of those who reported rarely using one. No relationship was observed in terms of social networking.

- School staff were particularly concerned about extent of gaming, reporting a number of issues relating to attendance, punctuality and motivation. Particular issues identified in relation to male pupils with gaming addiction noted in some instances.

- Internet safety is a particular concern for schools and parents/carers however young people themselves appeared more comfortable with their own safety online.

Research objectives

The overall aim of this research is to examine the relationship between young people's access to a computer and internet connection at home (home access) and how both access and usage impact on educational attainment. The objectives of the research are:

1. To assess and track young people's levels of home access throughout Key Stage 4[2], examining the nature and usage for both educational and non-homework purposes;

2. To explore young people's skill levels in a number of areas, e.g. communication/word processing, spreadsheet, internet and presentation skills;

3. To examine young people's attitudes towards using computers/laptops and ICT more generally; and

4. To determine, where possible, if differences in educational attainment at GCSE are linked to varying levels of home access, different types of ICT usage (e.g. non-homework or homework), varying levels of skills and/or different attitudes towards the use of technology.

Methodology

This study adopted a longitudinal approach to examining a range of aspects of ICT (e.g. access, usage) and how these impact on young people's attainment. A total of 13 schools were selected using a range of criteria such as Free School Meals (FSM) entitlement, GCSE attainment profile and school location (schools were selected from across all Education and Library Boards)[3]. A total of 978 Year 11 pupils were identified in Year 1 of the study and they were tracked throughout. In addition to a large-scale

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[2] Key Stage 4 covers the period of time when young people are in Year 11 and Year 12 and are typically aged between 14 and 16. Young people normally sit GCSE examinations at the end of this period.
[3] FSM entitlement and GCSE attainment were both used as the basis for selecting schools because we were particularly interested in understanding (a) whether affordability was a particular issue for pupils living in areas where one might expect affordability to be a greater issue and (b) to understand in the case of those who do not have access to ICT, how this (along with other factors such as FSM entitlement) links/relates to pupil attainment.

review of research and policy documents (including c. 50 documents), a range of research activities were undertaken in the schools as outlined below.

- **A large-scale tracking survey of pupils with their GCSE attainment data matched in:** The survey was administered using supervised completion methods in each of 13 schools to all young people in Year 11 in 2012/13 (Year 1 of the study). The survey was subsequently administered in 2013/14 (Year 2) to the same cohort of young people. In terms of response:
  —— 745 young people completed the survey in Year 1;
  —— 794 young people completed the survey in Year 2;
  —— 611 young people completed the survey in both Year 1 and Year 2; and
  —— Pupil attainment data was sourced for pupils who completed a survey in Year 1 and Year 2 (n=611) and this was matched into the final survey dataset.

- **Young Researchers Group:** The Young Researchers Group, comprising 22 young people aged 13-17, played a collaborative role in the project meaning that they were actively involved in the research process and planning of research at different stages[4]. Members of the group were involved in the following research phases: piloting/commenting on the survey instrument; undertaking site visits to schools and co-facilitating focus groups alongside NCB staff; and providing feedback on the final report. Each member of the group was recruited from schools across Northern Ireland and attended meetings at NCB NI on a regular basis. In addition, all members of the group were trained in research methods.

- **Focus groups with young people:** Focus groups were conducted on site in each of the schools and co-facilitated by NCB research and participation staff alongside the young researchers. In total:
  —— 5 focus groups were held in Year 1 with a total of 33 young people participating; and
  —— 13 focus groups were held in Year 2 with a total of 104 young people participating.

- **Focus groups with parents/carers:** Focus groups were conducted on site in each of the schools and parents/carers of the young people who participated in the focus groups were invited to take part. In total:
  —— 5 focus groups were held in Year 1 with a total of 16 parents participating; and
  —— 13 focus groups/one-to-one interviews were held in Year 2 with a total of 25 parents participating.

- **Teacher interviews:** 18 interviews were completed over the course of the two years of the research. Teachers selected taught across a range of subjects (ICT, geography, physical education) and included class teachers and heads of department.

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[4] For more information on the different models of young people's involvement in research please refer to NCB's Guidelines for Research with Children and Young People http://www.ncb.org.uk/media/820540/ncb-guidelines_for_involving_cyp_in_research.pdf

Research findings

Below, the research findings are presented under each of the research objectives. It is important to note the following:

- The survey findings analysed are based on those who responded to both Year 1 and Year 2 of the survey (n=611);
- Where there are salient points from the literature that have relevance to the findings from this study, they are noted for comparative purposes.

> **Research objective 1:** To assess and track young people's levels of home access throughout Key Stage 4, examining the nature and usage for both educational and non-homework purposes.

Home access

The findings from this study would suggest that despite young people who were surveyed living in some of the most deprived areas in Northern Ireland, levels of access to ICT is not an issue for a large proportion of young people. Key findings include:

- **Access to computer/laptop at home:** Almost all pupils (95% or greater) reported having access to a computer or laptop at home throughout the two years of the study. This high level of computer/laptop access broadly corresponds to findings from the 2013 Kids Life and Times survey which reported that 99% of young people had at least one computer or laptop at home. However, whilst c.5% of young people reported not having access to a computer or laptop at home, if this is scaled up across the top 40 most deprived schools[5], this would mean that c.1,000 young people are potentially without access to a computer or laptop at home.

- **Electronic devices:** Young people have access to a wide range of electronic devices including mobile phones (96%), games consoles (78%) and tablets (64%). This trend is similar to other UK studies, which show relatively high levels of access to mobile phones (95%), games consoles (71%) and tablets (70%) amongst young people (UKCCIS, 2013; Ofcom, 2014).

- **Printer:** The findings from the pupil focus groups suggested that young people's level of access to a printer at home varied quite substantially and is an issue for some young people. However, many of the teachers interviewed did not believe that this was a barrier to learning as they reported putting in place arrangements to meet pupils' needs in school.

- **Software packages:** Pupils reported having extensive access to a range of software packages on their home computer/laptop. A relatively high proportion (two-thirds or more) of young people indicated that they had access to commonly used software such as word processing, spreadsheet and presentation packages and levels of access increased between Year 1 and Year 2 for each of these packages. For example, 79% reported access to a word processing package in Year 1 increasing to 83% in Year 2.

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[5] This is based on examining the eight schools with the highest Free School Meal Entitlement in each of the five Education and Library Boards.

- **Internet:** The vast majority of young people surveyed (98% in Year 1 and 96% in Year 2) reported having access to the internet at home. This is slightly higher than the levels of household internet access reported in the (2009) Kids Life and Times survey (94% with access) and reflects the improved levels of provision since then. Quality of internet access improved between Year 1 and 2 and is not an issue for the vast majority of those surveyed with 95% of young people in Year 1 and 96% in Year 2 indicating that when they want to go online at home, it works all of the time or most of the time.

Usage of ICT at home

- **Homework:** Over two-fifths (43%) of young people in both Year 1 and Year 2 stated that they spent less than one hour per day doing homework on a computer/laptop. Just over one-tenth (12% in Year 1 and 14% in Year 2) spent 3 or more hours doing homework on a computer/laptop each day. Males were more likely than females to be low intensity (less than 1 hour per day) users of a computer/laptop for homework (50% vs. 36% in Year 1 and 50% vs. 34% in Year 2 respectively). The most popular homework activity undertaken by young people was using software to find out information and the least common activity was using software drawing graphs.

- **Non-homework:** Young people are more prolific users of computers/laptops for non-homework (social/leisure) purposes than homework purposes, with some two-fifths (41% in Year 1 and 42% in Year 2) of young people spending 1-2 hours or more per day engaging in non-homework activities with a similar proportion stating that they spend 3 hours or more per day.

- **Online activity:** Young people spend a significant amount of time online each day with one-third of young people spending four hours or more online in Year 1 rising to 40% in Year 2. Young people's high levels of daily usage of the internet is commonly reflected elsewhere in the literature (e.g. Ofcom, 2014). Social networking was the most popular online activity with over four-fifths (81%) of young people surveyed engaging in this activity on a daily basis, followed by watching video clips (57%) and finding out information on things that interest the young person (36%). These findings are broadly consistent with European trends, with social networking and watching clips on YouTube being in the top three online activities that young people participate in (Mascheroni and Cuman, 2014). Despite the fact that gaming did not fall within the top five activities young people report undertaking on a daily basis within this study, it, along with social networking, were identified by both parents and teachers as the two activities that could potentially impact most negatively on young people's learning and attainment.

Research objective 2: To explore young people's skill levels in a number of areas e.g. communication, spreadsheet and digital, video and sound function skills.

This research explored young people's confidence in undertaking a range of tasks in a number of areas including communication, spreadsheet and digital, video and sound function. These skills were taken from the Key Stage 4 specification for ICT and are those skills which young people studying this subject are expected to have at the end of Key Stage 4.

- **Communication tasks:** Overall, young people are adept at undertaking a wide range of communication tasks. The top three tasks that almost three-quarters or more of young people reported being able to do well or very well include:

  - ➢ Using a search engine (95%)
  - ➢ Sending, receiving and forwarding emails (77%)
  - ➢ Adding attachments to emails (74%)

- **Spreadsheet tasks:** A relatively high proportion of young people were confident or very confident in undertaking basic spreadsheet tasks. For example, almost three-quarters of young people indicated they could undertake basic spreadsheet skills such as entering text, numbers and formulae into a worksheet (74%) or formatting cells, rows and columns (72%) well or very well. However, in contrast, young people were less confident in undertaking a range of more complex spreadsheet tasks, e.g. carrying out a user test of a spreadsheet produced by another student.

- **Digital, video and sound function tasks:** Young people were least confident and less familiar with digital, video and sound function tasks compared to either the communication or spreadsheet tasks. The proportion of students reporting they could complete tasks very well exceeded 25% for just four of the tasks, namely: using transition and movie effects (30%); creating title screens and credits (29%); adding audio effects to video clips (27%); and using digital video editing (26%). Tasks that young people were least confident in undertaking included preparing digital, video and sound for sharing on the internet (with 31% indicating they had never tried this) and splitting, trimming and combining digital video clips (with 29% indicating they had never tried this).

- **Skill Groups:** Based on their responses, young people were assigned to high, medium and low skill groups for each of these skills categories. Further analysis found that, in relation to communication skills, girls were more likely than boys to fall into the high skills category and there were also differences based on Special Educational Needs (SEN) status and religion[6]. In relation to spreadsheet and digital, video and sound function tasks, no significant differences were identified based on gender, FSM status, SEN status or religion.

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[6] A lower proportion of those with an identified Special Educational Need (SEN) were in the high skills category compared to their peers (48% vs. 61%). A higher proportion of young people who identified themselves as Roman Catholic were in the high skills category relative to those who identified themselves as Protestant (59% vs. 49%).

Research objective 3: To examine young people's attitudes towards using computers/laptops and ICT more generally.

- **Attitudes towards ICT:** The findings show that young people are generally positively disposed towards using ICT in general (whether at home or in school), with 88% of young people stating they don't mind, they like or they really like using a computer for homework. These positive dispositions towards using ICT did not differ according to gender, SEN status, FSM status or religion of respondents.

  The findings from the survey also suggest that young people themselves can see the benefits of ICT with almost all (90%) indicating that ICT makes their life easier and almost three-quarters (72%) believing that ICT makes it easier for them to do their homework. These findings are reinforced by the findings from the focus groups where young people commented that by using the internet on their computers they were able to access information, on a variety of subject areas, easily and quickly and in a format that facilitated learning. Across the UK, the wider literature shows that young people have similarly positive dispositions towards the internet (Livingstone et al., 2011a).

- **Online Safety:** One particular area of concern that was raised throughout the two years of the research related to young people's safety online. Given that online safety has achieved a relatively high media profile over the last number of years, it is interesting that almost three-quarters (72%) of the young people surveyed as part of this study stated that they feel safe online. This corresponds to findings published by YouthNet (2011) which found over 75% of young people thought that the internet was a safe place. Parents/carers who participated in the focus groups/interviews appeared much more concerned for their child(ren)'s safety whilst online than the young people themselves – this is partly related to their own lack of confidence in using ICT and their lack of knowledge about how to keep their child(ren) safe online. They also felt that young people were not sufficiently equipped to protect their own safety online however young people themselves appeared to be knowledgeable in this respect.

"They are not equipped to deal with the force of mass followers. It is a concern – they fall victim to their own emotions – the craziest things." (Parent)
"People can pretend to be your friends and you might not even know who they are…" (Pupil)

This opinion observed in the parent focus groups/interviews around internet safety does not correspond with the literature, as a recent Ofcom study (2014) stated that a small proportion of parents (5%) are concerned about their child's online safety.

Two-thirds (66%) of the young people who completed the survey in Year 1 and Year 2 achieved 5A*-C grades at GCSE.

The findings from this research show a clear link between ICT access, usage, attitudes and skills levels and how well young people achieve at GCSE level. The following points summarise the key findings from this analysis[7]:

- **Home access to computer/laptop and attainment:** Although a relatively low proportion of young people (5% in Year 2) stated they did not have access to a computer/laptop, these young people were much less likely to achieve 5A*-C grades at GCSE than those who did report access to a computer or laptop (29% vs. 68%). These findings are consistent with other studies that have found a positive association between computer/laptop ownership and educational attainment (Schmitt and Wadsworth, 2004; Valentine, 2005; Spiezia, 2011; Bowers and Berland, 2013). Those young people that did not have access to a computer or laptop at home did have good access to mobile phones. However a substantial proportion (40%) did not have access to the internet at home and access to electronic devices such as Netbooks and games players was poor.

- **Access to software and attainment:** Pupils who had access to word processing and presentation software at home were more likely to achieve 5A*-C grades at GCSE than those who did not have access to this software. For example, 70% of pupils who stated they had word processing software on their computer/laptop achieved 5A*-C grades at GCSE in comparison to 33% of those who stated they did not have and did not want work processing software.

- **Usage of a computer/laptop for homework and non-homework purposes and attainment:** Those who spent around three hours per day using a computer/laptop doing homework were the highest attaining group with almost four-fifths (79%) achieving 5A*-C grades in their GCSE examinations. The lowest attaining groups were at either end of the spectrum - those who reported spending no time or those who reported spending more than three hours, with 57% of each of these groups achieving 5A*-C grades at GCSE. In terms of non-homework use, 75% of those who spent about 2 hours a day on the computer achieved 5A*-C grades at GCSE compared to just over one-half of those who spent no time (54%) or less than one hour (53%).

- **Use of other electronic devices and attainment:** The frequency of use of games consoles and portable games players had a significant impact on educational attainment. Pupils were much less likely to achieve 5A*-C grades at GCSE if they reported using a portable games player a couple of times a day (41%) compared to those who rarely (77%) used one. Similarly, those young people who reported using a games console a couple of times a day were less likely to achieve 5A*-C

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[7] The analysis used Year 2 survey data and pupil attainment data.

grades at GCSE compared to all other categories of users, but in particular in relation to those who rarely used their games console. Teachers and parents, in particular, were concerned that gaming had a negative impact on attendance at school (on particular days) and on levels of alertness and concentration. These findings are supported by the literature which shows that intensive gaming on a daily basis can have a detrimental impact on young people's academic engagement (Przbylski and Mishkin, 2015). The survey found no evidence to support the assertion that those who reported gaming frequently had a poorer attendance record.

- **Social networking and attainment:** No statistically significant association between pupils' intensity of participating in social networking activities and educational attainment at GCSE level was found.

- **Skills level and attainment:** Pupil attainment varied significantly only in relation to communication skills and not in relation to spreadsheet skills or digital, video or sound skills. Just over one-half (53%) of those who were categorised as having a low level of communication skills achieved 5A*-C grades at GCSE compared to 71% of those categorised as having a high level of communication skills.

- **Attitudes towards technology and attainment:** Pupils were more likely to achieve 5A*-C grades at GCSE if they had positive attitudes towards using computers for school work. For example, pupils were more likely to achieve 5A*-C grades at GCSE if they believed that computers/ laptops and other computer devices made life easier (69%) than those who felt computers/ laptops did not make life easier (23%).

Conclusions and recommendations

Level of access to ICT devices is generally not an issue for the vast majority of young people and these high levels of access have remained unchanged over the course of the research project. However, it does represent an issue for a small proportion of young people, suggesting that lack of resources potentially plays some part in this. Whilst the proportion of young people without access is low, these young people are placed at significant disadvantage relative to their peers and this research project shows that those who do not have access to a computer or laptop achieve significantly poorer outcomes at GCSE. Whilst a number of schemes have operated in the past (such as those administered as part of Neighbourhood Renewal), it is important that steps are taken to ensure that all young people, but particularly those commencing their GCSEs (at Year 11) have access to a computer/laptop or other electronic device at home that would enable them to have the same opportunities as those who currently have such equipment.

Recommendation 1: A targeted scheme should be introduced to provide those without access to a computer/laptop at home with access. Given that this is only an issue for approximately 5% (or approximately 1,000 young people across the top 40 schools in terms of FSM entitlement), such a scheme would not place a significant burden on finances and the potential benefit to young people in terms of educational attainment should outweigh any costs incurred. In terms of administration of the scheme, it is recommended that the Department for Social Development, the new Local Government District councils and private sector work together to devise such a scheme.

The findings from the survey suggest that young people spent proportionately less time on homework related activities in comparison to non-homework activities, with over two-fifths (43%) of young people in both Year 1 and Year 2 stating that they spent less than one hour per day doing homework on a computer/laptop. Further analysis revealed that a significant proportion of these young people (particularly those who spend no time using a computer/laptop for homework) underperformed relative to their peers in their GCSE examinations.

Recommendation 2: Given the significant link or relationship between type of usage (i.e. for homework purposes), level of usage and GCSE attainment, the leadership (e.g. Board of Governors) in each school may wish to consider reviewing their homework policy to ensure that teachers are encouraged to regularly set homework that requires the use of ICT (computer/laptop or other electronic device) at home. To facilitate this, schools may wish to consider making as much use as possible of C2KNI's online learning platform (Fronter) and also to encourage young people to access and upload homework activities using this platform from home.

In terms of non-homework use, the most prolific social activity undertaken by young people was social networking with over four-fifths of young people engaging in this activity daily, suggesting that it is an integral part of young people's lives. Whilst gaming did not feature as one of the top five social activities, parents/carers and teachers were concerned that gaming alongside social networking could have a negative impact on young people. Our research evidence did not point to an attainment gap between those who social networked frequently in comparison to those who did not. However, the research showed a clear link between frequency of use of games consoles/portable games player and attainment, with frequent users of these devices more likely to underperform at GCSE level relative to their peers. In addition, a significant proportion of these young people are boys rather than girls.

Recommendation 3: The research has identified that intensity of gaming is linked to young people's attainment and that those young people (the majority of whom are boys) who are intense users of gaming devices are placing themselves at considerable risk of underachieving relative to their peers. However, whilst there is a link between levels of gaming and attainment, the study did not set out to establish the factors (other than extent of gaming) that combine to impact on attainment – for example, do high levels of gaming interrupt normal sleep patterns resulting in poor attention/concentration in school, or are there other factors which contribute to poor attainment. The literature appears to point to a range of potential negative impacts of gaming on learning – for example, a recent study conducted by Przbylski and Mishkin (2015) found that, compared with those that did not play, teenagers who engaged in low levels of gaming (less than 1 hour a day), evidenced lower levels of hyperactivity and conduct issues whereas the opposite was found for those who gamed for 3+ hours per day. It is therefore recommended that schools encourage parents/carers to limit the amount of time they allow their child(ren) to use a games console or portable games player.

Recommendation 4: It is recommended that additional research is undertaken (possibly through a longitudinal tracking study) to understand in greater detail the factors (in addition to gaming) that lead to poor educational outcomes amongst those who are prolific gamers. Given that the majority of gamers are boys, the study may wish to focus on boys attending single-sex boys' schools and those attending co-educational schools, to understand whether the issues are similar or different across these school types.

The findings from both the qualitative and quantitative research show that young people are not only confident users of ICT but that the vast majority of young people enjoy using technology and understand the benefits they can derive from it. Whilst young people did mention the potential negative impacts of technology in terms of being able to stay safe whilst online, by and large young people felt safe whilst online and for the majority of young people, their online activity did not impact on their school work. However, findings from the focus groups with parents/carers suggests that they are not confident about their child's safety online.

This discomfort on the part of parents appears to stem both from their own lack of confidence in using ICT and also their lack of awareness and control over what activities their child(ren) are engaged in online.

Recommendation 5: It is recommended that the E-safety Forum for Northern Ireland develop specific guidance for parents/carers about the steps that they can take to keep their child(ren) safe whilst online. This guidance should draw on good practice from other regions within the UK and should be piloted with a small group of parents/carers before being rolled out more widely. Critical to the overall development and delivery of e-safety messages is that it is undertaken within a context that the internet is, on balance, a positive experience for most young people.

Section 1: Background to the study and research objectives

> This section of the report sets out the aims and objectives of this study and also the background and context within which this project is being undertaken. The remainder of this section of the report is structured under the following headings:
>
> - Background and rationale for the study;
> - Research objectives; and
> - Report structure.

Background and rationale for the study

In January 2012, the National Children's Bureau Northern Ireland (NCB NI) were successful following a bid submission to an open research call by the Office of the First Minister and Deputy First Minister (OFMDFM). The funding was awarded for a research project to explore a number of aspects relating to young people's access to, and use of, Information and Communication Technology (ICT[8]) in their home.'

To date, policy in Northern Ireland has focused almost exclusively on ICT provision in schools. Since 2000, Classroom 2000 (C2K), the body responsible for ICT provision, has spent over half a billion pounds in providing ICT infrastructure to schools across Northern Ireland and over the period 2012-2017 alone, C2KNI is expected to invest almost £170 million in ICT infrastructure[9].

This large-scale investment by C2K, alongside investment by schools themselves, has meant that Northern Ireland has been able to achieve an excellent computer to pupil ratio by international standards. The PIRLS and TIMMS study[10] (last undertaken in 2011) shows that in Northern Ireland just over three-quarters of pupils were in schools where a computer was available for every one to two pupils, well above the international average of 41%. In addition, for 17% of pupils in Northern Ireland, computers were shared between three to five pupils and for the remaining 5% the ratio was one computer for six or more pupils.

In terms of home access more specifically, the Department of Education (DE) has not engaged in policy initiatives to provide young people, particularly those who are disadvantaged, with access to a computer/laptop at home. However, some Government departments (such as the Department for Social Development (DSD)) have operated small-scale initiatives via Neighbourhood Renewal to provide targeted access to ICT for families depending on their financial circumstances.

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[8] Information and Communication Technology.
[9] http://www.c2kni.org.uk/news/nENniLeader.html
[10] Sturman, L., Twist, L. and Burge, B. (2012)

The evidence from the studies which NCB reviewed suggests, however, that young people already enjoy a high level of access to computers/laptops and other electronic devices. In addition, access to internet broadband has also increased over time – for example, the Northern Ireland Continuous Household survey (NISRA, 2014) found that internet broadband access had increased from 64% in 2010/11 to 72% in 2013/14. It also found that internet broadband access increased according to the number of individuals in a household, with 95% of households comprising 4 individuals having access to broadband internet, rising to 97% of households with 5 individuals.

Given that ICT is now so prolific, and that young people who do not have access to at least one electronic device is the exception rather than the rule, it is interesting to note that so little is known about the relationship between ICT (usage, skills level, attitudes) and young people's educational attainment. This is the first large-scale study of its kind to look at this in detail within some of the most deprived schools in Northern Ireland and the findings may help to shed more light on the potential impact that ICT has on young people's attainment.

Research objectives

The overall aim of this research is to examine the relationship between young people's access to a computer/laptop (home access), how that technology is used, and the impact that this has on educational attainment and social exclusion.

The specific objectives of the research are to:

1. Assess and track young people's levels of home access throughout Key Stage 4 (i.e. when pupils are in Year 11 and Year 12), examining the nature and usage for both educational and non-homework purposes;

2. Explore young people's skill levels in a number of areas, e.g. communication/word processing, spreadsheet, internet and presentation skills;

3. Examine young people's attitudes towards using computers/laptops and ICT more generally; and

4. Determine, where possible, if differences in educational attainment at GCSE are linked to varying levels of home access, different types of ICT usage (e.g. non-homework or homework), varying levels of skills and/or different attitudes towards the use of technology.

Report structure

The remainder of this report is structured under the following headings:

- Section 2: Methodology;
- Section 3: Access and usage of ICT at home;
- Section 4: Young people's ICT skills;
- Section 5: Young people's experiences of, and attitudes towards, ICT;
- Section 6: An exploration of how ICT at home impacts on pupil attainment; and
- Section 7: Conclusions and recommendations.

Section 2: Methodology

Introduction

A mixed-method approach was adopted to deliver this project including a literature review, a large-scale longitudinal survey of young people and qualitative interview methods (semi-structured face-to-face interviews and focus groups with parents, pupils and teachers). The remainder of this section of the report is structured under the following headings:

Overview of methodology;

Methodology; and

Young Researchers Group.

Overview of methodology

Figure 2.1 below provides an overview of the methodology employed to deliver this study. The research activity took place over the 2012/13 and 2013/14 school years and comprised a range of activities with pupils (large-scale longitudinal survey and focus groups), teachers (one-to-one interviews) and parents/carers (focus groups/interviews). A short and focused literature review was undertaken to inform the development of both the survey instruments and topic guides for interviews and focus groups.

Underpinning all of the above activities was:

- A project *Advisory Group* which comprised representatives from across the government/statutory sector, education and library boards and schools (see Appendix A for a list of Advisory Group members). This group provided strategic direction to the research team and had a key role to play in critically examining the research findings and what they might mean in terms of potential recommendations; and

- A *Young Researchers Group* which comprised a group of 22 young people from schools participating in the research project and also young people from schools that were not involved with the research[11]. Young people were aged between 13 and 17 years and had an interest in computers and ICT. Members of the group were involved in the following areas: design of the survey instrument; data acquisition; development of the report; and dissemination of the findings and recommendations.

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[11] Given the timing of school recruitment (which took place in June 2012), it was decided that the Young Researchers Group would comprise members of Young NCB and other young people that NCB work with. A recruitment exercise to establish a formal Young Researchers Group took place in early 2013 and the first meeting of the Young Researchers Group took place in June 2013.

Figure 2.1: Overview of methodology[12]

1. Literature review
- Over 50 research and policy studies consulted

2a. Pupil survey & attainment data
- Year 1 (n=745)
- Year 2 (n=794)
- Attainment data sourced for 611 pupils

2b. Pupil focus groups
- Year 1: 5 focus groups (33 young people)
- Year 2: 13 focus groups (104 young people)

Research activity

3: Focus groups with parents
- Year 1: 5 focus groups (16 parents)
- Year 2: 13 focus groups (25 parents)

4. Interviews with teachers
- Year 1: 5 interviews
- Year 2: 13 interviews

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[12] Where it was not possible to undertake focus groups with parents, due to low numbers, one-to-one interviews were undertaken.

Methodology

Table 2.1 below provides a brief description of the methodology employed to undertake this project. A comprehensive methodology can be found in Appendix B.

Table 2.1: Methodology

Activity	Detail
1. Literature review	**Method** • The literature review was conducted via an internet search using search terms that combined one or more of the following key words/phrases: Access; Pilot; Attainment; Programmes; Attitudes; Schemes; England; Scotland; Gaming; Social exclusion; GCSE; Social use; Home; Skills; Homework; Tracking; ICT; UK; Northern Ireland; Wales. **Scale/Response rate** • A total of c. 50 research and policy documents were included within the scope of the literature review and the review included studies from across the UK. Full findings from the literature review are presented in Appendix D.
2a. Pupil survey and attainment data	**Method** • *School selection:* Post-primary schools ranked in relation to proportion of young people eligible for Free School Meals. A total of 40 schools identified as eligible to take part in the study and 13 schools recruited. • *Pupil selection:* The target sample for Year 1 was 978 pupils[13], i.e. all Year 11 pupils in a total of 13 schools. These pupils were tracked from Year 11 into Year 12. • *Survey administration:* The survey was administered on site in each of the schools in both years of the research project. Research staff supervised the completion of the questionnaire in both Years 1 and 2. • *Attainment data:* Attainment data was received from schools for all of those who completed the survey in both Year 1 and Year 2 (i.e. 611 pupils). This data was matched into this combined survey dataset (containing 611 pupil records). The analysis presented in this report is based on this number of young people. • *Profile of respondents:* The profile of young people who completed the survey over the two years (*n*=611) is as follows:

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[13] This is based on 2011/12 enrolment data provided by Department of Education.

Activity	Detail
	— Gender: Male 51%; Female 49%. — Ethnicity: White 97.7%; Chinese 0.2%; Irish Traveller 0.2%; Indian 0.3%; Black 0.5%; Mixed ethnic group 0.7%; Other 0.5%. — Religion: Protestant 18.2%; Roman Catholic 81.2%; Muslim 0.5%. — Free School Meal (FSM) status: entitled to FSM 39%; not entitled to FSM 61%. — Special Educational Needs (SEN) status: SEN 32%; non-SEN 68%. — Educational achievement: Achieved 5A*-C grades at GCSEs 65.5%; did not achieve 5A*-C grades at GCSEs 34.5%. **Scale/Response rate** • In Year 1, a total of 745 completed returns were achieved resulting in a response rate of 76%. • In Year 2, a total of 794 completed returns were achieved resulting in a response rate of 81%. • The total number of students that completed the survey in Year 1 and Year 2 was 611.
2b. Pupil focus groups	**Method** • *Pupil selection:* — In Year 1, survey data was used to group pupils according to their levels of access to ICT and how much time they spent using a computer or laptop to do homework. A total of five focus groups were conducted in Year 1, with each of the following groups of pupils (a) those who did not have access to a computer/laptop[14] (one Focus Group (FG)); and (b) those who did have access to a computer/laptop split by levels of usage for homework purposes: no usage (1 FG); low usage[15] (1 FG); medium usage[16] (1 FG); and high usage[17] (1 FG).

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[14] Less than four percent of the entire sample did not have access to a computer or laptop.
[15] Around one hour or less per day.
[16] Between 1 and 2 hours per day.
[17] 3 or more hours per day.

Activity	Detail

	— In Year 2, the selection criteria for the focus groups was modified slightly as a result of the change in the study's objectives[18]. Survey data was used to group pupils according to their usage of ICT (for homework and/or non-homework purposes) and the amount of time they spent using ICT per day for each of these purposes. A total of 13 focus groups were conducted based on the following criteria:
	  ▪ Usage[19] for homework: No usage (1 FG); low usage (2 FGs); medium usage (1 FG); and high usage (2 FGs).
	  ▪ Usage for non-homework/social purposes: Same as above.
	  ▪ One focus group was undertaken with a group of pupils who indicated that their school work had suffered in the last month due to something that had happened online.
	
	• *Administration:* All of the focus groups were conducted on site at each of the schools. The focus group was moderated by a member of the research team with significant input from NCB's participation officers. Focus groups typically lasted up to 2 hours.
	
	Scale/Response rate
	• In Year 1**,** the number of pupils identified for participation in the focus groups was 38 across the five schools (an average of just over seven per focus group). The total number of pupils who participated in the focus groups across the five schools was 33.
	• In Year 2, the target number of pupils identified for the focus groups was 127 (an average of just under 10 per focus group). The total number of pupils who were available to participate in the focus groups across the 13 schools was 104.

3. Parent focus groups/one-to-one interviews	**Method** • *Parent selection:* Only those parents of the young people who participated in the pupil focus groups were invited to take part. Focus groups were conducted by a member of the research team on site in each of the schools. Focus groups typically lasted up to 1 hour.

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[18] In Year 2, the study team focused less on access to a computer or laptop as a result of finding in Year 1 that almost all young people had access to a computer/laptop or other electronic devices.

[19] Definitions for none, low, medium, high are the same as in Year 1.

Activity	Detail
	Scale/response rate • In Year 1 and Year 2, at least one parent/carer per child was targeted for participation in the focus groups. This equated to a target of 165 parents/carers over the course of the two years. The total number of parents/carers who participated in the focus groups/one-to-interviews in Years 1 and 2 was 41 (n=16 in Year 1 and n=25 in Year 2).
4. Teacher interviews	**Method** • Teachers selected taught across a range of subjects (ICT, geography, physical education) and included class teachers and heads of department. • Interviews were undertaken on site in each of the schools at the same time that the pupil and parent/carer focus groups were conducted. Interviews were semi-structured and included a mix of closed and open-ended questions. Interviews typically lasted up to one hour. **Scale/Response rate** • Interviews were conducted with five teachers in Year 1 and these teachers were subsequently interviewed in Year 2. In addition, a further eight teachers were interviewed in Year 2 so that at least one teacher in all of the schools was interviewed. • Over the course of Year 1 and Year 2, a total of 18 interviews were conducted with school staff.

Young Researchers Group

The Young Researchers Group played a collaborative role in the project, meaning that they were actively involved in the process and planning of research at different stages throughout the project[20]. The young researchers were involved in the following research phases: design of the survey instrument; co-facilitating pupil focus groups; and development of the final report. A total of 22 young researchers aged between 13-17 years participated in the project (see Figures 2.2 and 2.3). The young researchers were recruited from schools across Northern Ireland and attended meetings at NCB NI on a regular basis.

Figure 2.2: Young Researchers Group

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[20] For more information on the different models of young people's involvement in research please refer to NCB's Guidelines for Research with Children and Young People http://www.ncb.org.uk/media/820540/ncb-guidelines_for_involving_cyp_in_research.pdf

Involving Young People in Research at NCB

NCB recognise that children and young people are experts in their own lives. By involving them, wherever possible, in the planning and process of research, NCB works to ensure that young people's views and experiences are taken into account in what is researched, how the research is conducted and how the findings are disseminated and used. Young people's involvement as researchers is common practice across NCB, and the diagram below illustrates the different ways in which children and young people can be involved in research.

CYP are research participants

CYP are actively involved in aspects of the planning and process of research

CYP are sources of research data

CYP are consulted about the research

CYP are collaborators in the research

CYP have ownership of the research

CYP have *increasing* control of the research process
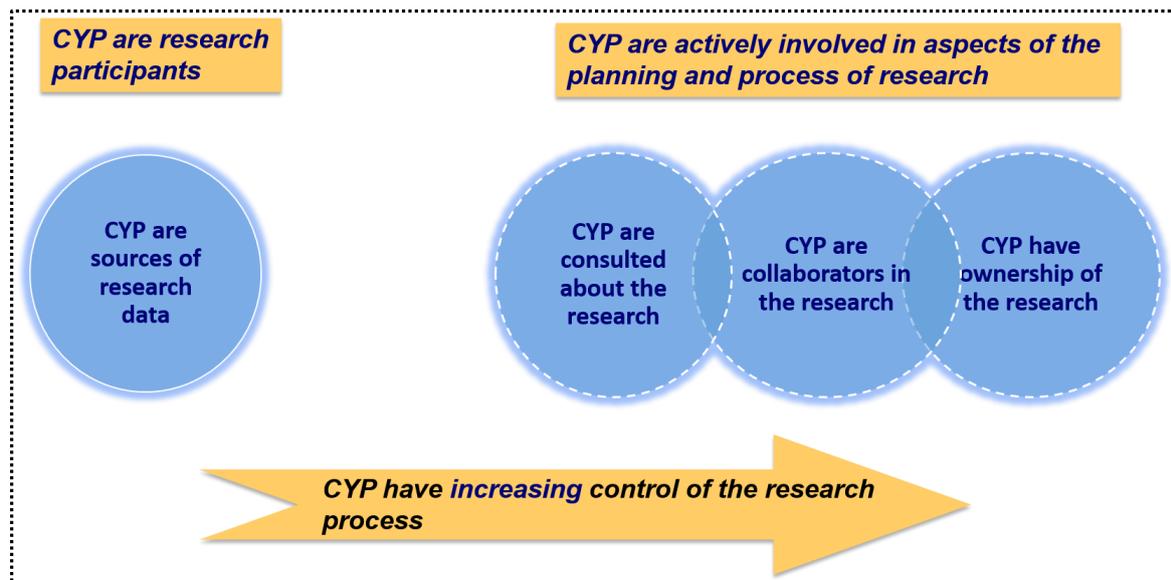
Involving children and young people in research brings benefits to the quality of the research and to the young people themselves. More information on these benefits is provided below:

➢ **Quality of the Research:**
— Keeps the research grounded in the lived experience of young people, ensuring that researchers stay mindful of young people's perspectives throughout the process.
— Ensures that research tools are relevant (for example, questionnaire and interview schedules) and issues are approached using language they understand.
— Enhances the quality and quantity of date gathered- for example, if CYP are involved in conducting interviews, they may put their peers at ease more readily than adult researchers.
— Brings an additional perspective to the interpretation of research findings.

➢ **Benefits to Young People:**
— Gives young people the opportunity to access their right to have a say in decisions that affect their lives.
— Enables young people to make an active contribution to their communities and to improve services used by CYP.

> — Helps young people develop a variety of transferable skills (e.g. in research, presentation, project management, negotiation and decision-making).
> — Develop and extend their social skills and networks, through working with both adults and peers.
> — Access broader personal development, for example increased confidence, knowledge, self-esteem and the confirmation that their views matter and can affect change.

The Young Researchers Group were involved in a number of different activities as part of the project. More detail on the activities is provided in Table 2.2 below.

Table 2.2: Activities of the Young Researchers Group

Activity	Detail
Training	22 young researchers received training in January and February 2014. The training was led by researchers and a participation officer at NCB NI and used participatory activities to develop the young researchers' knowledge in the following areas: social research; research methods; research ethics; and dissemination techniques. Role plays were used in order to develop the young researchers' knowledge of conducting research in real settings and how to respond effectively in different and challenging scenarios.
Data Acquisition	Between February and April 2014 the young researchers conducted focus groups with their peers in 12 schools across Northern Ireland. Each focus group consisted of between 6-10 pupils in Year 12 and was led by two young researchers. At each focus group the young researchers were supported by a researcher or participation officer from NCB NI. The young researchers used a participatory approach in the focus groups, with the pupils involved in a range of activities which aimed to encourage open and meaningful discussion around the issue of ICT usage and home access.
Developing recommendations	The young researchers met to discuss the findings from the research project and to develop the project's recommendations.
Dissemination of findings	The young researchers played a lead role in the dissemination stage of the research. For example, they decided how the findings from the research should be disseminated and played a role in the development of the dissemination approach.

Figure 2.3: The young researchers participating in training and conducting field work in schools across Northern Ireland

Section 3 overleaf is the first section of the report that provides findings from the primary research activities (surveys, focus groups, and interviews) undertaken.

Section 3: Access and usage of ICT at home

Introduction

This section of the report explores young people's level of access to ICT at home and examines the nature of young people's usage of ICT, whether for homework or non-homework purposes. This section of the report addresses the following research objective:

> **Research objective 1:** To assess and track young people's levels of home access throughout Key Stage 4, examining the nature and usage for both educational and non-homework purposes.

The remainder of this section of the report is structured under the following headings:

- Access to ICT at home;

- Level of usage of ICT for homework;

- Level of usage of ICT for non-homework/social purposes;

- Young people's online activity; and

- Summary

Access to ICT at home

Computers/laptops

> **Finding 1:** Almost all pupils (95% or greater) reported having access to a computer or laptop at home – however lack of access is a greater issue for pupils entitled to FSM.

Figure 3.1 overleaf illustrates the proportion of young people who reported having access to a computer or laptop at home. It shows that a very high proportion of young people report being able to access a computer or laptop in their home, with 97% reporting access in Year 1 and a slightly lower proportion (95%) reporting access in Year 2. This high level of computer/laptop access broadly corresponds to findings from the 2013 Kid Life and Times survey which reported that 99% of young people had at least one computer or laptop at home. However, whilst only c.5% of young people reported not having access to a computer or laptop at home, if this is scaled up across the top 40 most deprived schools in Northern Ireland, this would mean that c.1,000 young people are potentially without access to a computer or laptop at home in these schools alone.

This level of access is high despite the fact that these young people live in some of the most deprived areas in Northern Ireland, as reflected in the high level of FSM entitlement. However, further analysis revealed that pupils who are entitled to FSM were more likely to not have access to a computer or laptop at home than those who are not entitled to FSM (10% and 2% home access respectively)[21].

Figure 3.1: Young people's access to a computer or laptop at home
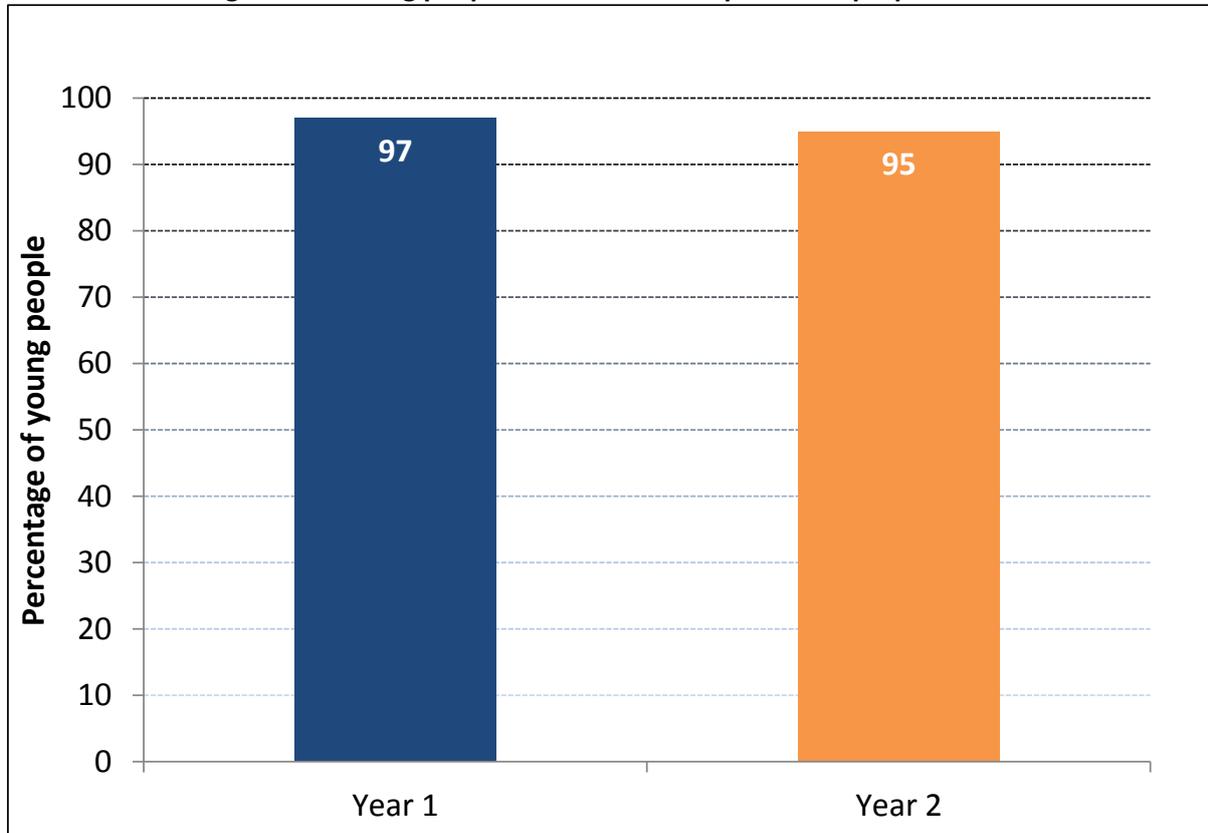
Source: Young people's survey, 2012 and 2013
Base: Year 1 (601); Year 2 (603)

Further exploration of the survey findings revealed that of those young people who reported not having access to a computer or laptop at home (*n*=31) a relatively high proportion had access to a mobile phone (73%; *n*=22), however:

- A substantial proportion (40%) reported that they did not have access to the internet at home; or

- Access to other electronic devices such as Netbooks, EBooks, laptops, PCs, tablets and portable games players was poor.

Although not an explicit focus of the research, the survey investigated levels of access to a computer/laptop outside of home and in other venues, e.g. in school. The survey found that in addition to young people having good levels of access to a computer/laptop at home, levels of access to a computer/laptop in venues outside of home were also high, with almost three-quarters accessing a computer/laptop in the classroom at school (74%) at least once a month or more often. This was

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[21] The number of young people without access to a computer/laptop at home is low, therefore care should be taken in interpreting these findings.

followed by just over one-half of young people who accessed a computer/laptop in their relative's house (53%) or at a friend's house (51%).

The survey also found that of those who did not have access to a computer or laptop at home in Year 2 (*n*=31), almost three-fifths (59%) stated that they found it very easy/easy to access a computer or laptop outside of their home.

Overall, these findings suggest that in addition to the vast majority of young people having high levels of access to a computer/laptop at home, young people also reported high levels of access to computers/laptops outside of home. In addition, even for those who reported issues of access at home, the majority did not appear to have difficulty gaining access to ICT outside of home.

Other electronic devices

Finding 2: *Y*oung people have access to a wide range of electronic devices.

Young people reported having access to a wide range of electronic devices, with almost all young people (96%) stating that they had a mobile phone. This was followed by over three-quarters (78%) of young people who stated they had a games console, and almost two-thirds (64%) of young people who indicated that they access to a tablet. At UK level, access to mobile phones (95%), games consoles (71%) and tablets (70%) is similarly high amongst young people (UKCCIS, 2013; Ofcom, 2014).

Less popular electronic devices included smart TVs (51%), portable games players (49%), e-books (27%) and netbooks (25%).

Printers

Finding 3: Access to a printer appears to be an issue for some young people – however this was not identified by teachers or parents as a barrier to learning.

Almost all of the GCSE subjects that young people study incorporate the use of ICT and require young people to print a significant amount of their work whether for homework or for submission of course work. Therefore, it is important that young people have access to a printer.

The focus groups were used to explore young people's level of access to a printer. Overall, it was found that access to printers varied substantially – for example, in one focus group only one of the seven focus group participants reported having access to a printer, whilst in another focus group eight of the nine participants reported having access to a printer.

Notwithstanding this, many of the teachers interviewed did not believe this was a barrier to learning as the schools provided high levels of access to printing facilities for their young people.

> "Well some of them would come in with a memory pen and just print it here at school, or else maybe the colour printer at home has run out of ink. And that's OK. They just come in (to school) and print." *(Teacher)*

Many of the parents noted that they did have printers at home and reiterated the point made by teachers in that if their child(ren) did encounter printer access problems at home (e.g. run out of ink, printer stopped working), the school provided them with good access.

"…he can print it out in school." (Parent)

Computer software

Finding 4: Pupils reported having high levels of access to a range of software packages.

Given that some teachers set homework that requires the use of a computer/laptop at home and that this is likely to increase in the future given the emphasis on using ICT across the curriculum, it is important that young people have access to key software packages to enable them to complete homework related tasks.

Generally pupils' access to software at home was very high across Year 1 and Year 2, with only a small proportion (2%) of pupils reporting that they did not have access to any form of software on their computers or laptops. As expected, Word Processing software was the most common type of software reported on young people's computers)/laptops with 79% of young people in Year 1 reporting access to Word Processing software, rising to 83% in Year 2. The following summarises other notable findings from the research:

- Pupils had least access to Photoshop in both Year 1 (39%) and Year 2 (36%).

- Pupils' access to software increased for all of the software packages/types listed in Figure 3.2 apart from iTunes and Photoshop. The biggest percentage point increase was recorded for Adobe Reader, with an 11 percentage point increase reported by young people between Year 1 and Year 2.

Figure 3.2: Young people's access to software on their computer/laptop at home
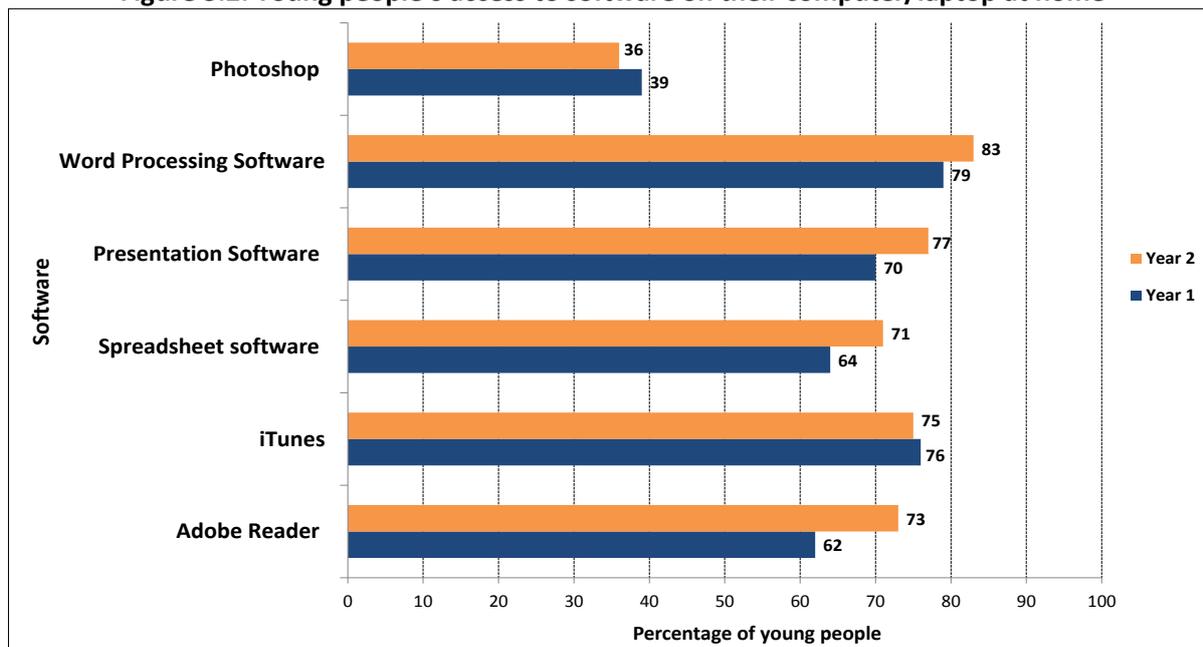
Source: Young people's survey, 2012 and 2013
Base: Year 1 (592); Year 2 (546)

Internet

Finding 5: The majority of pupils reported having access to good quality internet at home.

In addition to having access to computer hardware and software, it is also important for young people to have access to the internet at home. Members of the Advisory Group were particularly interested to understand whether access to the internet (that is fully functioning) was a particular area of concern for certain groups of young people (perhaps for those who live in rural areas).

The vast majority of young people reported that they had access to the internet at home, with 98% of young people stating they had access to the internet in Year 1 in comparison to 96% in Year 2. These figures are slightly higher than the levels of household internet access reported in the 2009 Kids Life and Times survey (94% with access) and reflects the improved levels of provision since then. As indicated in Figure 3.3, a high proportion of pupils in Year 2 (64%) indicated that they had access to the internet at home for over three years representing an increase of eight percentage points from Year 1.

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Figure 3.3: Length of time young people have had access to the internet at home
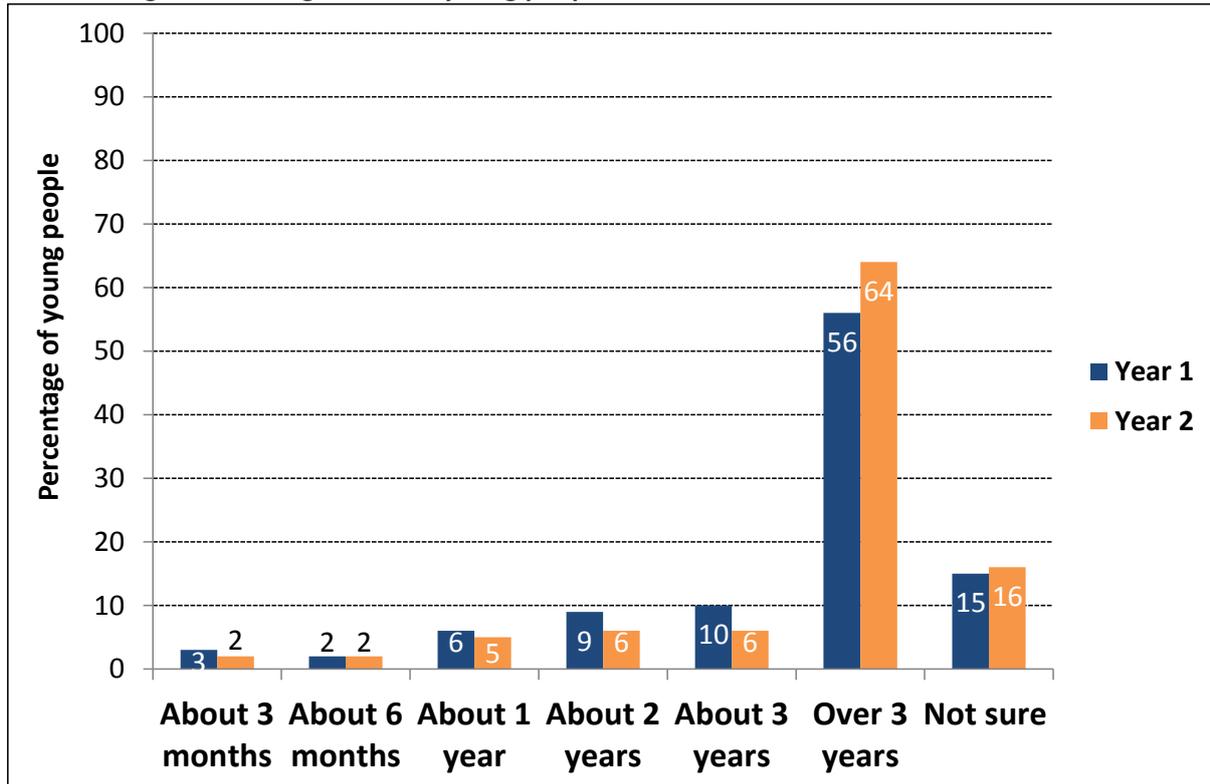
Source: Young people's survey, 2012 and 2013
Base: Year 1 (593); Year 2 (577)

The young people also reported having access to good quality internet, with some 95% of young people indicating that their internet connection worked all of the time or most of the time in Year 1, rising to 96% in Year 2.

Level of usage of ICT for homework

Level of usage

Finding 6: 43% of young people spend little time (i.e. less than 1 hour per day) using a computer/laptop for homework, and these young people were more likely to be male.

The amount of time young people spend using ICT at home to do their homework was explored in the survey over the two years of the research. The survey findings show that a substantial proportion (43%) of young people use a computer/laptop at home for less than one hour a day to do their homework. This did not change between Year 1 and Year 2. In addition, a similar proportion of young people used a computer/laptop for between one and three hours a day to do their homework. A small proportion of survey respondents (between 12% and 14%) reported being heavy users of ICT for homework purposes. These findings are illustrated in Figure 3.4 below.

Figure 3.4: Amount of time spent by young people on a computer/laptop doing homework on a normal weekday
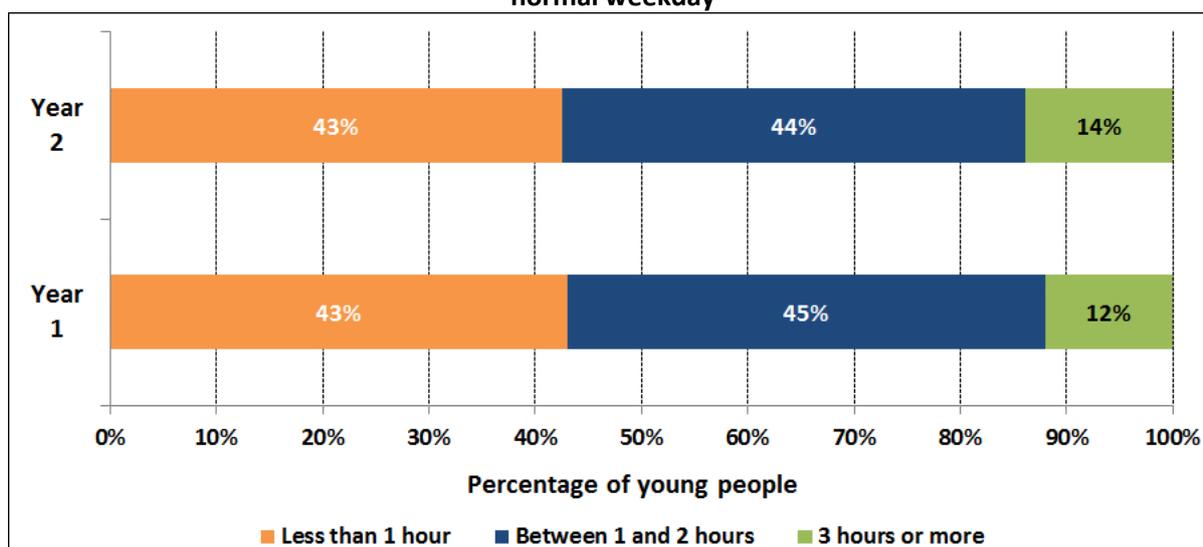
Further exploration of the survey data revealed that males were statistically more likely than females to be low users of a computer/ laptop for homework purposes in Year 1 and in Year 2[22] with exactly half of males in Year 1 and Year 2 reporting usage of less than one hour per day for this purpose compared to 36% of females in Year 1 and 34% of females in Year 2.

Types of homework activities undertaken

Finding 7: The most common homework activity undertaken by young people on their computer/laptop was using software to find out information for homework, the least common activity was using software to draw graphs.

In relation to homework activities, Figure 3.5 below shows that on a weekly basis pupils were most likely to spend time using a computer or laptop at home to find out information for homework (58% Year 1; 60% Year 2). Across both Year 1 and Year 2 the activities they were least likely to conduct on a weekly basis included drawing graphs (11% and 9% respectively) and creating art for school (16% and 11% respectively). The activity which recorded the biggest increase between Year 1 and Year 2 was creating documents for school (6% increase).

---

[22] A Chi-square test for independence indicated a significant association between gender and intensity of usage of ICT for homework activities in Year 2 (X^2 (2, n= 5768) = 15.427, p= 0.0005).

Figure 3.5: Homework activities using a computer or laptop[23]
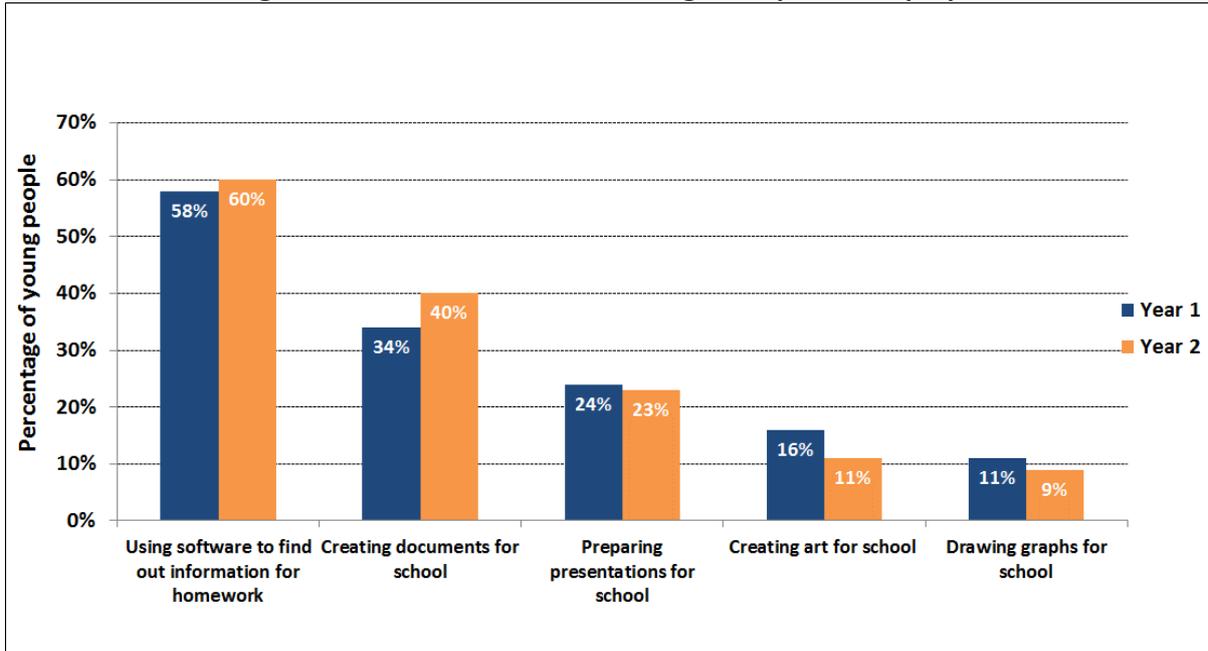
Source: Young people's survey, 2012 and 2013
Base: Year 1 (576); Year 2 (574)

Level of usage of ICT for non-homework purposes

Finding 8: Young people spend more time at home on their computer or laptop for non-homework than for homework activities.

In Year 1, 43% of pupils reported spending between 1-3 hours using a computer or laptop for non-homework related activities and 42% spent more than 3 hours using a computer or laptop for non-related homework activities on a normal week day. Less than one-fifth (15%) spent less than 1 hour using a computer or laptop for non-homework activities. The survey findings for Year 2 were almost unchanged.

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[23] The stated activities are undertaken by young people at least once a week.

Figure 3.6: The length of time per day pupils spend using ICT for non-homework activities in a normal week
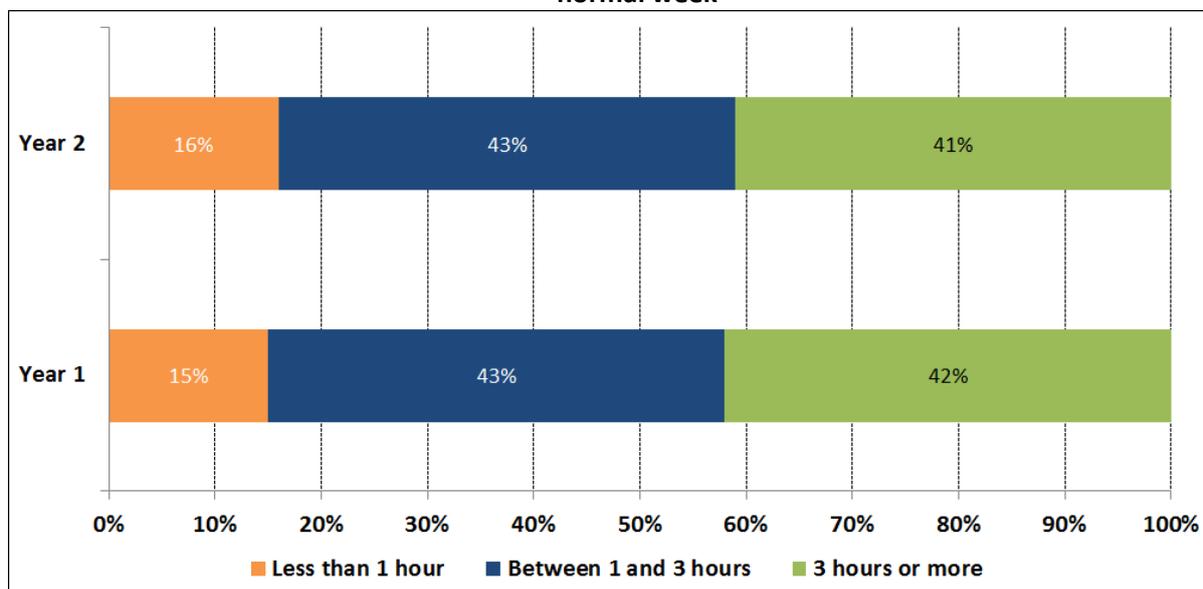
Source: Young people's survey, 2012 and 2013
Base: Year 1 (592); Year 2 (570)

Further analysis of the data showed:

- In Year 2, those pupils who were high intensity users (defined as 3 hours or more per day) of a computer or laptop at home for homework activities were likely to be high intensity users of a computer or laptop at home for non-homework activities (74%) (3 hours or more per day) than low (3%) or medium users (23%)[24].

Young people's online activity

Finding 9: One-third (33%) of young people spent 4 or more hours per day online in Year 1. This increased to two-fifths (40%) in Year 2.

Table 3.1 below shows that pupils spent a large proportion of their time at home online. For example, in Year 2 over three-quarters of pupils (76%) spent 2 hours or more online. This marks a 7 percentage point increase from Year 1. Notably, two-fifths (40%) of young people were spending a large amount of time (4 hours or more a day) online. The average amount of time spent online per day in Year 2 was between 1 and 2 hours. This finding is broadly comparable with UK trends which suggest that on average 12-15 year olds spend 2.4 hours per day online (Ofcom, 2014).

---

[24] A Chi-square test for independence indicated a significant association between pupils' intensity of usage of using a computer/laptop at home for homework activities and usage of a computer/ laptop for non-homework activities (X^2 (4, n= 568) = 86.751, p= 0.0005).

Table 3.1: Length of time pupils spend online at home per day

Length of time	Year 1	Year 2
1 hour or less	31%	24%
2-3 hours	36%	36%
4+ hours	33%	40%
Totals	100%	100%

Source: Young people's survey, 2012 and 2013.
Base: Year 1 (593); Year 2 (570)

Table 3.1 above illustrates that between Year 1 and Year 2 the proportion of pupils spending 1 hour or less online decreased from 31% to 24%. This suggests that in Year 2 more pupils were spending more time online at home.

Finding 10: Social networking was the most popular online activity.

Figure 3.7 illustrates the range of activities that young people reported doing online in Year 2. Social networking (e.g. using Facebook) was the most popular activity that young people participate in online with 81% of young people reporting going online daily to do this.

Figure 3.7: Frequency of pupils' involvement in online activities at home (Year 2)
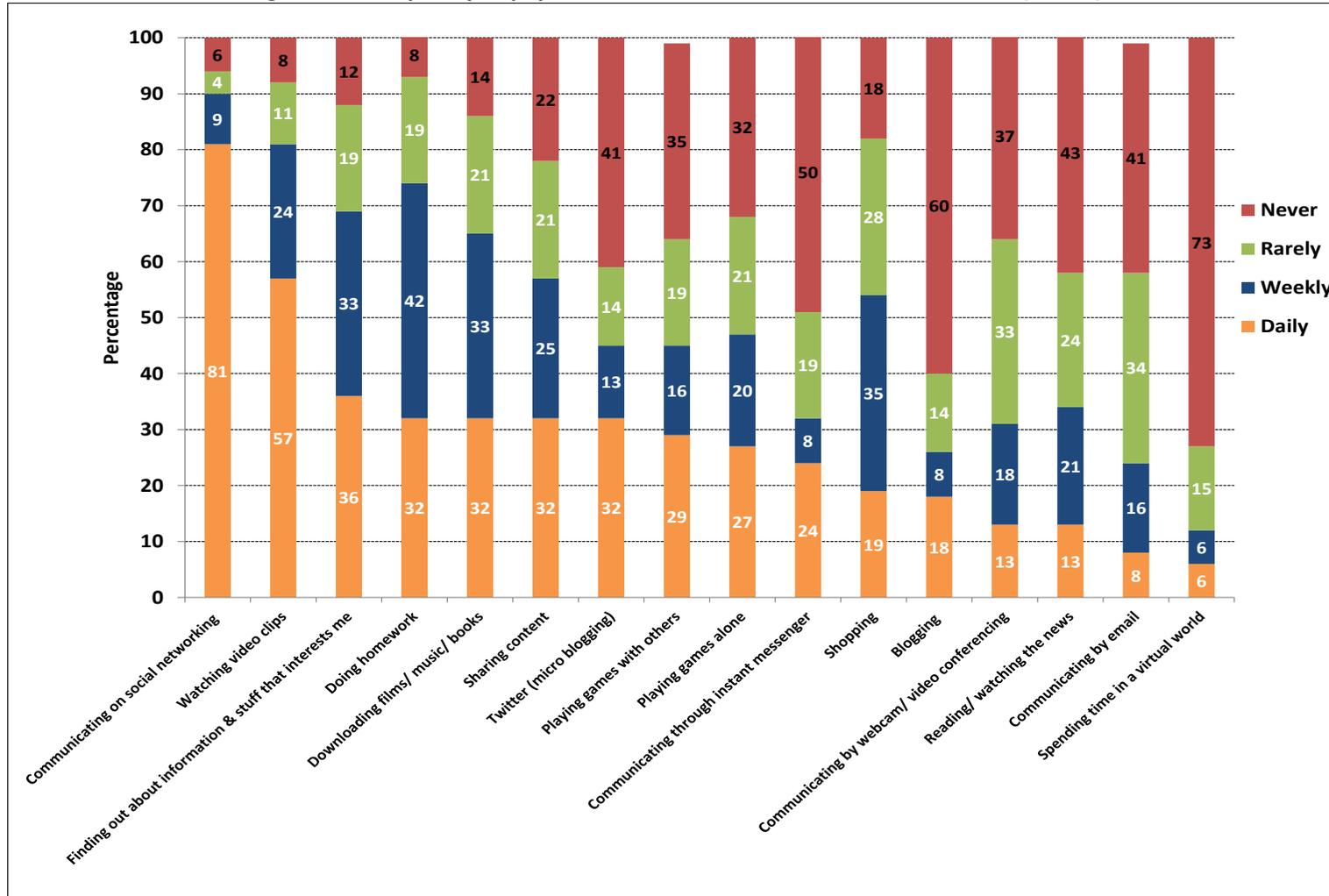
Source: Young people's survey 2013.
Base: 560 - 573

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Findings from the pupil focus groups support the survey findings in suggesting that social networking activities are a significant part of young people's activity online, with a large number of focus group participants indicating that they are regularly online.

> "I'm constantly on it to be fair." (Pupil)
>
> "You just always have to have a check to see what people are up to." (Pupil)
>
> "I always be checking my phone, even when I wake up in the middle of the night." (Pupil)

Other notable findings from the survey include:

- Aside from social networking, the next most popular daily online activities reported by young people were watching video clips (57%); using the internet to find out information (36%); doing homework (32%); downloading films/music/books (32%); sharing content (32%) and micro blogging (e.g. using Twitter). These findings are broadly comparable with European trends, with social networking and watching clips on YouTube in the top three activities that young people participate in (Mascheroni and Cuman, 2014).

- Almost one third of pupils reported using the internet for homework on a daily basis (32%) and 8% reported never going online to complete homework. Unsurprisingly, boys were more likely than girls (13% vs. 4%) to never go online to do homework[25]. Other groups that were more likely to never go online to complete homework included: those entitled to Free School Meals[26], those with Special Educational Need[27] and those who did not achieve 5A*-C grades at GCSE[28].

- Just over one quarter of pupils stated that they play online games alone (27%) or with others (29%) on a daily basis. Further analysis of the survey revealed that males were more prolific users of a computer/laptop for playing games (either alone or with other others) with 42% of males playing games alone every day compared to just 12% of females. This finding is comparable with the literature which shows males are more likely to play online games than girls (Kids Life and Times survey, 2009; Mascheroni and Olafsson, 2013). Findings from the pupil focus groups indicate that the intensity of gaming usage on a daily basis varied. For example, some pupils were high intensity users, spending several hours a day gaming, while others were low intensity users.

  > "I'd probably play games when I come home from school until I get my dinner and then that would be it." (Pupil)
  >
  > "Gaming takes up most of my evening." (Pupil)

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[25] A Chi-square test for independence indicated a significant association between gender and those pupils who never went online to complete homework (X^2 (3, n= 568) = 28.477, p= 0.0005).

[26] A Chi-square test for independence indicated a significant association between FSM status and those pupils who never went online to complete homework (X^2 (3, n= 569) = 11.886, p= 0.008).

[27] A Chi-square test for independence indicated a significant association between SEN status and those pupils who never went online to complete homework (X^2 (3, n= 568) = 13.530, p= 0.004).

[28] A Chi-square test for independence indicated a significant association between educational attainment and those pupils who never went online to complete homework (X^2 (3, n= 569) = 43.235, p= 0.0005).

- Online activities that were less popular included spending time in a virtual world, with almost three-quarters of those surveyed indicating that they never spent time doing this. Blogging was also a relatively unpopular online activity with three-fifths (60%) of young people surveyed stating that they had never participated in this activity. The EU Kids Online study (2014) also reported participating in virtual worlds as an unpopular activity amongst young people.

In addition to the survey findings, some of the young people indicated that they multi-task while engaging in technology on a daily basis. A study published by YouthNet (2011) suggested that it is common for young people to multi-task, with 90% likely to use different technologies at the same time.

> "Definitely people would be texting and doing their homework at the same time or eating or watching TV whilst on Facebook at the same time." (Pupil)

Pupils' involvement in online activities was discussed at the teacher interviews and parent focus groups/interviews. The parents' and teachers' views mirrored those of the young people in suggesting that the most popular online activity that young people participated in is social networking. Furthermore, they noted that online non-homework activities were likely to take precedence over school related activities such as homework.

> "…young people…the internet is their life. You know, it's like chopping their right arm off if you take it off them, because they are likely on Facebook, Twitter, and Bebo… They are talking to their mates." (Parent)
>
> "Maybe in the likes of when they have to do an activity, where we would maybe set, where we know they are using the VLE and they have to do something, they have to collaborate on a particular topic. Yes maybe then they might use it, but unless it is directed, I would say no, it is probably more recreational than it is educational." (Teacher)

Impact of Online Activities

Finding 11: The online activities that parents and teachers were most likely to identify as having a negative impact on young people were social networking and gaming.

During the parent/carer and teacher focus groups, social networking was identified as the main online activity that can have a negative impact on young people. It was noted by many that social networking can negatively impact on young people's concentration, distract them from their homework and can be a platform for bullying behaviour. Indeed many of the young people noted that Facebook, in particular, distracted them from their school work.

> "I think social networking effects my school work as it is distracting me when I'm trying to study or do homework." (Pupil)

> "If someone messages you on Facebook, then you go on your newsfeed and you end up spending half an hour on it looking at funny photos and videos and before you know it, it's bedtime." (Pupil)

Teachers also noted that issues that originated on a social media platform, for example a pupil being abusive to or bullying another pupil sometimes spilled over from outside the school and into the classroom and was believed to have a negative impact on learning. This finding was also supported by a number of parents that had taken part in the focus groups.

> "These public networking sites where somebody had put a post on or made a comment or something like that and then we ended up with the fallout from that. I mean last year as I say it was horrendous." (Teacher)
>
> "There is a whole growing area of cyber bullying in our school and it is a problem…. conversations, chats that are happening online are developing into more serious issues physically in school and verbally in school." (Teacher)
>
> "…My daughter was bullied on Facebook before and she was off school for a while because she didn't want to come into school and face the people." (Parent)

Gaming was the other main activity that teachers and parents identified as having a negative impact on young people. Teachers and parents noted that young people were likely to spend excessive periods of time gaming at home and this impacted negatively on their attendance and concentration levels at school. The negative impact of gaming was believed to be particularly noticeable when new versions of video games (such as Grand Theft Auto) were released.

> "First of all when…there's a couple of dates throughout the year when Grand Theft Auto, is released. Quite a few children would take the day off to be able to go out and buy them, and obviously then to play them. We would get children who present themselves to school looking very tired and dishevelled and find it hard to engage and we would find that they are sitting up until the early hours of the morning playing games online." (Teacher)
>
> "…we are an all-boys school and of our [cohort] in the current Year 12, I would say three-quarters of them would be addicted to gaming…"(Teacher)
>
> "I usually have to turn the games off to get them to go to bed... their school work suffers. They have been unable to concentrate in school..." (Parent)

Summary

The findings from this study would suggest that despite young people who were surveyed living in some of the most deprived areas in Northern Ireland, levels of access to ICT is not an issue with almost all (97%) young people reporting having access to a computer/laptop in Year 1 of the study. Whilst this reduced slightly in Year 2 to 95%, this still represents a high level of access. The majority of those who reported not having access to a computer/laptop (n=31) were entitled to Free School Meals suggesting a link between lack of access and the financial circumstances of the family.

The pupil focus groups suggested that young people's level of access to a printer at home varied quite substantially, and is certainly an issue for some young people. However, many of the teachers interviewed did not believe this was a barrier to learning as they reported putting in place arrangements to meet pupils' needs in school.

Young people reported having extensive access to a range of software packages on their home computer/laptop (including word processing, spreadsheet and presentation packages) and levels of access increased between Year 1 and Year 2.

The vast majority of young people surveyed (98% in Year 1 and 96% in Year 2) reported having access to the internet at home. Quality of internet access improved between Year 1 and 2 and is not an issue for the vast majority of those surveyed who indicate that it works all of the time or most of the time.

Overall, young people were much more likely to be low intensity users of a computer/laptop for homework purposes than for non-homework purposes. Both the intensity of use for homework purposes and non-homework purposes appears to have remained relatively static over the two years in contrast to young people's online activity which appears to have increased between Year 1 and Year 2. Other key findings around the length of time young people spent using ICT include:

- **Homework:** Over two-fifths (43%) of young people in both Year 1 and Year 2 stated that they spent less than one hour per day doing homework on a computer/laptop. Just over one-tenth (12% in Year 1 and 14% in Year 2) spent 3 or more hours.

- **Non-homework:** Young people are much more prolific users of a computer/laptop for non-homework purposes with some two-fifths (41% in Year 1 and 42% in Year 2) of young people spending 1-2 hours or more per day engaging in non-homework activities with a similar proportion stating that they spend 3 hours or more day.

- **Online activity:** One-third of young people spent 4 hours or more online per day in Year 1 rising to 40% in Year 2. Social networking was the most popular online activity in Year 2, followed by watching video clips.

Social networking and gaming were identified by parents/carers and teachers as the online activities that were most likely to have a negative impact on young people. It was noted that these activities can negatively impact upon young people's concentration, attendance, attainment and can provide a platform for bullying behaviour.

Section 4: Young people's ICT skills

Introduction

This section of the report explores young people's level of confidence in undertaking a range of tasks across the broad categories of communication, spreadsheet and digital, video and sound function. This section commences by presenting a top level analysis of pupils' self-reported level of confidence in undertaking the various tasks and this is followed by more detailed analysis of particular groups of young people who were categorised as having high, medium or low levels of skill in each of the particular skills areas.

> **Research objective 2:** To explore young people's skill levels in a number of areas e.g. communication, spreadsheet and digital, video and sound function skills.

The remainder of this section of the report is structured under the following headings:

- Pupils' self-reported skill level: top level analysis;

- Pupils' self-reported skill level: An analysis of high, medium and low skills groups; and

- Summary

Pupils' self-reported skill level: top level analysis

This sub-section provides pupils' self-reported skill level in three areas that have been drawn from the Key Stage 4 ICT syllabus including communication; spreadsheet and digital, video and sound functions. In total, pupils were asked to identify their level of confidence in undertaking up to 24 tasks under these three areas. By the end of Key Stage 3, pupils are expected to be confident in undertaking basic communication tasks, however spreadsheet and digital, video and sound function tasks are covered in more depth by those pupils completing the Key Stage 4 ICT syllabus and young people who are not studying ICT might not expected to be able to undertake these tasks to the same level[29].

Communication tasks

> ***Finding 12:*** A high proportion of pupils reported that they were able to complete most communication tasks well/very well.

Young people generally reported high levels of confidence in relation to being able to complete a wide range of communication related tasks. The top three tasks that young people reported being most comfortable with included:

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[29] Further analysis of the data showed that there was a significant difference between those studying and those not studying ICT in relation to communication skills only and not in relation to digital skills or spreadsheet skills.

- Using a search engine (95% reported being able to do this well or very well);

- Sending, receiving and forwarding emails (77%); and

- Adding attachments to emails (74%).

The majority of young people were also confident in being able to delete and store emails (73%) and judging if information is accurate and relevant from an internet search (71%). In contrast, a significant minority of pupils reported that they had never tried to complete a number of communication tasks such as contributing to or setting-up a video conference (24%) and using a contact list or address book in an email (14%). These findings are illustrated in Table 4.1 below.

Table 4.1: Pupils' self-reported confidence in undertaking a range of communication tasks

Communication task	Very well (%)	Well (%)	OK (%)	Poorly (%)	Can't do this at all (%)	Never tried (%)
Contribute to and set-up a video-conference (e.g. Skype)	41	12	15	6	2	24
Delete and store emails	57	16	13	4	2	9
Use your contact list/ address book in an email	50	14	12	7	3	14
Put an attachment in an email	58	16	10	7	2	7
Send, receive and forward emails	58	19	13	4	2	5
Judge if the information is accurate and relevant from an internet search	40	31	20	3	0.5	6
Use a search engine (e.g. Google)	89	6	3	<1%	<1%	1

Source: Young people's survey 2013.
Base: 588 - 590

Spreadsheet tasks

Finding 13: Pupils reported that they were able to complete basic spreadsheet tasks well, however they found complex spreadsheet tasks more challenging.

Pupils' self-reported skill levels in terms of spreadsheet tasks were more mixed. For example, young people reported high skill levels for only a small number of tasks. In addition, young people were more likely to report that they completed spreadsheet tasks poorly, were not able to do them or had never tried these tasks in comparison to the communication tasks listed in Table 4.1. This finding is not surprising given that many of the more complex spreadsheet tasks require a detailed understanding of spreadsheet packages and are skills that young people studying ICT at GCSE would be expected to demonstrate. Some points to note from Table 4.2 include:

- Almost three-quarters of young people indicated they could enter text, numbers and formulae into a worksheet (74%) or format cells, rows and columns (72%) well or very well.

- The tasks that pupils were most likely to report they had never tried before included:

  — Carrying out a user test of a spreadsheet produced by another student (32%);

  — Creating a simple macro comprising a sequence of commands (23%); and

  — Importing data in a variety of file formats (21%).

- Just under one-fifth of pupils self-reported that their skill levels were low in:

  — Creating and using formulae (17%); and

  — Creating a simple macro comprising a sequence of commands (17%).

Table 4.2: Pupils' self-reported confidence in undertaking a range of spreadsheet tasks

Spreadsheet task	Very well (%)	Well (%)	OK (%)	Poorly (%)	Can't do this at all (%)	Never tried (%)
Carry out a user test of a spreadsheet produced by another student	19	14	20	10	5	32
Create a simple macro comprising a sequence of commands (e.g. to print a worksheet)	25	18	19	11	6	23
Select areas of a spreadsheet for printing	31	19	22	10	4	15
Create, label and format charts	34	21	23	8	4	10
Import data in a variety of file formats (e.g. PDF, XML)	23	19	23	10	5	21
Use header and footers in a spreadsheet	44	20	17	7	3	9
Replicate and copy a formula	30	18	25	9	4	14
Create and use formulae (e.g. SUM, VLOOKUP, COUNT)	23	17	23	13	4	20
Format cells, rows and columns (e.g. by changing the colour or size of text)	45	27	18	3	2	5
Enter text, numbers and formulae into a worksheet	48	26	16	4	2	5

Source: Young people's survey 2013.
Base: 584 - 591

Digital, Video and Sound Function Tasks

Finding 14: Young people reported being less familiar with digital, video and sound function tasks compared to either the communication or spreadsheet tasks.

Overall, young people's level of skill and familiarity with a range of digital, video and sound tasks was lower than for either the communication or the spreadsheet skills discussed above. For example, between 22 - 29% of pupils had never tried each of the tasks listed in Table 4.3. The proportion of students reporting they completed tasks very well exceeded 25% for just four of the tasks, namely adding audio effects to video clips (27%); creating title screens and credits (29%), using digital video editing (26%) and using transition and movie effects (30%).

Table 4.3: Pupils' self-reported confidence in undertaking a range of digital, video and sound function tasks

Digital, video and sound function task	Very well (%)	Well (%)	OK (%)	Poorly (%)	Can't do this at all (%)	Never tried (%)
Prepare digital video and sound for sharing on the internet	23	13	16	14	2	31
Add audio effects to video clips	27	16	20	10	3	24
Create title screens and credits	29	18	17	9	2	25
Split, trim and combine digital video clips	23	15	18	12	3	29
Use transition and movie effects	30	16	20	10	2	22
Plan a digital video using appropriate storyboarding that shows, e.g. title screen and credits	23	18	22	10	2	25
Use digital video editing tools (e.g. Movie Maker)	26	19	24	8	2	22

Source: Young people's survey 2013.
Base: 587 - 590

Pupils' self-reported skill level: An analysis of high, medium and low skills groups

Pupils were assigned to low, medium or high skills categories depending on their self-reported confidence in undertaking tasks within the three broad groups, namely:

• Communication;

• Spreadsheet; and

- Digital, video and sound function tasks.

Table 4.4 below illustrates how young people were allocated to each of the groups (high, medium, low) for each skill category depending on the number of skills that young people indicated they could do 'well' or 'very well'.

Table 4.4: Categorisation of young people into high, medium, low skills groups

Skill category	Number of skills		
	Low	**Medium**	**High**
Communication	0-2	3-5	6-7
Spreadsheet	0-3	4-7	8-10
Digital, video and sound function	0-2	3-5	6-7

Source: Young people's survey 2013.
Base: 566 - 582

Table 4.5 below illustrates the proportion of young people that fall into each of the categories (high, medium, low) for each of the skill categories. Overall, it illustrates that young people feel most confident in undertaking a wide range of communication tasks, with well over-one half (57%) falling into the high skills group, and are least confident in undertaking digital, video and sound function tasks, with a majority (52%) falling into the low skills group for these tasks. Again, this is to be expected given the specialist nature of a range of these tasks.

Table 4.5: Proportion of young people in each skills category

Skill category	Low	Medium	High
Communication	18%	25%	57%
Spreadsheet	36%	29%	35%
Digital, video and sound function	52%	17%	31%

Source: Young people's survey 2013.
Base: 566 - 582

Further exploration of each skill category showed the following:

- **Communication:**

  — There was no significant association between the skill category a young person was grouped into and their FSM status or their level of attendance at school.

— A higher proportion of girls than boys fell into the 'high' category for communication skills (64% vs. 50%).[30]

— A lower proportion of those with an identified Special Educational Need (SEN) were in the high skills category compared to their peers (48% vs. 61%).[31]

— A higher proportion of young people who identified themselves as Roman Catholic were in the high skills category relative to those who identified themselves as Protestant (59% vs. 49%)[32]

— Those who were undertaking IT at GCSE level were more likely to have high levels of communication ICT skills (64%) than those who were not undertaking IT at GCSE level (49%)[33].

- **Spreadsheet tasks**

  — Young people were twice as likely to be categorised as having low skill levels in spreadsheet tasks in comparison to communication skills (36% vs. 18%). Overall, however there were roughly equal proportions (c. one-third) of young people in each of the categories - low, medium, high.

  — There were no significant differences between young people based on their gender, SEN status, religion or their FSM status.

- **Digital, video and sound function tasks**

  — Young people were almost three times as likely to be categorised as having low skills level in relation to digital, video and sound function tasks in comparison to communication tasks (52% vs. 18%). Overall, less than one-third of young people were classified as falling into the high skills category for this range of skills.

  — No significant differences were observed between groups based on gender, religion, SEN status or FSM status.

  — As may be expected given the specialist nature of these skills, those undertaking IT at GCSE level were more likely to have high digital, video and sound skills (40%) compared to those who were not undertaking IT at GCSE level (40% vs. 32%)[34].

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[30] A Chi-square test for independence indicated a significant association between gender and pupils ICT communication skill levels (X^2 (2, n= 581) = 10.554, p= 0.005).

[31] A Chi-square test for independence indicated a significant association between SEN status and pupils ICT skill levels ($\chi2$ (2, 581) = 10.24, p=0.006).

[32] A chi-square test for independence indicated a significant association between religion and pupils ICT skill levels ($\chi2$ (6, 578) = 13.279, p=0.039).

[33] A Chi-square test for independence indicated a significant association between pupils taking ICT at GCSE level and pupils ICT communication skill levels (X^2 (2, n= 582) = 12.584, p= 0.002).

[34] A Chi-square test for independence indicated a significant association between pupils taking ICT at GCSE level and pupils ICT digital skill levels (X^2 (2, n= 580) = 7.959, p= 0.019).

The findings from the interviews with teachers support the survey findings. The following points serve to summarise some of the key points made by teachers in relation to young people's skills sets.

Pupils' interest and competency strongest in relation to communication tasks

Pupils' interest and competency is most likely to fall into the communication tasks category (i.e. communicating over the internet), and for most pupils this interest is unlikely to be mirrored in other ICT areas, such as working with spreadsheets.

"I would say generally they are quite competent [in communication tasks], but the less able kids would struggle, particularly on things like spreadsheets." (Teacher)

Those studying ICT at GCSE appear to have an advantage in relation to development of skills

Teachers believed that those studying ICT at GCSE level are more likely to have a much higher skill set than those who were not undertaking ICT at GCSE level – integration of ICT across the curriculum does not give pupils the same exposure to ICT.

"There is a big difference. Pupils that do the GCSE ICT, their skill levels would be a lot higher than the children that don't. I feel it comes down to Key Stage 3, where ICT is being used as a cross curricular theme isn't the same as an ICT teacher teaching the ICT." (Teacher)

In general, teachers believed that the majority of young people are well skilled

Teachers were keen to suggest that despite the variation of skills development, in general most young people were confident and competent in a range of skills areas.

"In my experience I would say there would be a good majority of them would be capable and able and would be well skilled. A lot of them do Moving Image Art as well, so there's the sound and video coming in there. I struggle with Excel, so I'm sure some of them do as well, but in terms of presentation, PowerPoint, all those sort of things, they are au fait with that. So I would say, like in my experience, they are pretty well skilled." (Teacher)

Summary

Overall, young people reported that they are adept at undertaking a wide range of communication tasks. The top three tasks that almost three-quarters or more of young people reported being able to do well or very well include:

- Using a search engine (95%);
- Sending, receiving and forwarding emails (77%); and
- Adding attachments to emails (74%).

In contrast, young people were less confident in undertaking a range of more complex spreadsheet tasks, though a relatively high proportion of young people were confident or very confident in undertaking basic spreadsheet tasks. For example, almost three-quarters of young people indicated they could undertake basic spreadsheet skills such as entering text, numbers and formulae into a worksheet (74%) or formatting cells, rows and columns (72%) well or very well.

Young people were least confident and less familiar with digital, video and sound function tasks compared to either the communication or spreadsheet tasks. The proportion of students reporting they could complete tasks very well exceeded 25% for just four of the tasks, namely adding audio effects to video clips (27%), creating title screens and credits (29%), using digital video editing (26%) and using transition and movie effects (30%).

Based on their responses, young people were assigned to high, medium and low groups for each of these skills categories. Further analysis found that in relation to communication skills, girls were more likely than boys to fall into the high skills category and there were also differences based on Free School Meal (FSM) status, religion and Special Educational Needs (SEN) status. In relation to spreadsheet and digital, video and sound function tasks, no significant differences were identified based on gender, FSM status, religion or SEN status.

These findings should be interpreted with a degree of caution as a recent study conducted by ECDL (2014) found that young people are likely to overestimate their ICT skills and there is a wide discrepancy between young people's self-assessment of ICT skills and actual ICT skills. Skills identified in the literature as being inadequate include those typically required by employers such as critically assessing online information and editing word documents and spreadsheets (Bartlett, 2011; PRC, 2012; ICILA, 2014; Sommer, 2014). In addition, the literature highlights that young people are at risk of not receiving sufficient training in this area as it is assumed they have a high degree of ICT skills because they have grown up in a generation immersed in technology (Selwyn, 2009; Bartlett, 2011; ICILS, 2014).

Section 5: Young people's experiences of, and attitudes towards, ICT

Introduction

This section of the report explores young people's attitudes towards technology and examines their views on a range of areas relating to ICT and how it impacts either positively or negatively on young people's lives. In addition, particular focus is given to young people's online safety as this is an area that many stakeholders (teachers and parents/carers) believed could have a negative impact on young people.

Research objective 3: To examine young people's attitudes towards using computers/laptop and ICT more generally

The remainder of this section of the report is structured under the following headings:

- Young people's attitudes towards technology;
- Online safety; and
- Summary

Young people's attitudes towards technology

Finding 15: A large majority of young people (88%) either don't mind, like or really like using computers for school work.

Figure 5.1 shows that just over half (52%) of pupils stated that they either really liked or liked using computers for school work and a further 36% indicated that they don't mind using computers. Just over one-tenth (12%) of pupils stated that they did not like or indeed hated using computers for school work.

Figure 5.1: Pupil's attitudes on how much they like using computers for school work
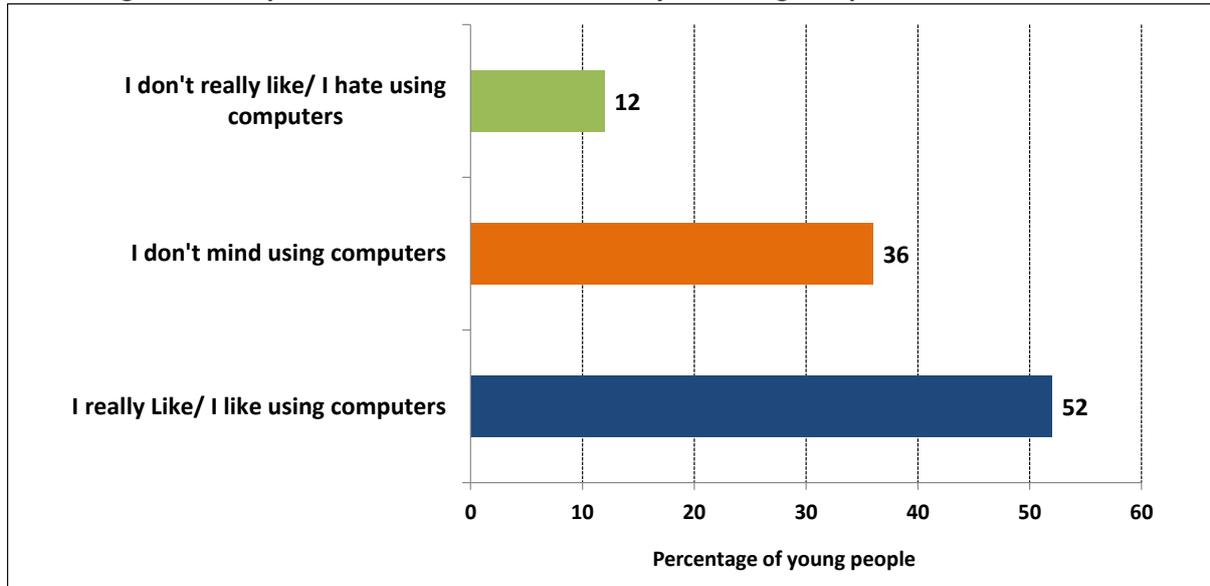
Source: Young people's survey 2013.
Base: 597

Further analysis of the data was undertaken to examine if there were any significant differences between groups of young people. The analysis revealed no significant differences based on gender, religion, FSM status and SEN status.

Finding 16: The vast majority of young people believed that computers and laptops had made their life easier and many indicated that ICT had made it easier to do their school work.

Pupil's attitudes towards ICT were explored in more depth in the Year 2 survey. Figure 5.2 below illustrates the key findings from the Year 2 survey.

In terms of general attitudes towards ICT, a vast majority of pupils (90%) stated that computers and laptops had made their life easier. In a study conducted by YouthNet (2011), similarly high proportions (80%) of young people stated that new technology makes life simpler. The survey findings revealed that less than one-half (45%) of young people were concerned about having access to the latest technology.

Almost three-quarters (72%) stated that computers and laptops had made it easier for them to do their school work and over three-fifths (62%) stated that computers/laptops had helped them to save time.

These findings were mirrored in the pupil focus groups, with some noting that computers helped them produce neater work for school than if they had to hand write it.

"When you type your school work up it makes it neat." (Pupil)

Other pupils commented that by using the internet on their computers they were able to access information, on a variety of subject areas, easily and quickly and in a format that facilitated learning.

52

> "Using the internet is easier than looking up textbooks, sometimes it gives you an easier description or explanation." (Pupil)
>
> "I think the internet helps my school work as I'm able to research anything." (Pupil)
>
> "The internet gives you simplified notes about what you're studying." (Pupil)

Across the UK young people have similarly positive dispositions towards the internet (Livingstone et al., 2011a).

In terms of ICT skills, less than half of the young people surveyed (44%) stated that they would like to be better at using computers/laptops or other devices and close to two-thirds did not find computers or laptops frustrating to use (64%).

Figure 5.2: Young people's attitudes about using ICT for school work and life in general
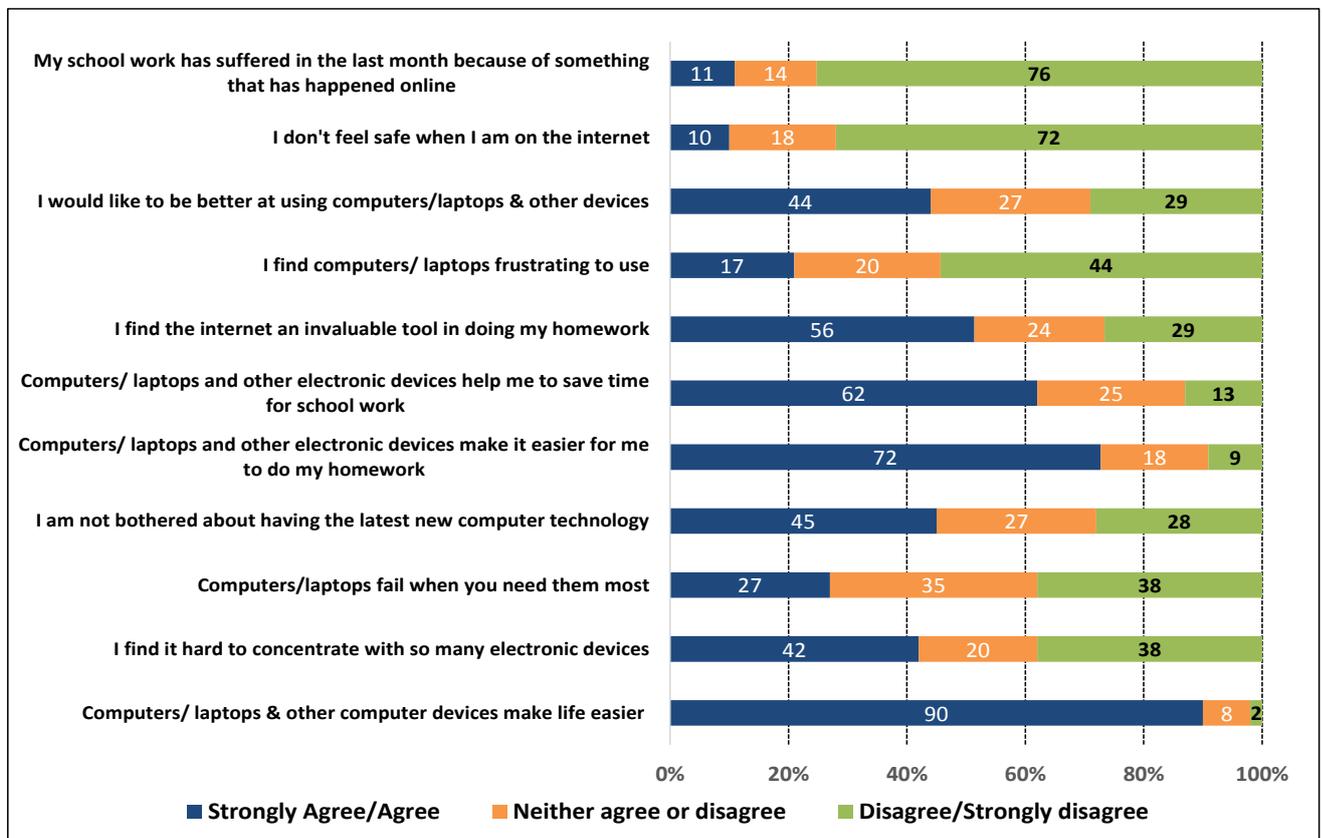
Source: Young people's survey 2013.
Base: 585-595

Online Safety

*Finding 17: A*lmost three-quarters (72%) of young people feel safe online. However, almost 10% do not feel safe online and these young people were disproportionately male. Parents/carers appeared much more concerned for their child(ren)'s online safety than the young people themselves.

Figure 5.2 above illustrated that approximately three-quarters of pupils reported that they felt safe whilst being online (72%). This corresponds to findings published by YouthNet (2011) which found over 75% of young people thought that the internet was a safe place. However, a significant minority (9%) of pupils stated that they felt unsafe online, whilst the remainder (18%) neither agreed nor disagreed.

A more detailed analysis of the pupil survey data showed that there were significant differences based on gender of respondent with males (14%) statistically more likely than females (6%) to state that they felt unsafe whilst online[35]. There were no statistically significant differences between groups based on SEN status, religion or FSM status.

Notably when online safety was discussed during the parent focus groups/interviews there was a split in opinion, with approximately half of parents worried about their child's online safety whilst the other half of parents appeared not to worry much about this issue. Those parents who reported that they were not worried about their child's online activities indicated that they were able to put restrictions on their child(ren)'s online devices and were able to monitor their child(ren)'s activities. In addition, other parents felt sufficiently reassured of their child's online safety because their child had talked to them about what they were doing online. The literature suggests that parents are one of the main groups young people talk to about online safety (Kids Life and Times survey, 2013; Vincent, 2015).

> "…because as I say there is ways of blocking things out. They don't all work but… no I think if you want to, you can block out the majority of things you don't want on it." (Parent)
>
> "I see what he's doing online and the computer is just off the kitchen, he's also very good at talking to you and he would tell you if something was up. Like he would show me his Facebook." (Parent)

However, there was considerable concern amongst a substantial proportion of parents about their child(ren)'s safety online. This concern arose through a lack of knowledge on the part of parents as to what their child was doing online. In addition, parents were concerned that young people were not always equipped with the appropriate skills to ensure their safety online and that this could put their child's safety in danger, for example, through meeting strangers online and subsequently meeting up with them face-to-face.

> "You are always going to worry and will never know everything that goes on online."(Parent)

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[35] A Chi-square test for independence indicated a significant association between gender and pupils views about feeling safe online (X^2 (2, n= 588) = 11.421, p= 0.003).

> "When they're chatting to people online, you don't know who they are, my elder daughter would have friends on Facebook from different countries and older men and she adds them as friends, it would worry me if she decided to meet up with them." (Parent)
>
> "They are performing on a world platform... they are not equipped to deal with the force of mass followers. It is a concern – they fall victim to their own emotions – the craziest things." (Parent)

The split in opinion observed in the parent focus groups/one-to-one interviews around internet safety does not correspond with the literature, as a recent Ofcom study (2014) stated that a small proportion of parents (5%) are concerned about their child's online safety.

Though young people themselves were not as vocal as parents/carers in relation to e-safety, a number of those who participated in the focus groups expressed similar views as to the potential online safety issues that may present themselves. However, young people were more acutely aware of other online safety issues that may arise beyond those identified by parents, such as online fraud or computer hacking.

> "People can pretend to be your friends and you might not even know who they are..." (Pupil)
>
> "...because there are creeps online, trying to add you as a friend." (Pupil)
>
> "Sometimes you could be on a fake website when you're online shopping and they could steal your account details." (Pupil)
>
> "...because we don't understand how easily it is to be hacked or whatever."(Pupil)

Finding 18: A significant proportion (28%) of young people indicated that their parent(s)/carer(s) had not spoken to them about how to stay safe online.

The pupil survey findings revealed that two-thirds (66%) of parents had spoken to their child about how to keep safe online and this may explain why a significant proportion of the parents in the focus groups indicated that they were not worried about the safety of their child whilst being online. However, a significant proportion (28%) of young people stated that their parent(s)/carer(s) had not spoken to them about how to stay safe online, thus potentially exposing young people to greater e-safety risks than their counterparts.

Figure 5.3: Have your parents ever spoken to you about how to keep yourself safe online?
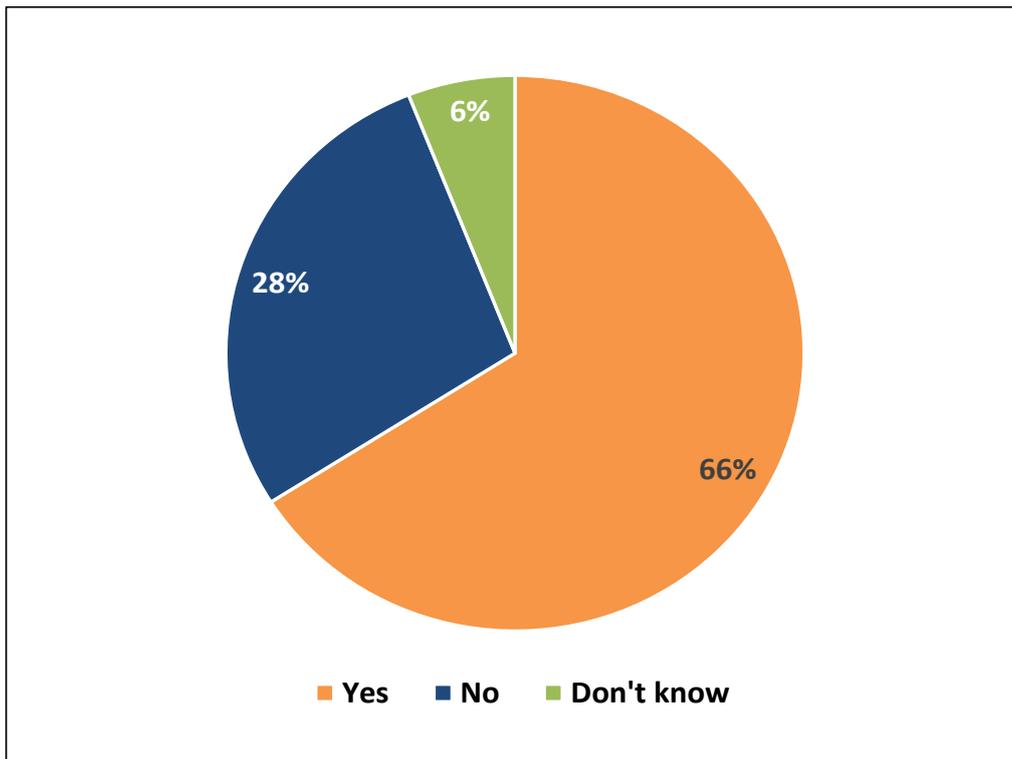
Source: Young people's survey 2013.
Base: 552

Summary

The findings show that young people are generally positively disposed towards using ICT in general (whether at home or in school), with almost 9 out of 10 young people stating they don't mind, they like or they really like using a computer for homework. These positive dispositions towards using ICT did not differ according to gender, SEN status, religion or FSM status.

The findings from the survey also suggest that young people themselves can see the benefits of ICT with almost all (96%) indicating that ICT makes their life easier and almost three-quarters (72%) indicating that ICT makes it easier for them to do their homework. These findings are reinforced by the findings from the focus groups where young people commented that by using the internet on their computers they were able to access information, on a variety of subject areas, easily and quickly and in a format that facilitated learning.

One particular area of concern that was raised throughout the two years of the research related to young people's safety online. The survey of young people shows that almost three-quarters (72%) feel safe online. However, almost 10% do not feel safe online and these young people were disproportionately male. Parents/carers appeared much more concerned for their child(ren)'s safety whilst online than the young people themselves.

Section 6: An exploration of how ICT at home impacts on pupil attainment

Introduction

A key aspect of this research project is to examine the relationships between various aspects of ICT at home and GCSE attainment. Specific relationships that were investigated included, for example, the extent of ICT usage for homework purposes and GCSE attainment.

It is important to note that a whole host of factors other than those which are included within this study impact on young people's attainment (e.g. literacy level). In addition, whilst the analysis presented in this section of the report will confirm whether a relationship exists or not between each of the ICT variables and GCSE attainment, this study does not explain what proportion of the difference/variance in attainment is specifically attributable to each of these variables. Therefore, this section of the report describes the relationships that exist but does not explain how much a particular variable contributes to the differences observed.

> **Research objective 4:** To determine, where possible, if differences in educational attainment at GCSE are linked to varying levels of home access, different types of ICT usage (e.g. non-homework or homework), varying levels of skills and/or different attitudes towards the use of technology.

The remainder of this section of the report is structured under the following headings

- GCSE attainment profile;
- Access to computer/laptop at home and pupil attainment;
- Usage of ICT at home and attainment;
- Access to software at home and attainment;
- Skills level and attainment;
- Pupils' educational attainment according to attitudes about using computers for school work; and
- Summary

GCSE attainment profile[36]

> **_Finding 19:_** Two-thirds (66%) of young people surveyed achieved 5 A*-C GCSEs – this is below the average for all secondary schools in Northern Ireland. Attainment varied based on gender, SEN status, FSM status and religion.

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[36] The data presented in this sub-section all refers to the school year 2013/14 only.

Figure 6.1 below illustrates that exactly two-thirds (66%) of the young people surveyed achieved at least 5A*-C grades at GCSE (not including English and Maths) in Year 12 (See Figure 6.1). This compares to a Northern Ireland average of just under 82% in 2013/14, and an average of 72% (rounded) for all secondary schools in Northern Ireland. The fact that pupils attained at a level lower than their peers in other secondary schools in Northern Ireland is not surprising given these schools were selected based on the relatively high proportion of young people entitled to Free Schools Meals.

Figure 6.1: 2013/14 GCSE attainment of surveyed pupils
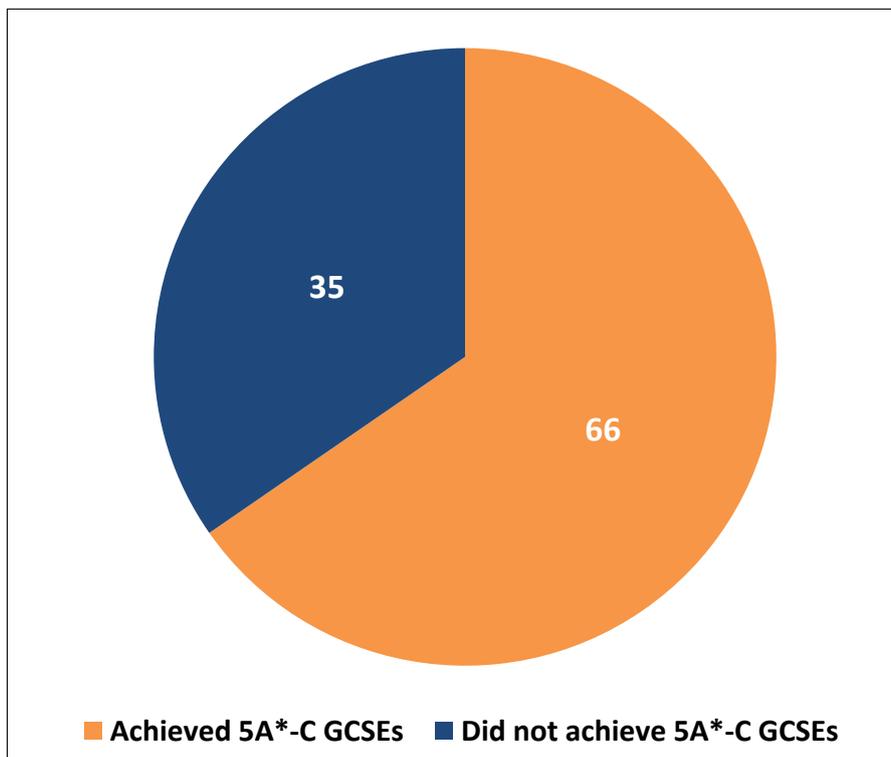
Source: Young people's survey 2013.
Base: 611

A more detailed analysis of GCSE attainment of the young people that participated in the survey revealed significant differences in attainment by:

- **Gender:** A higher proportion of females achieved 5A*-C grades at GCSE than their male counterparts by almost 12 percentage points (72% vs. 60%). This gender gap across Northern Ireland is 11 percentage points (pp).

- **FSM status:** Just over one-half of young people who are entitled to FSM achieved 5A*-C grades at GCSE compared to three-quarters of those who are not entitled to FSM (51% vs. 75%). This represents a gap of 22 pp. The corresponding statistics for secondary schools in Northern Ireland are 59% and 75% respectively. Therefore, relative to the Northern Ireland average for secondary schools, those entitled to Free School Meals in schools that participated in the study underperformed.

- **Religion:** 48% of those who identified themselves as Protestant achieved 5A*-C grades at GCSE compared to 70% of those who identified themselves as Roman Catholic[37]. Both groups of young people underperformed relative to the Northern Ireland average.

- **SEN:** 50% of those who indicated they had a Special Educational Need achieved 5A*-C grades at GCSE compared to 76% of those who did not identify themselves as having a Special Educational Need.

Access to computer/laptop at home and pupil attainment[38]

Finding 20: Those without access to a computer/laptop at home more likely to underperform in their GCSEs.

As already alluded to in Section 3, this study found that only a small proportion (5%) of young people reported that they did not have access to a computer or laptop[39]. An analysis was undertaken to understand the relationship between access/ownership of a laptop/computer and GCSE attainment. The analysis showed that those pupils who reported that they did have access to a computer or laptop in their home in Year 2 of the study were more likely to have achieved 5A*-C grades at GCSE (68%) than those who reported they did not have access to a computer or laptop (29%)[40]. This finding corresponds with the literature which shows that access to ICT at home has a mainly positive impact on educational attainment (Schmitt and Wadsworth, 2004; Valentine, 2005; Spiezia, 2011; Bowers and Berland, 2013).

Figure 6.2: Pupils' educational attainment according to access to a computer or laptop at home
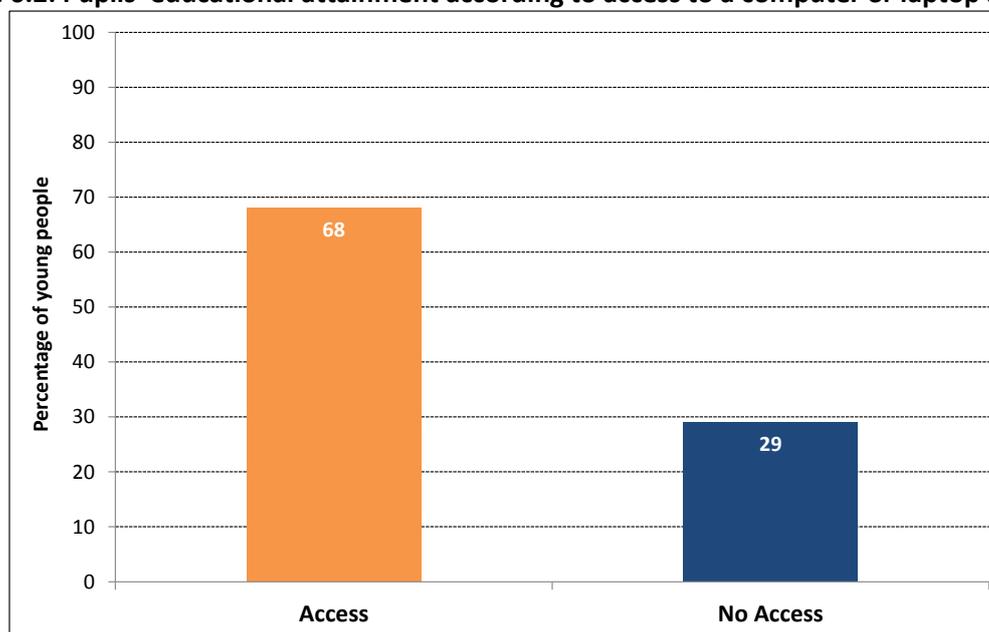
Source: Young people's survey 2013.
Base: 603

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[37] It is important to note that schools were selected based on the proportion of young people who were entitled to Free Schools Meals. As many of these schools were Maintained schools, a high proportion of those surveyed identified themselves as Roman Catholic.
[38] Findings presented for the remainder of this section relate to Year 2 survey data only.
[39] Caution should be exercised in interpreting these findings as the number of young people that reported that they did not have access to a computer or laptop is low.
[40] A Chi-square test for independence (with Yates Continuity Correction) indicated a significant association between educational attainment and access to a computer or laptop at home (X^2 (1, n= 603) = 18.208, p= 0.0005).

Despite the findings above, many of the teachers interviewed believed that for those few that did not have access to a computer or laptop at home, their ability to do homework should not be compromised because of the high levels of access to computers and laptops provided by schools. In addition, some teachers noted that, if they were aware that a pupil did not have access to a computer or laptop at home, then they would not set a homework which required them to have access to a computer or laptop.

> "We provide access at school… in the morning, lunchtime and after school at the homework club, so even if they can't do it at home (due to not having access to a computer or laptop), they still have an opportunity to access it in school." (Teacher)
>
> "Well the thing is, I wouldn't set a homework if I was aware that pupils couldn't do it, because you can't be treating children differently." (Teacher)

In contrast, parents believed that lack of access to a computer or laptop at home would negatively impact a pupil's ability to do well at school.

> "I think it's definitely a drawback for them, because so much work is done now on a computer and in future life computers are used so much. I think they're at a big disadvantage if they're only using it in school." (Parent)

Access to software at home and attainment

Finding 21: Pupils who had access to word processing and presentation software at home were more likely to achieve 5A*-C grades at GCSE than those who did not have access to this software.

Pupils' educational attainment at GCSE level was explored according to their access to different types of software at home. There was found to be a significant association between pupils' access to word processing and presentation software and educational attainment. For example:

- Those pupils that stated they had presentation software were more likely to achieve 5A*-C grades at GCSE (72%) than those who stated they did not have and did not want presentation software (36%)[41].

- Those pupils that stated they had word processing software were more likely to achieve 5A*-C grades at GCSE (70%) than those who stated they did not have and did not want word processing software (33%)[42].

---

[41] A Chi-Square test for independence indicated a significant association between attainment and those pupils who had access to presentation software X^2 (2, n=558) = 20.670 p=.0005.
[42] A Chi-Square test for independence indicated a significant association between attainment and those pupils who had access to word processing software X^2 (2, n=554) = 16.639 p=.0005.

- No significant association was identified for pupils' access to other types of software, including Adobe Reader, iTunes, Database Software, Spreadsheet Software and Photoshop, and educational attainment at GCSE level.

Usage of ICT at home and attainment

Usage of computer/laptop at home and educational attainment

Finding 22: *A c*lear link was identified between the amount of time spent using a computer for homework and non-homework purposes and attainment. Those at either end of the usage spectrum (less than 1 hour per day or more than 3 hours) more likely to not achieve 5 A*-C grades at GCSE level relative to their peers.

An analysis was undertaken to understand the relationship, if any, between extent of usage of ICT for homework purposes and attainment and also extent of usage of ICT for social/non-homework purposes and attainment. The following findings emerged:

- The survey findings show that pupil attainment is lowest at each end of the usage spectrum with:

  — Those who use a computer/laptop least (i.e. no time or less than 1 hour) for homework or non-homework purposes more likely to not achieve 5 A*-C grades at GCSE compared to moderate/high users (1-3 hours); and

  — Those who use a computer/laptop most (i.e. 3 or more hours) for either homework or non-homework purposes less likely to achieve 5 A*-C grades compared to moderate/high users (1-3 hours)[43]

  — Those who reported using a computer for about 3 hours per day for homework purposes attained the highest, with 79% of this group achieving 5A*-C grades at GCSE, exceeding the Northern Ireland average for secondary schools and close to the overall Northern Ireland average.

  — Those who reported using a computer/laptop for about 1, 2 or 3 hours per day (for either homework or non-homework activities) performed close to or above the Northern Ireland average for secondary schools.

---

[43] A Chi-square test for independence indicated a significant association between educational attainment and usage of a computer for homework purposes (X^2 (5, n= 569) = 12.658, p= 0.027). A Chi-square test for independence indicated a significant association between educational attainment and usage of a computer for non-homework purposes (X^2 (5, n= 570) = 14.914, p= 0.011).

Figure 6.3: Percentage of young people achieving 5A*-C grades at GCSE in relation to home use of ICT for homework and non-homework purposes
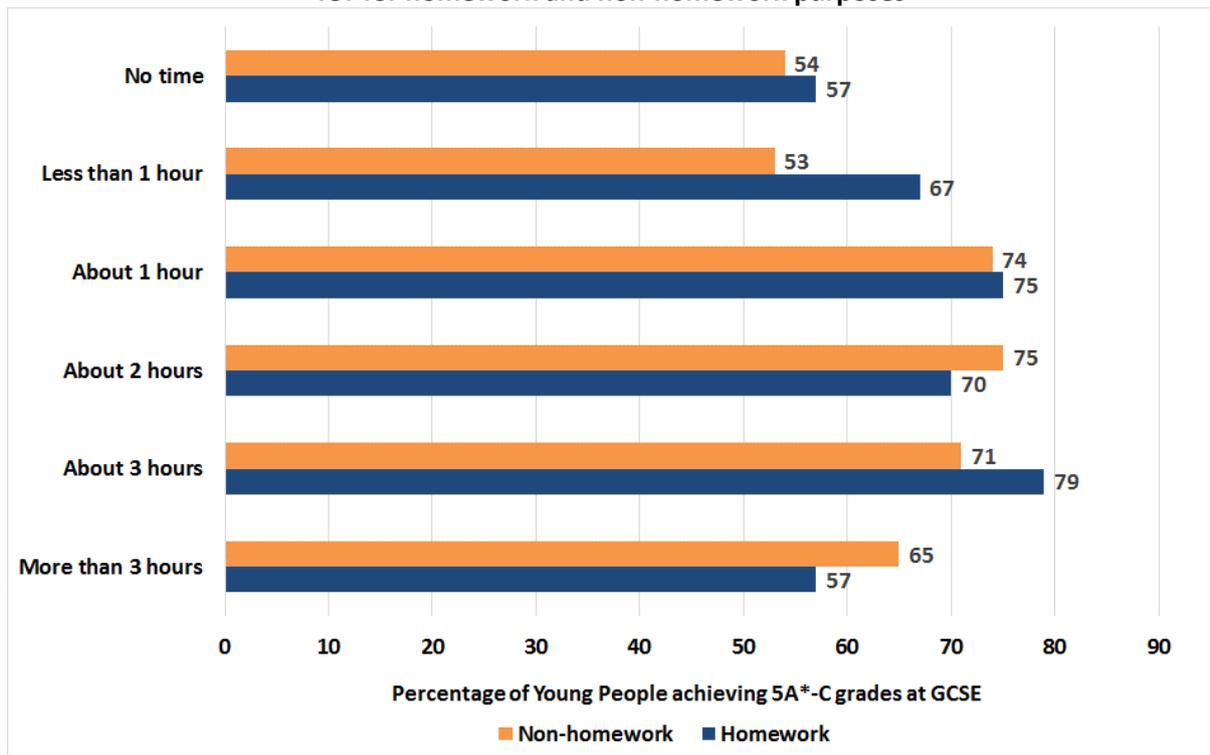
Source: Young people's survey 2013.
Base: 569-570

Relationship between usage of a range of electronic devices and educational attainment

Finding 23: Young people who reported using a portable games player or a games console at home a couple of times a day were less likely to achieve 5A*-C grades at GCSEs than those who played these devices less often.

The survey also asked young people about how frequently they used a range of devices to go online. The survey included nine devices that young people could use to go online including the following:

- Smart television;
- E-book;
- Games console (e.g. PlayStation 3);
- Laptop;
- Mobile phone;
- Netbook;
- PC;
- Portable Games Player; and
- Tablet.

Out of a possible nine electronic devices, a significant association between frequency of usage and educational attainment was identified for two devices[44]: Portable Games Player and Games Console (e.g. PS3). Pupils were less likely to achieve 5A*-C grades at GCSES if they reported using a portable games player a couple of times a day (41%) compared to those who rarely (77%) used one[45]. Similarly, those young people who reported using a games console a couple of times a day were less likely to achieve 5A*-C grades at GCSE compared to all other categories of users, but in particular in relation to those who rarely used their games console[46]. These findings are supported by the literature which shows that intensive gaming on a daily basis can have a detrimental impact on young people's academic engagement (Przbylski and Mishkin, 2015). The findings showing young people's attainment for different gaming user groups are illustrated in Figure 6.4 below and the link between gaming and attainment as suggested by parents/carers and teachers interviewed is supported by the survey findings.

Figure 6.4: Relationship between GCSE attainment and usage of gaming devices
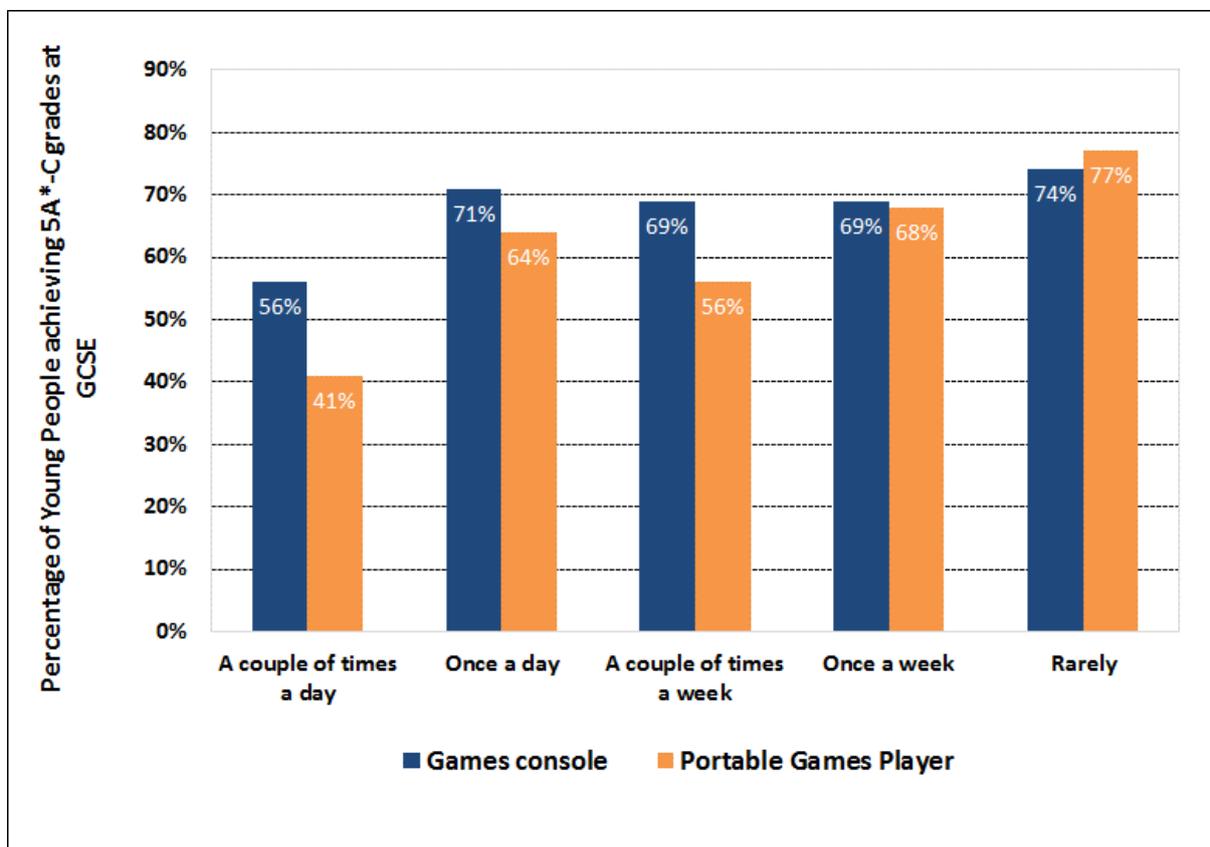
Source: Young people's survey 2013.
Base: 268-435

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[44] This analysis is based only on those who reported having each of the electronic devices and excludes those who indicated that they did not have the device.
[45] A Chi-square test for independence indicated a significant association between pupils' intensity of usage of a Portable Games Player and educational attainment (X^2 (4, n= 268) = 24.533, p= 0.0005).
[46] A Chi-square test for independence indicated a significant association between pupils' intensity of usage of a games console and educational attainment (X^2 (4, n= 435) = 10.542, p= 0.032).

Notably, recent studies have found that low levels of gaming (less than 1 hour per day) can have a positive impact on young people's academic engagement compared to those to those who do not play at all (Bowers and Berland, 2013; Przbylski and Mishkin, 2015). This trend is mirrored to some extent in this study, as there is not a significant change around levels of educational attainment and those who use a games console once a day or less frequently. Notably there is a significant increase in levels of attainment between using a games console and portable games player a couple of times a day and those who use these devices once a day (see Figure 6.4).

A statistically significant relationship was not identified for frequency of use of the following electronic devices and educational attainment at GCSE level: a smart TV; E-book; laptop; mobile phone; netbook; PC and tablet.

In spite of the fact that no link could be observed between usage of other devices (such as mobile phones), opinion was divided between parents/carers and teachers who participated in the research. Approximately one-half of those interviewed believed that there was an association between usage of electronic devices (in addition to gaming devices) and educational attainment. For example, some teachers believed that excessive usage of mobile phones, in particular, had a negative impact on educational attainment as they distracted pupils from doing their school work. However, other interviewees were equally of the view that these electronic devices could be beneficial to young people's learning.

> "I think they are very detrimental. Probably if there was a way of turning off those phones in schools it would be no bad thing. We would find that a significant amount of time of teachers and pupils is taken up addressing problems created on social media. It impacts on their concentration, because they are distracted waiting for messages…" (Teacher)
>
> "You can get the smart phones, they have the Wi-Fi on them, they have the Internet; you can get all your apps and things downloaded. With the new C2K system now coming into schools, which gives you the access to your school documents, you get those through your phone, through the tablet, through games consoles, off the internet, yeah. I think they are all very beneficial to be honest…" (Teacher)

Online Activities and attainment

Finding 24: No link was found between length of time spent social networking and attainment. However, there is a link between the amount of time spent online gaming and attainment- with those who game more frequently are less likely to achieve 5A*-C grades at GCSEs.

Social networking and gaming were identified by pupils as popular online activities. However, during the focus groups/ interviews, parents/ carers and teachers were most likely to link these activities to having a negative impact on young people. One of the ways in which these activities were considered to impact young people negatively was through educational attainment. For example, parents/ carers and teachers were likely to note that social networking and gaming distracted young people from their school work and could result in tiredness and absenteeism (for more detail please refer to section 3).

Despite issues relating to social networking and its negative impact on young people being raised in the interviews and focus groups, no statistically significant association between pupils' intensity of participating in social networking activities and educational attainment at GCSE level was found to exist. However, pupils intensity of participating in online games was found to have an impact on attainment, i.e. the more frequently pupils participated in these activities the less likely they were to achieve 5A*-C grades at GCSEs. The survey found no evidence to support the assertion that those who reported gaming online frequently had a poorer attendance record.

Skills level and attainment

Finding 25: Young people's attainment varied significantly according to the level of communication skills they reported having. Those with low levels of skills were less likely to achieve 5A*-C grades at GCSEs compared to those with high skill levels.

In Section 5, pupils' self-reported ICT skill levels were grouped into three categories (high, medium and low) for communication, spreadsheet and digital, video and sound function tasks. Pupils' educational attainment was explored according to their self-reported skill levels for these tasks.

Figure 6.5 below illustrates that young people were more likely to achieve 5A*-C grades at GCSEs if they had high (71%) or medium (68%) levels of ICT communication skills compared to those who had low levels (53%) of ICT communication skills[47].

No statistically significant relationships were found for either spreadsheet or digital skills and educational attainment. These findings make sense intuitively as many of these are specialist in nature and would expect to be better developed in those young people undertaking a GCSE in ICT.

Overall, this suggests that basic communication skills are a more important determining factor in terms of young people's GCSE attainment than either spreadsheet or digital, video or sound skills.

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[47] A Chi-square test for independence indicated a significant association between ICT skill levels for communication tasks and educational attainment (X^2 (2, n= 582) = 10.768, p= 0.005).

Figure 6.5: Young people's communication skill level and GCSE attainment
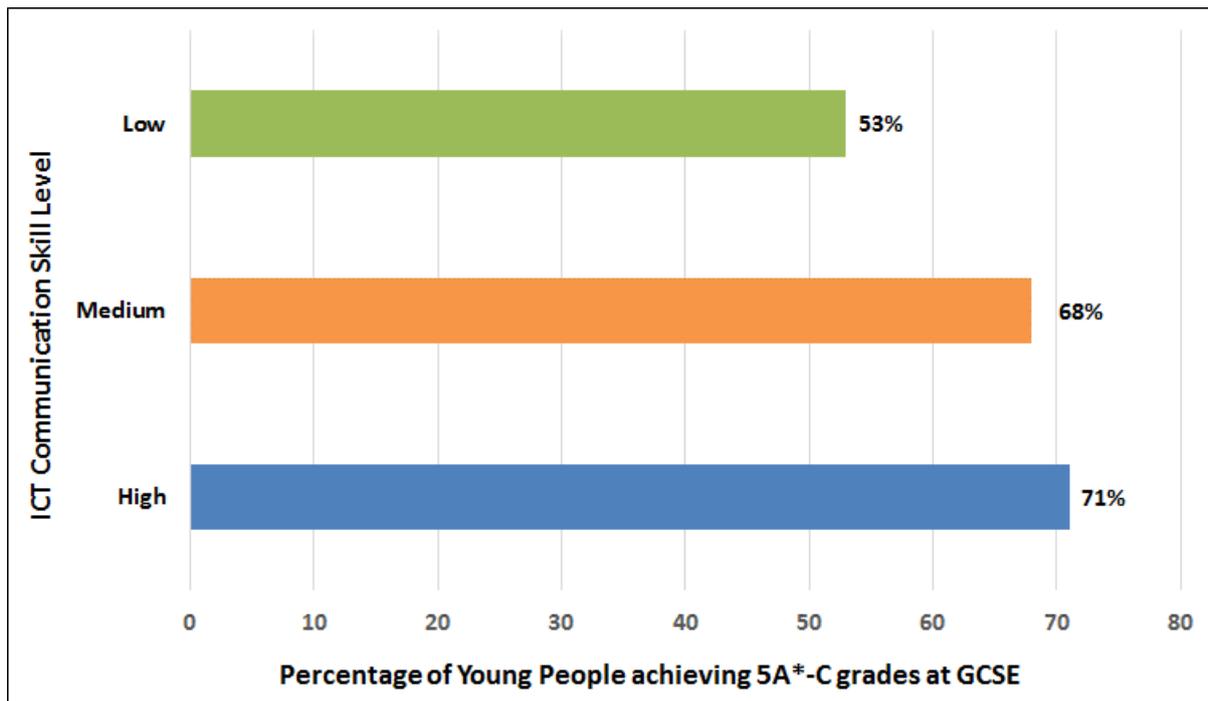
Source: Young people's survey 2013.
Base: 582

Pupils' educational attainment according to attitudes about using computers for school work

Finding 26: Pupils were more likely to achieve 5A*-C grades at GCSEs if they had positive attitudes towards using computers for school work.

Those young people who showed more positive attitudes towards using computers/laptops for school work were more likely to achieve 5A*-C grades at GCSE level than those pupils who expressed more negative viewpoints. Table 6.1 below shows that pupils were more likely to achieve 5A*-C grades at GCSE if they:

- Believed that computers/ laptops and other computer devices made life easier (69%) than those who felt computers/ laptops did not make life easier (23%)[48].

- Stated that they did not find computers and laptops frustrating to use (70%) compared to those young people who found them frustrating to use (54%)[49].

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[48] A Chi-square test for independence indicated a significant association between students views on computers/ laptops making life easier and educational attainment (X^2 (2, n= 591) = 17.879, p= 0.0005).
[49] Chi-square test for independence indicated a significant association between students attitudes about computers/ laptops being frustrating to use and educational attainment (X^2 (2, n= 588) = 8.834, p= 0.012).

Table 6.1: Young people's attitudes towards technology and GCSE attainment

Statement	Achieved 5A*-C grades at GCSE	
	Agree with statement	**Disagree with statement**
Computers/ laptops and other computer devices make life easier	69%	23%
I find computers/laptops frustrating to use	23%	70%
I find it hard to concentrate with so many electronic devices (e.g. computers/laptops) around me	71%	57%

Source: Young people's survey 2013.
Base: 588-597

Notably, those pupils that stated that they found it hard to concentrate with so many electronic devices were more likely to achieve 5A*-C grades at GCSE level (71%) than those who stated that electronic devices did not have a negative impact on their concentration (57%).[50]

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[50] Chi-square test for independence indicated a significant association between students views on electronic devices and concentration levels and educational attainment (X^2 (2, n= 592) = 12.381, p= 0.002).

Summary

Two-thirds (66%) of the young people who completed the survey in Year 1 and Year 2 achieved 5A*-C grades at GCSE. This compares less favourably to the Northern Ireland average for secondary schools (72%) and the Northern Ireland average for all young people who took GCSEs (82%).

The findings from this research show a clear link between access, usage, attitudes and young people's skills level and how well they achieve at GCSE level. The following points summarise the key findings from this analysis[51]:

- **Home access to computer/laptop and attainment:** Although a relatively low proportion of young people (5% in Year 2) stated they did not have access to a computer/laptop, these young people were much less likely to achieve 5A*-C grades at GCSE than those who did report access to a computer or laptop (29% vs. 68%).

- **Usage of a computer/laptop for homework and non-homework purposes and attainment:** Those who spent around three hours per day using a computer/laptop to do homework were the highest attaining group with almost four-fifths (79%) achieving 5A*-C grades in their GCSE exams. The lowest attaining groups were those who reported spending no time or those who reported spending more than three hours, with 57% of each of these groups achieving 5*-C grades at GCSE. In terms of non-homework use, 75% of those who spent about 2 hours a day on the computer achieved 5A*-C grades at GCSE level compared to just over one-half of those who spent no time (54%) or less than one hour (53%).

- **Use of other electronic devices and attainment:** The frequency of daily use of games consoles and portable games players had a significant impact on educational attainment. Pupils were less likely to achieve 5A*-C grades at GCSES if they reported using a portable games player a couple of times a day (41%) compared to those who rarely (77%) used one. Similarly, those young people who reported using a games console a couple of times a day were less likely to achieve 5A*-C grades at GCSE compared to all other categories of users, but in particular in relation to those who rarely used their games console.

- **Skills level and attainment:** Pupil attainment varied significantly only in relation to communication skills and not in relation to spreadsheet skills or digital, video or sound skills. Just over one-half (53%) of those who were categorised as having a low level of communication skills achieved 5A*-C grades at GCSE compared to 71% of those categorised as having a high level of communication skills.

- **Attitudes towards technology and attainment:** Pupils were more likely to achieve 5A*-C grades at GCSEs if they had positive attitudes towards using computers for school work. For example, pupils were more likely to achieve 5A*-C grades at GCSE if they believed that computers/ laptops and other computer devices made life easier (69%) than those who felt computers/ laptops did not make life easier (23%).

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[51] The analysis used Year 2 survey data and pupil attainment data.

Section 7: Conclusions and recommendations

Young people's level of access to ICT devices is generally not an issue for the vast majority of young people and these high levels of access have remained unchanged over the course of the research project. However, it does represent an issue for a small proportion of young people a significant proportion of whom were entitled to Free School Meals suggesting that lack of resources could at least play some part in this. Whilst the proportion of young people without access is low, these young people are placed at significant disadvantage relative to their peers and this research project shows that those who do not have access to a computer or laptop achieve significantly poorer outcomes at GCSE. If this is scaled up across the top 40 most deprived schools (the targeted sample for this study), this would mean that c.1,000 young people are potentially without access to a computer or laptop at home. Whilst a number of schemes have operated in the past (such as those administered as part of Neighbourhood Renewal), it is important that steps are taken to ensure that all young people, but particularly those commencing their GCSEs (at Year 11) have access to a computer/laptop or other electronic device that would enable them to have the same opportunities as those who currently have such equipment.

Recommendation 1:

- Recommendation 1: A targeted scheme should be introduced to provide those without access to a computer/laptop at home with access. Given that this is only an issue for approximately 5% (or approximately 1,000 young people across the top 40 schools in terms of FSM entitlement), such a scheme would not place a significant burden on finances, and the potential benefit to young people in terms of educational attainment should outweigh any costs incurred. In terms of administration of the scheme, it is recommend that the Department for Social Development, the new Local Government District councils and private sector work together to devise such a scheme.

The findings from the survey suggest that young people spent proportionately less time on homework related activities in comparison to non-homework activities, with over two-fifths (43%) of young people in both Year 1 and Year 2 stating that they spent less than one hour per day doing homework on a computer/laptop. Further analysis revealed that a significant proportion of these young people (particularly those who spend no time using a computer/laptop for homework) underperformed relative to their peers in their GCSE exams.

Recommendation 2:

- Recommendation 2: Given the significant link or relationship between type of usage (i.e. for homework purposes), level of usage and GCSE attainment, the leadership (e.g. Board of Governors) in each school may wish to consider reviewing their homework policy to ensure that teachers are encouraged to regularly set homework that requires the use of ICT (computer/laptop or other electronic device) at home. To facilitate this, schools may wish to consider making as much use as possible of C2KNI's online learning platform (Fronter) and also encourage young people to access and upload homework activities using this platform from home.

In terms of non-homework use, the most prolific social activity undertaken by young people was social networking, with over four-fifths of young people doing this on a daily basis. Whilst gaming did not feature as one of the top five social activities, parents/carers and teachers were concerned that gaming alongside social networking could be having a negative impact on young people. Our research evidence did not point to an attainment gap between those who social networked frequently in comparison to those who did not. However, the research showed a clear link between frequency of use of games consoles/portable games player and attainment, with frequent users of these devices more likely to underachieve relative to their peers. In addition, a significant proportion of these young people are boys rather than girls.

Recommendation 3: The research has identified that intensity of gaming is linked to young people's attainment and that those young people (the majority of whom are boys) who are intense users of gaming devices are placing themselves at considerable risk of underachieving relative to their peers. However, whilst there is a link between levels of gaming and attainment, the study did not set out to establish the factors (other than extent of gaming) that combine to impact on attainment – for example, do high levels of gaming interrupt normal sleep patterns resulting in poor attention/concentration in school, or are there other factors which contribute to poor attainment. The literature appears to point to a range of potential negative impacts of gaming on learning – for example, a recent study conducted by Przybylski and Mishkin (2015) found that, compared with those that did not play, teenagers who engaged in low levels of gaming (less than 1 hour a day), evidenced lower levels of hyperactivity and conduct issues whereas the opposite was found for those who gamed for 3+ hours per day. It is therefore recommended that schools encourage parents/carers to limit the amount of time they allow their child (ren) to use a games console or portable games player.

Recommendation 4: It is recommended that additional research is undertaken (possibly through a longitudinal tracking study) to understand in greater detail the factors (in addition to gaming) that lead to poor educational outcomes amongst those who are prolific gamers. Given that the majority of gamers are boys, the study may wish to focus on boys attending single-sex boys' schools and those attending co-educational schools, to understand whether the issues are similar or different across these school types.

The findings from both the qualitative and quantitative research show that young people are not only confident users of ICT but that the vast majority of young people enjoy using technology and understand the benefits they can derive from it. Whilst young people did mention the potential negative impacts of technology in terms of being able to stay safe whilst online, by and large young people felt safe whilst online and for the majority of young people, their online activity did not impact on their school work. However, findings from the focus groups with parents/carers suggests that they are not confident about their child's safety online. This discomfort on the part of parents appears to stem both from their own lack of confidence in using ICT and also their lack of awareness and control over what activities their child(ren) are engaged in online.

Recommendation 5: It is recommended that the E-safety Forum for Northern Ireland develop specific guidance for parents/carers about the steps that they can take to keep their child(ren) safe whilst online. This guidance should draw on good practice from other regions within the UK and should be piloted with a small group of parents/carers before being rolled out more widely. Critical to the overall development and delivery of e-safety messages is that it is undertaken within a context that the internet is, on balance, a positive experience for most young people.

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Appendix A: Members of the Advisory group

Member	Organisation
Pauline Donnan	OFMDFM
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Appendix B: Detailed methodology

Table A1 below provides a full description of the methodology used to undertake this project.

Table A1: Detailed methodology

Activity	Timing	Detail
1. Literature review	• A first draft of the literature was compiled in late 2012/early 2013 and was incorporated in the interim report. • The literature review was updated in late 2014/early 2015 and incorporated into the final report.	**Purpose** • To get a deeper understanding of the home access landscape for young people both in Northern Ireland and in other parts of the UK. • The findings from the review have informed the development of focus group topic guides and the survey instrument. **Method** • The literature review was conducted via an internet search using search terms that combined one or more of the following key words/phrases: Access; Pilot; Attainment; Programmes; Attitudes; Schemes; England; Scotland; Gaming; Social exclusion; GCSE; Social use; Home; Skills; Homework; Tracking; ICT; UK; Northern Ireland; Wales. **Scale/Response rate** • A total of c. 50 research and policy documents were included within the scope of the literature review and the review included studies from across the UK and further afield. **Analysis** • A content analysis approach was adopted and specific information was extracted from each of the documents that linked to the specific aims and objectives of this research.
2a. Pupil survey and attainment data	• The pupil survey was administered twice over the course of two years:	**Purpose** • To quantify the level of access young people have to a computer(s), laptop(s) or other electronic devices; how young people use those devices (whether for homework or non-homework purposes), the amount of time they spend on a computer/laptop each day and the impact of all of this on their attainment at GCSE level.

Activity	Timing	Detail
	—— Year 1 between October 2012 and February 2013. —— Year 2 between September and December 2013. • Attainment data was sourced in September 2014 for all pupils who completed a survey in both Year 1 and Year 2.	**Method** • *School selection:* Post-primary schools ranked in relation to proportion of young people eligible for Free School Meals. Of the total number of post-primary schools: —— 74 had a particularly high proportion of young people eligible for Free School Meals. —— 40 (of 74) were identified for recruitment. —— 13 agreed to a visit. • *Pupil selection:* The target sample for Year 1 was 978 pupils[52], i.e. all Year 11 pupils in a total of 13 schools. These pupils were tracked from Year 11 into Year 12. • *Survey administration:* The survey was administered on site in each of the schools in both years of the research project. Research staff supervised the completion of the questionnaire in both Year 1 and 2. • *Attainment data:* Attainment data was received from schools for all of those who completed the survey in both Year 1 and Year 2 (i.e. 611 pupils). This data was matched into this combined survey dataset (containing 611 pupil records). **Scale/Response rate** • In Year 1, a total of 745 completed returns were achieved resulting in a response rate of 76%. The profile of survey respondents was as follows: • In Year 2, a total of 794 completed returns were achieved resulting in a response rate of 81%. • The total number of students that completed the survey in Year 1 and Year 2 was 611. The profile of these respondents is as follows: —— 51% were male and 49% were female; —— 93% stated they belonged to a particular religion and of those, 18% identified themselves of being from a Protestant background, whilst 81% identified themselves as being Roman Catholic; and —— 15% of respondents considered themselves to have a medical problem or disability.

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[52] This is based on 2011/12 enrolment data provided by Department of Education.

Activity	Timing	Detail
		Analysis
		• All survey data for the pupils was cleansed and entered into the statistical software package PASW Statistics 18 for analysis.
2b.Pupil focus groups	• Focus groups were undertaken in: ── Year 1: between January and March 2013. ── Year 2 between January and April 2014.	**Purpose** • To gain a deeper and richer understanding of the issues relating to young people's access to ICT at home; how they use ICT (whether for homework or non-homework purposes) and how the level of access and usage of ICT at home might impact on their attainment and future life chances. **Method** • *Pupil selection:* ── In Year 1, survey data was used to group pupils according to their levels of access to ICT and how much time they spent using a computer or laptop to do homework. A total of five focus groups were undertaken in Year 1, with each of the following groups of pupils (a) those who did not have access to a computer/laptop[53] (one Focus Group (FG)); and (b) those who did have access to a computer/laptop split by levels of usage for homework purposes: no usage (1 FG); low usage[54] (1 FG)); medium usage[55] (1 FG); and high usage[56] (1 FG). ── In Year 2, the selection criteria for the focus groups was modified slightly as a result of the change in the study's objectives[57]. Survey data was used to group pupils according to their usage of ICT (for homework and/or non-homework purposes) and the amount of time they spent using ICT per day for each of these purposes[58]. A total of 13 focus groups were undertaken based on the following criteria: ▪ Usage[59] for homework: No usage (1 FG); Low usage (2 FGs); Medium usage (1FG) and High usage (2 FG) ▪ Usage for non-homework/social purposes: Same as above. • *Administration:* All of the focus groups were conducted on site at each of the schools. The focus group was moderated by a member of the research team with significant input from NCB's participation officers. Focus groups typically lasted up to 2 hours.

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[53] Less than four percent of the entire sample did not have access to a computer or laptop.
[54] Around one hour or less per day.
[55] Between 1 and 2 hours per day.
[56] 3 or more hours per day.
[57] In Year 2, the study team focused less on access to a computer or laptop as a result of finding in Year 1 that almost all young people had access to a computer/laptop or other electronic devices.
[58] In addition one focus group was undertaken with a group of pupils who indicated that their school work had suffered in the last month due to something that had happened online.
[59] Definitions for none, low, medium, high are the same as in Year 1.

Activity	Timing	Detail
		Scale/Response rate • In Year 1**,** the number of pupils identified for participation in the focus groups was 38 across the five schools (an average of just over seven per focus group). The total number of pupils who participated in the focus groups across the five schools was 33 (an average of just under six per focus group). • In Year 2, the target number of pupils identified for the focus groups was 127 (an average of just under 10 per focus group). The total number of pupils who were available to participate in the focus groups across the 13 schools was 104 (an average of 8 per focus group). **Analysis** • All focus group and interview data was recorded, transcribed and stored on NCB servers. It was then coded using NVivo software, the recognised package for analysis of qualitative data. Using NVivo, thematic analysis was conducted to identify the key themes emerging from the data.
3. Parent focus groups/one-to-one interviews	• The timings were the same as for the pupil focus groups	**Purpose** • To understand from parents' perspectives the impact that young people's level of access to, and use of, ICT can have on pupil's lives. **Method** • *Parent selection:* Only those parents of the young people who participated in the pupil focus groups were invited to take part. Focus groups were undertaken by a member of the research team on site in each of the schools. Focus groups typically last up to 1 hour. **Scale/response rate** • In Year 1 and Year 2, at least one parent/carer per child was targeted for participation in the focus groups. This equated to a target of 165 parents/carers over the course of the two years. The total number of parents/carers who participated in the focus groups in Year 1 and 2 was 41 (*n*=16 in Year 1 and *n*=25 in Year 2). Engagement was lower than NCB had expected despite the provision of incentives (£20 shopping voucher per participant per year) – however NCB invested considerable amounts of time to maximise participation (e.g. by scheduling telephone interviews for parents/carers who could not attend a focus group in school.

Activity	Timing	Detail
		Analysis • The same approach was used for analysis of the parent focus group data.
4. Teacher interviews	• The number of rounds and timings are the same as for the pupil focus groups and parent focus groups/one-to-one interviews.	**Purpose** • To elicit teacher views on the factors that impact on pupil attainment including young people's use of ICT at home and at school. The interviews were also used to ascertain the extent of ICT provision in schools and the level of access that young people have to this in instances where their provision at home is insufficient. **Method** • Interviews were undertaken on site in each of the schools at the same time that the pupil and parent/carer focus groups were undertaken. Teachers selected taught across a range of subjects (ICT, geography, physical education) and included class teachers and heads of department. Interviews were semi-structured and included a mix of closed and open-ended questions. Interviews typically lasted up to one hour. **Scale/Response rate** • Interviews were conducted with five teachers in Year 1 and these teachers were subsequently interviewed in Year 2. In addition, a further eight teachers were interviewed in Year 2, such that one teacher in all of the schools were interviewed. • Over the course of Year 1 and Year 2, a total of 18 interviews were conducted with school staff. **Analysis** • Same approach as for parent/carer and pupil focus groups

Appendix C: Profile of schools participating in the research

Table C1: Profile of schools

	Population (n=216)	Target sample (n=40)	Achieved sample (n=13)
Board area			
Belfast	16%	20%	23%
North Eastern	23%	20%	23%
South Eastern	17%	20%	23%
Southern	24%	20%	15%
Western	20%	20%	15%
School type			
Secondary	69%	100%	100%
Grammar	31%	0%	0%
Management type			
Controlled	34%	12%	15%
Integrated	9%	10%	15%
RC Maintained	33%	78%	69%
Total	**100%**	**100%**	**100%**
Base	**216**	**40**	**13**

Note: Totals may not sum to 100% due to rounding

Appendix D: Literature Review

Objective	Key findings from the literature
1. Assess and track young people's levels of home access throughout Key Stage 4, examining the nature and usage for both educational and leisure purposes.	***Young people have good access to computers and laptops and mobile phones*** *Home access to a computer/ laptop:* — Findings from the 2013 Kids Life and Times survey found that 99% of respondents had at least one computer or laptop in their family home. *Intensity of usage of a computer/laptop:* — 65% of young people use a computer/ laptop daily, 28% weekly and 5% several times a month (Young Life and Times survey, 2010). *Usage of a computer/laptop:* — A computer/ laptop is the preferred device that young people use to find out information for school (Ofcom, 2014). — A study undertaken by Microsoft (2010)[60] examining computer use of 512 families with young people found that 90% of pupils aged between 11 and 18 used a home computer/laptop for schoolwork at least once a week. In addition, more than one-third used their family's computer/laptop for homework or revision every day. *Access to other electronic devices:* — Findings from a UK study undertaken by UKCCIS (2013) found that almost all (95%) of the young people surveyed had access to a mobile phone. In Northern Ireland, the trend is similar with 90% of children stating they have access to a mobile phone (Kids Life and Times survey, 2013). — 82% of young people have a smart phone, i.e. a phone which can access the internet and can be used to download apps (Kids Life and Times survey, 2013). — A high proportion of young people have access to a games console (71%) (UKCCIS, 2013).

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[60] Source: cited by National Literacy Trust: http://www.literacytrust.org.uk/news/405_pupils_use_home_computers_for_schoolwork.

Objective	Key findings from the literature
	— 70% of children and young people are reported to have access to a tablet at home (Ofcom, 2014).

Young people have good access to the internet in their homes and in school

Internet access:
- 94% of young people in Northern Ireland access the internet through their home computer/ laptop (Kids Life and Times survey, 2009).
- The UK has one of the highest rates of school internet access with 87% of young people accessing the internet at least weekly in school (Livingstone et al., 2014b).
- Across the EU 15-16 year olds are much more likely to access the internet at home rather than in school and this trend is similar in the UK (Mascheroni and Olafsson, 2013).
- In terms of daily usage, smartphones (56%) are the most commonly used electronic device to access the internet compared to laptops (47%) and tablets (32%) (Mascheroni and Cuman, 2014).

Quality of internet connection:
- Northern Ireland has the highest availability of fibre broadband services in the UK (Ofcom, 2014). Ofcom estimates that 95% of homes in Northern Ireland are being served by Next Generation Networks (NGA) compared to the UK average of 78%. In the first quarter of 2012 89% of homes with children under 18 years had broadband access.

Young people use the internet on a regular basis. The most popular online activity is social networking

Usage of the internet:
- 55% of children use the internet at home every day and 34% use the internet at home at least once or twice every week (Kids Life and Times survey, 2013).
- Ofcom (2014) reports that young people aged 12-15 years are likely to spend more time online than watching TV in a typical week.
- 86% of young people use the internet for both schoolwork and fun (Kids Life and Times survey, 2009).
- 90% of young people are likely to use different technologies at the same time (YouthNet, 2011).

Objective	Key findings from the literature
	— On average 12-15 year olds in the UK spend 17.2 hours a week online, or 2.4 hours per day (Ofcom, 2014), and intensive gamers are most likely to be high intensity users of the internet (Vincent, 2015). — Social networking, instant messaging, watching clips on YouTube and gaming are the most popular online activities (Mascheroni and Cuman, 2014). — 88% of 15-16 year olds have a profile on a social networking site in the UK (Mascheroni and Olafsson, 2013), and Facebook is the most popular social networking platform (Mascheroni and Olafsson, 2013; Mascheroni and Cuman, 2014). Girls are more likely than boys to be experienced social networkers (Vincent, 2015). — 37% of young people in the UK have a media sharing platform (i.e. YouTube, Instagram, Flickr) (Mascheroni and Olafsson, 2013). — In terms of online activity, young people are much less likely to create or upload content, read the news online or participate in virtual worlds (EU Kids Online, 2014). — 46% of children play online multi-player games, with boys more likely to do so than girls and boys were more likely to spend more time playing games than girls (Kids Life and Times survey, 2009). — The majority of parents in the UK (90%) trust that their children use the internet safely (Ofcom, 2014).
2. Explore young people's skill levels in a number of areas e.g. communication, spreadsheet, and digital, video and sound function skills.	*Young people do not have a high level of ICT skills* *Young people's ICT skills:* The literature on young people's ICT skills around specific tasks including communication, spreadsheet and digital, video and sound tasks is limited. However there is a greater availability of literature on young people's general ICT skills. Global, European and UK studies have consistently found that young people are likely to have limited ICT skills, especially those skills required by employers. A summary of key findings from these studies is provided below: — A global study which assessed computer and information literacy skills of 60,000 eighth graders from 21 education systems (including those from 9 EU countries) found that on average 17% of students to not reach the lowest level of their scale and only 2% score at the highest level (which requires the application of critical thinking while searching for information online) (ICLS, 2014). This finding was mirrored in a study conducted by Bartlett (2011) whereby teachers raised concerns about pupils' lack of skills around the application of fact-checks of the online information they consume and their ability to recognise bias or propaganda.

Objective	Key findings from the literature
	— An Australian study found that only 15% of the student population are advanced users of ICT while 45% of all students could be described as rudimentary digital technology users (Kennedy et al., 2010).
	— A 2014 Horizon report emphasises that digital competence in European teenagers remains inadequate. This tendency is especially relevant for critical and participatory literacy, when students have not only to read the content but also engage with it and actively create their own responses to it.
	— Notably, a study conducted by ECDL (2014) found that young users of digital technologies tend to overestimate their ICT skills and there is a wide discrepancy between young people's self-assessment and actual computer skills. For example, 84% of respondents claimed that they had 'very good' or 'good' knowledge of the internet, however in practical tests 49% of them scored 'bad' of 'very bad' (ECDL, 2014). This corresponds with a study conducted by YouthNet (2011) which found that most of the 994 respondents believed they were reasonably internet-literate and more generally, technologically aware.
	— The EU Kids Online survey (Livingstone et al., 2011a) indicates that two in three 9-10 year old children deny knowing more about the internet than their parents.
	— In comparison to other EU countries, the UK ranks 11th (out of 25) in terms of children's digital literacy and safety skills (Livingstone et al., 2011a)
	— Teachers have also highlighted concerns over young people's ICT skills, for example a study conducted by the Pew Research Centre (2012) which surveyed 2,000 middle and high school teachers found that many felt pupils encountered difficulties when judging the quality of online information. In addition, while many of the teachers felt that technology had a positive impact on pupils research habits, 87% noted that technologies are creating an easily distracted generation with short attention spans.
	— Children vary in skills and confidence with regard to using the internet and the various devices they use to connect. The more activities young people pursue the more skilled, confident and experienced they are when using the internet and the more likely they are to engage with others, share their experiences and often teach others how they did it (Vincent, 2015).

Objective	Key findings from the literature
	Young people require formal training in ICT to bring their skills levels up to standards required by employers *Types of ICT skills and ICT training:* The literature around young people's ICT skills distinguishes between lifestyle skills and workplace skills, and suggests that young people lack ability in the latter area. This challenges the 'digital native' discourse which suggests that young people intuitively know how to use technology because they have grown up in generations immersed in technology. Some key points from the literature around these discussions are listed below: —— Selwyn (2009) highlights that young people can hold two different types of digital skills- 'lifestyle skills' and 'workplace skills'. Lifestyle skills are those required by young people in order to text message, play games and retrieve online content, as well as passive content consumption such as watching videos. Workplace skills are those typically required by employers and can only be developed through formal and structured education. —— A German study found that young people are very skilled in everyday tasks such as bookmarking a webpage, whereas less than 20% of them can apply paragraph styles in text processing documents or change a chart type in spreadsheets (Sommer, 2014). —— A number of studies emphasise that young people require formal training to develop their workplace digital skills (e.g. text processing, basic spreadsheet tasks) and that this form of training can be overlooked for young people because of the digital natives discourse (ICILS, 2014; Bartlett, 2011; Livingstone et al., 2011). In addition, in Bartlett's (2011) study teachers' felt that digital fluency needs to be given more prominence in the classroom. —— A study conducted by ECDL (2014) emphasised that young people's digital skills can be noticeably strengthened by training and certification.
3. **Examine young people's attitudes towards using computers/ laptops and ICT more generally.**	***Young people have positive attitudes towards technology and the internet*** *Attitudes to ICT:* —— 96% of young people in the UK feel that the internet is good for children their age (Livingstone et al., 2011a). —— A study conducted by YouthNet (2011) with 994 respondents between the ages of 16 and 24 found that 75% claimed they could not live without the internet; 86% loved how new technology helps them communicate with people; 80% stated that new technology makes life simpler; and 85% were confident about using new technology.

Objective	Key findings from the literature
	— Girls are more likely than boys to have any dislikes about social media, in particular dislikes that relate to people being bullied; spending too much time on websites or apps; and friends acting thoughtlessly or hurtfully (Ofcom, 2014). ***Young people feel safe online and have access to information about staying safe online*** *Internet safety:* In general young people feel safe online and have good access to information about staying safe online. One of the main groups that provide young people with this information are parents. It is important to note, however, that a significant minority of young people have had a negative online experience. — A study conducted by YouthNet (2011) found that over 75% of young people thought the internet was a safe place as long as you know what you are doing. In addition, the majority said they were generally not bothered by their experiences of online risks, but a minority of children did find online risks upsetting. — Findings from studies conducted with young people in Northern Ireland report that: — 16% had viewed something online that worried or upset them (Kids Life and Times, 2013). — 13% had been bullied through texts or through something that was sent online (Kids Life and Times, 2013). Girls were slightly more likely to state that they had been bullied than boys (11%/15%). — 93% of young people had been taught about staying safe online (Kids Life and Times, 2013). *Parental mediation:* — In the UK 45% of parents have set at least two items of technical restriction, i.e. the use software and technical tools to filter, restrict and monitor children's online activities on computers, tablets or smartphones (Mascheroni and Cuman, 2014). — 53% of young people reported that their parents/ guardians had set rules about their use of the internet (Kids Life and Times, 2013). This is lower than the UK average with 67% of parents reporting that they had set at least two rules around using the internet (Mascheroni and Cuman, 2014). — According to Vincent (2015) parents prefer to talk about internet safety than use parental controls and two-thirds have suggested ways for their child to use the internet safely. In addition, many parents trust their children to use the internet safely (Ofcom, 2014).

Objective	Key findings from the literature
4. Determine, where possible, if differences in educational attainment at GCSE is linked to varying levels of home access; different types of ICT usage (e.g. leisure or homework); varying levels of skills and/ or different attitudes towards the use of technology.	*Usage of ICT at home can have a positive impact on educational attainment. However, usage that results in sleep-deprivation can have a negative impact on attainment.* *Home ICT access and usage:* Findings from the literature suggests access and usage of ICT at home has a mainly positive impact on educational attainment. However a number of studies also note that access to ICT at home can have a negative impact on educational attainment: ***Positive impact of home access to ICT on educational attainment*** — A study conducted by Spiezia (2011) which aimed to assess whether the use of ICT has an impact on student performances as measured in the OECD Programme for International Student Assessment (PISA) 2006, found that after controlling for observable students' characteristics and self-selection, there was a positive and significant effect of the frequency of computer use on science scores. However, in most countries this effect was larger when a computer was used at home rather than at school. — A study by Bowers and Berland (2013) suggested that young people's use of computers for fun and moderate levels of video gaming were positive and significant on cross-sectional reading and mathematics achievement assessments in high school. — A recent study conducted by Przbylski and Mishkin (2015) found that, compared with those that did not play, teenagers who engaged in low levels of gaming (less than 1 hour a day), evidenced lower levels of hyperactivity and conduct issues whereas the opposite was found for those who gamed for 3+ hours per day. Teachers of young people who tended toward playing mainly single-player games reported that these students showed lower levels of hyperactivity and conduct problems, fewer peer and emotional difficulties as well as higher levels of academic engagement. Teachers reported that those young people who played cooperative and competitive online games were more emotionally stable and had better relationships with classmates.

Objective	Key findings from the literature
	— A 2005 study showed small positive associations with using ICT at home and attainment in Maths at Year 6 and 9, and a slightly larger association at Year 11 in Maths and English. If young people lose home ICT access between age 14 and 16, educational attainment may be reduced (Valentine, 2005). — A study was undertaken of pupils by the BBC in 2011, in which more than 100 students used the BBC Bitesize revision materials before their GCSE examination. The children were found to have achieved a grade lift compared to those who did not use the online revision guides. — A study undertaken by Schmitt and Wadsworth (2004) using British Household Panel Data from a ten-year period showed a positive association has been found between PC ownership and both number of GCSEs obtained and probability of passing five or more GCSEs. Home access can also lead to a number of positive soft outcomes. These are listed below: — Motivation: Young people's motivation increased when they used ICT to research information, helping to ensure an active engagement in their schoolwork. This was found to be particularly true for young people who had become disengaged with traditional teaching methods (Passey et al., 2004). — Confidence: NGfL (2001) found that the improved quality and presentation of homework completed on a computer gives children a greater confidence and pride in their work, therefore enhancing their motivation. This increased confidence allows them to ask questions in class and to help out their peers when needed, therefore improving class interaction. Passey et al., (2004) found that for young people with special needs, home ICT access provides them with a platform to demonstrate their skills with a confidence they perhaps wouldn't have using traditional methods of communication. — Flexibility/independence: Young people feel that home ICT access increases the flexibility and degree of independence with which they can learn, particularly when they can access in their own time and without time restrictions (DfE, 2011). — Engagement with own learning: Young people perceived homework done using ICT to be more fun, allowing them to present their work in a much more creative way with the inclusion of diagrams, word art and pictures (Valentine, 2005). — Parent/child interaction: Home ICT access is also thought to improve parent and child interaction, allowing parents to become more actively involved in their child's learning, therefore boosting attainment. This is dependent on parents own ICT skills (Valentine, 2005).

Objective	Key findings from the literature

	Negative impact of ICT home access on educational attainment:
	
	— Zavodyny (2006) asserts that teenagers increased use of modern technology has been accompanied by a decrease in the amount of sleep and increase in attention difficulties and poor academic achievement. These findings were mirrored in a study conducted by Boton College (cited by BBC 2013) which highlighted sleep deprivation as a barrier to high achievement in maths, science and reading. The cause of sleep deprivation was linked to technology in children's bedrooms- specifically the use of screens on smartphones or laptops late at night.
	— Schmitt and Wadsworth (2004) identified a positive association between ICT use for leisure purposes and a decrease in educational attainment.
	
	The impact of access to and usage of ICT in school and educational attainment is less clear
	
	School ICT access and usage: A number of studies have explored the impact of technology in school on educational attainment. Overall the findings suggest that the impact of using technology in school can have a small positive impact, however the positive gains are less obvious when compared to other school based learning interventions/ approaches.
	
	— A meta-analysis (Higgins et al., 2012) on the impact of digital technology in schools on academic achievement identified the following key findings:
	    • Studies linking the provision and use of technology with attainment tend to find consistent but small positive associations with educational outcomes.
	    • Caution should be taken however as a small causal link cannot be inferred from this kind of research- it seems probable that more effective schools and teachers are more likely to use digital technologies more effectively than other schools.
	    • Research findings from experimental and quasi-experimental designs- which have been combined in meta-analyses- indicate that technology-based interventions tend to produce just slightly lower levels of improvement when compared with other researchers interventions and approaches (such as peer tutoring of those which provide effect feedback for learners).

Objective	Key findings from the literature
	— Laxton (2011) investigated the use of tablet technology in classrooms in relation to engagement and found that cognitive, emotional and general engagement was higher in lessons based on iPads than those which were not. Of particular significance was the increase in engagement observed in boys. However, no difference in behavioural engagement was found. — The OECD (2010) Programme for International Student Assessment (PISA) collected data in 33 countries and found that computer use at school in the majority of countries had no significant effects in science scores. Findings indicated that computer use associated with higher science scores was driven entirely by home computer use.
5. Methodological considerations for future studies in this area	The literature (Johannessen, 2007; Spiezia, 2010) has identified a number of areas to consider for studies investigating the impact ICT home use may have on educational attainment : — Differences in school systems internationally make comparison and benchmarking difficult. — As technology and its application in education is still evolving, it is difficult to conduct longitudinal studies in this area. — Gender differences in the use of ICT and the effect of educational performance is an area that needs further research. — Comparisons between 'treated' and 'untreated' groups are complicated as usage is more likely to be seen in terms of high intensity to low intensity rather than a simple dichotomous use/no use classification. Therefore, it is also important to consider variances within groups in terms of the ICT skills and abilities/interest and their actual usage. If making comparisons between school and home use, there is a need to consider the amount of time that ICT is used in either location. The location where the highest frequency of use occurs should be used when exploring the potential effect on educational attainment.