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2012-05-17

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Recommended Citation
O'Neill, B. Dinh, T.: Digital Literacy, Digital Opportunities. Digital Childhoods Working Paper Series (No.2)

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Digital Literacy, Digital Opportunities

Brian O'Neill, Thuy Dinh

Digital Childhoods Working Paper Series No.2 (May 2012)

Summary

- Online activities for 9-16 year olds in Ireland are substantially below European norms leaving many opportunities unexplored.
- 57% of young people don't go beyond the second step of a 'ladder of opportunities'.
- Cluster analysis shows that 'a low use, low risk' pattern to be the most prominent followed by a "moderate-use, entertainment and communication-oriented" use of the internet.
- Young people's digital skills are closer to the European average though less than half express confidence in their own skills.
- Younger children, in particular, are lacking in many basic safety skills.

Why digital skills matter

'Digital literacy' is crucial to children's use of the internet, as promoted by Europe's *Digital Agenda.* It is fundamental to national digital strategy and economic recovery. It is also essential for fostering young people's creativity and digital citizenship skills. Too often assumptions are made about 'digital natives' technical competence with insufficient evidence of what digital skills children actually have. Many assume that the more digitally literate children become, the more they can gain from the internet and the more resilient against online risks.

Growing Up in Ireland has highlighted the importance if ICTs and computer games is in the lives of nine year old Irish children.[1] Data from *EU Kids Online* also underlines just how embedded the internet is in 9-16 year olds day to day lives. But what kinds of things do young people do online? This report examines clusters of activities as practiced by young people. More activities mean more skills and in this context we examine young people's digital confidence as illustrated by:

- **Specific internet skills:** children (aged 11-16) were asked 8 digital safety and critical/informational skills.
- **Self-efficacy:** children (aged 9-16) were asked, 'how true is it for you [that] I know a lot about the internet?'
- **Knowledge**: children (aged 9-16) were asked, 'how true is it for you: I know more about the internet than my parents'). The *EU Kids Online* survey asked parents ('how good are you at using the internet?')

Children's online activities

What do Irish children aged 9-16 say they do when they go online? The *EU Kids Online* survey asked children about which online activities they take up, so as to understand the opportunities they enjoy and to provide a context for the investigation of online risks. A rank order list is presented in Table 1.

- **The most popular activities (76% in each case) are 'watching video clips' and 'playing internet games',** followed by using the internet for schoolwork and using social networking (58% in each case).
- **Entertainment/information and communication uses would appear to dominate**. More creative and production-oriented activities associated with more sophisticated uses of the internet are much less prevalent.
- **The average number of activities per child is 5.** This compares to 7.1 activities on average reported by children across Europe. Even teenagers, who use the internet more, are below their European counterparts: teenage boys across Europe reported on average 9 activities and girls cited 10,

[1] *Report No.3. Influences On 9-Year-Olds' Learning: Home, School And Community. Growing Up in Ireland National Longitudinal Study of Children*. Dublin: Department of Children and Youth Affairs.

nearly double the findings for girls and boys in Ireland, aged 13-16.

- **Age is an important factor in the kinds of activities taken up:** watching video clips and playing computer games are popular with all ages; communication use (SNS, email, IM) is more for teenagers.
- **Gender differences are small** except in relation to gaming (more for boys) and communicating online (more popular with girls).

Table 1: Children's activities online in the past month

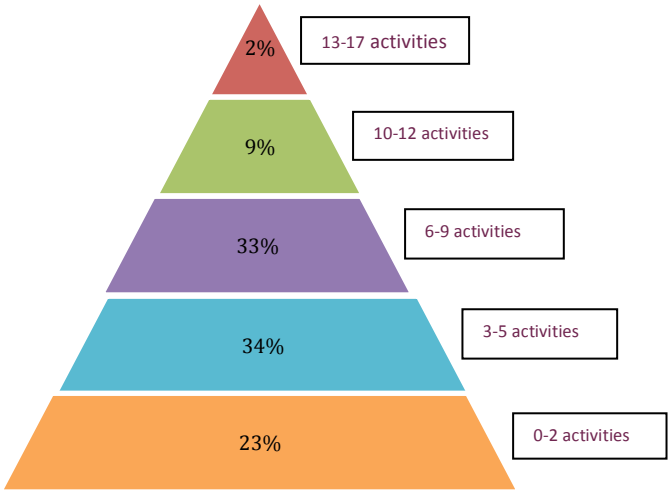
	9-12		13-16		
% who have…	Boys	Girls	Boys	Girls	All
Watched video clips	73	62	83	87	76
Played internet games on your own or against the computer	78	81	78	64	76
Used the internet for school work	55	65	56	57	58
Visited a social networking profile	32	41	71	86	58
Sent/received email	21	32	52	59	41
Used instant messaging	18	28	50	65	41
Put (or posted) a message on a website	15	20	39	49	31
Put (or posted) photos, videos or music to share with others	13	18	35	57	31
Played games with other people on the internet	38	26	44	13	30
Downloaded music or films	12	14	42	40	27
Created a character, pet or avatar	32	39	16	14	25
Spent time in a virtual world	17	27	11	13	17
Used a webcam	13	14	12	18	14
Read/watched the news on the internet	15	7	19	14	14
Visited a chatroom	7	8	9	12	9
Used file sharing sites	3	2	16	13	9
Written a blog or online diary	3	2	6	14	6
Average number of activities	4.2	4.6	6.2	6.5	5.4

QC102: How often have you played internet games in the past 12 months? QC306a-d, QC308a-f and QC311a-f: Which of the following things have you done in the past month on the internet?[i] *(Multiple responses allowed)* Base: All children who use the internet.

The ladder of opportunities

The 'ladder of opportunities' is a hypothesized sequence of activities through which children progress beginning with information seeking, to interactive communication and gaming, to more creative and participative uses and activities.[2] We have analysed the data for online activities for Irish children to reveal five distinct steps according to the number of activities taken up. Figure 1 gives an overview of these five stages in the progression through online opportunities.

Figure 1: 5 Stages in Ladder of Opportunities



- **Stage 1:** 23% of young people practice less than two activities, predominantly using the internet for schoolwork and using the computer for playing video games
- **Stage 2:** 34% undertake up to five of the activities listed, including watching vídeo clips online. Note that 57% of young people do not beyond this step.
- **Stage 3:** a third (33%) take up to nine of the activities which now includes SNS, email, instant messaging and posting content.
- **Stage 4** comprises just 9% of the total sample and engages with more extensive online entertainment features as online gaming, downloading films and posting messages on websites.
- **Stage 5:** only 2% of the total group reach this step to include the full spectrum of activities to include using a webcam, creating avatars, writing a blog and reading online news.

In sum, these findings are in line with the findings from EU kids online and support the "ladder of opportunities" hypothesis. The basic activities tend to be done first and by a larger number of children, but more creative or participatory activities come last, and undertaken by fewer children. However, the average number of Irish children in every single stage has fewer numbers of children compared to the European average.[3]

[2] Livingstone, S., & Helsper, E. (2007). Gradations in digital inclusion: children, young people and the digital divide. *New Media Society, 9*(4), 671-696.

[3] Livingstone, S., Haddon, L., Gorzig, A., & Ólafsson, K. (2011). *EU Kids Online Final Report*. LSE, London: EU Kids Online.

Clustering activities

The purpose of this section is to identify clusters of activities or patterns in children' online use, thereby reducing the complexity of the data. The following variables were used to form clusters: duration of use; range of activities; and number of risky online activities. Based on stability of cluster membership and the F-values of each variable involved, we decided on a solution with six clusters. Table 2 describes the six clusters.

Table 2: Description of clusters representing patterns of young people's online use

	CL1	CL2	CL3	CL4	CL5	CL6
% of cases	39	16	8	25	7	6
Average values						
Estimate time online	38	62	60	71	81	107
Risky online activities	0.3	0.5	0.7	1.3	1.9	2.1
Online activities	2.3	3	7.1	6.6	9.1	10.4
Content-based activities						
Watched video clips	58	77	86	89	93	97
Played internet games on your own or against the computer	62	96	84	72	83	77
Used the internet for school work	52	62	80	62	57	77
Downloaded music or films	12	9	26	32	87	54
Read/watched the news on the internet	3		100	3	18	39
Contact/communication-based activities						
Visit a social networking profile	18	57	63	97	93	91
Sent/received email	12	36	51	62	69	88
Used instant messaging	7	29	36	74	76	88
Played games with other people on the internet	12	69	51	20	44	37
Used a webcam	5	10	24	18	15	53
Visited a chatroom	1	17	6	9	21	26
Conduct/peer participation activities						
Put (or posted) photos, videos or music to share with others	3	13	28	64	60	79
Put (or posted) a message on a website	3	21	32	55	60	88
Created a character, pet or avatar	6	76	39	14	46	26
Spent time in a virtual world	3	51	25	9	30	23
Used file sharing sites	1	1	3		87	21
Written a blog or online diary			1			97

Cluster 1: "low use, low risk". Members of this cluster are characterised by a small amount of online use and a small range of activities. Risky activities are very low. Activities of this cluster focus mostly on entertainment. This is the largest cluster in the analysis, comprising 39% of the sample.

Cluster 2: "low-use, gaming /or entertainment-oriented". This is quite similar to cluster 1, with low levels of risk. The relevant differences are higher values for entertainment activities and the duration of use. This comprises 16% of the sample.

Cluster 3: "learning–oriented". Compared to the first two clusters, users in this group have a bigger range of activities, they explores all types of different activities with a focus on school work, reading news and entertainment. It is a smaller cluster at 8% of the sample.

Cluster 4: "moderate-use, entertainment and communication-oriented". Compared to Clusters 1-3, users in this group have shifted their focus to content and communication based activities. The most obvious characteristics here are the lower use for schoolwork and playing games. This cluster accounts for 25% of children, placing it as the second largest user group among Irish children.

Cluster 5: "high-use, social networking oriented". This cluster is characterised by higher risk-encounters, longer time spent online, high levels of social networking and other participatory activities. It is a small group at 7% of the sample.

Cluster 6: "**focused social web use**". This is very similar to cluster 5 in terms of the range of activities and the focus on social networking. It is characterised by the longest during of daily online use, highest risky online activities and account for a smallest number of users. It is also the smallest grouping at 6% of the sample.

Table 3 presents how gender and age are distributed within clusters and represents the average age of cluster members with cluster 4 being the youngest, and cluster 3 and 6 being the oldest.

Table 3: Distribution of age and gender groups within clusters (column%)

	CL1	CL2	CL3	CL4	CL5	CL6
Girls	62	56	66	48	35	44
Boys	38	44	34	52	65	57
9-10	6	26	9	39	17	5
11-12	26	39	9	37	34	15
13-14	35	23	32	17	27	40
15-16	33	11	50	8	23	40
Average age	13.4	11.9	13.9	11.3	12.7	13.9

Clusters 2 and 4 have the youngest average age and are focused on entertainment and communication activities while the oldest clusters 3 and 6 tend to use the internet for learning and social web purposes.

The data also shows gender differences across clusters. Girls and boys are differently represented in each with higher numbers of girls in clusters 1, 2 and 3 ("low use"; "low-use entertainment"; and "learning oriented") while boys are higher in clusters 4, 5 and 6 ("moderate-use, entertainment and communication-oriented"; and "high-use, social networking oriented"). These results re-confirm our previous findings on gender differences in internet use among young people.[4]

As the cluster descriptions show, there is a general tendency of **"the more and the more": time spent online, the wider range of activities and risky online activities are all positively correlated.** This is also in line with the "ladder of opportunities" above and highlights substantial differences in the patterns of young people's internet use and online experience.

Children's online skills

'Digital literacy', and associated terms – 'media literacy', 'media competence' or 'e-skills' – are essential to gaining benefits from the information society. Digital literacy is assumed to result from, and further stimulate, the range and depth of children's online activities. Policy makers anticipate that the more digitally literate children become, the more they will gain from the internet while also being better prepared to avoid or cope with online risks.

EU Kids Online asked children (11-16 years old) about eight specific skills, with a focus on digital safety and information skills (Table 4).

- **On average, children say they can do four of the eight things asked about.** This is slightly below the European average of 4.2 but at the lower end of the European spectrum, i.e. 7th lowest of EU25.
- Most 11-16 year olds can bookmark a website (66%), block messages from someone they do not wish to be in contact with (64%) or find safety information online (64%). These findings are very similar to the European average.
- **Over half can change privacy settings on a social networking profile (58%),** block junk mail and spam (49%). Less than half (43%) can delete their history on an internet browser. Less than a quarter can change filter preferences (21%).

Table 4: Children's digital literacy and safety skills

% who say that they can...	11-13 years		14-16 years		All
	Boys	Girls	Boys	Girls	
Instrumental safety skills					
Bookmark a website	58.4	50.2	72.7	70.2	62.8
Block messages from someone you don't want to hear from	45.1	52.4	66.7	78.4	60.6
Change privacy settings on a social networking profile	38.6	43.9	64.2	70.9	54.4
Delete the record of which sites you have visited	30.9	24.8	54.0	51.1	40.2
Block unwanted adverts or junk mail/spam	35.1	40.7	54.0	59.6	47.4
Change filter preferences	9.9	10.1	28.1	25.6	18.4
Information skills					
Find information on how to use the internet safety	50.6	53.9	66.9	75.7	61.8
Compare different websites to decide if information is true	30.8	20.6	51.7	52.1	38.8
Average number of skills	3	3	5	5	4

QC320a-d and QC321a-d: which of these things do you know how to do on the internet? Please say yes or no to each following… If you don't know what something is or what it means, don't worry, just say you don't know.

Base: all children aged 11-16 who use the internet

- With regard to information skills, **only 42% say they compare websites to judge the quality of information.** This is substantially below the European average of 61%. Across all ages, children in Ireland are below their European equivalents in this basic area of media literacy.
- Looking at differences by age and gender, **girls, particularly in the older age group, claim more skills than boys.** Girls are better able to manage blocking, privacy settings on a social networking profile and block unwanted content than boys. This slightly reverses the European average where boys claimed more skills than girls.

Children's digital confidence

In the EU Kids Online survey, we asked children about their levels of digital skill, including their own confidence in using the internet (a measure of *self-efficacy* "I know lots of things about the internet") as well as their level of knowledge compared to parents ("I know more about the internet than my parents").

Table 5 summarises children's reports of digital confidence (9-16 years old).

[4] O'Neill, B., Grehan, S., & Ólafsson, K. (2011). *Risks and safety for children on the internet: the Ireland report*. LSE, London: EU Kids Online.

Table 5: Children's digital confidence

	9-12		13-16		
% who say that they can...%	Boys	Girls	Boys	Girls	All
I know lots of things about the internet					
Not true	22.2	23.1	9.3	10.3	16.9
A bit true	56.3	57.7	46.5	44.6	51.8
Very true	21.5	19.2	44.2	45.1	31.3
I know more about the internet than my parents					
Not true	54.4	50.4	15.4	16.5	35.9
A bit true	29.1	32.4	33.6	26.4	30.5
Very true	16.5	17.3	50.9	57.1	33.7

QC 319 a-b(11-16yr); QC3a-b (9-10yr): how true is it for you that…I know more about the internet than my parents? I know lots of things about using the internet?

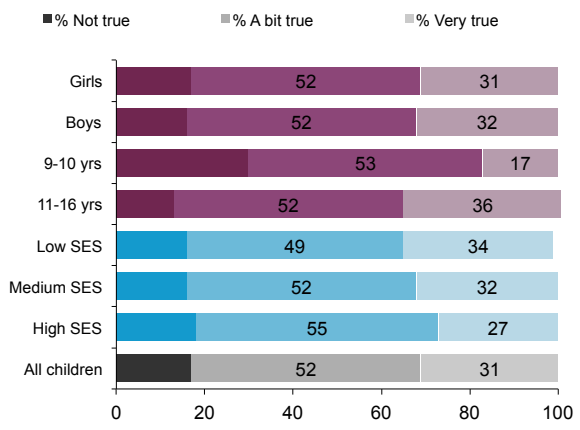
Base: All children who use the internet.

- **One third of all children say it is very true of them that they knows lots of things about the internet**; just over half say it is a bit true and less than a fifth (16.9%) say it is not true.
- **One third of 9-16 year olds (34%) also say they know more about the internet than their parents:** one third (31%) say it is 'a bit true' and one third (36%) say it is 'not true' of them.
- **Teenagers are somewhat more confident,** but less than half say "they know lots of things about the internet". Just over half of teenagers claim to know more about the internet than their parents. Younger children (9-12 years old) are far more likely to say they don't know as much as their parents
- Gender plays less of a role though interestingly for **older teenagers girls express more digital confidence than boys,** at least in terms of saying they know more about the internet than their parents.

Figure 2 provides more demographic detail about children's self-efficacy.

- Gender differences are slight: girls report just as much digital confidence as boys.
- As expected, age plays a bigger role, though noting that just a little over a third are very confident about their knowledge of the internet.
- The role of SES is curious in that contrary to expectations, children from high SES homes report less confidence than young people from lower SES homes.

Figure 2: Children's self-efficacy on the internet

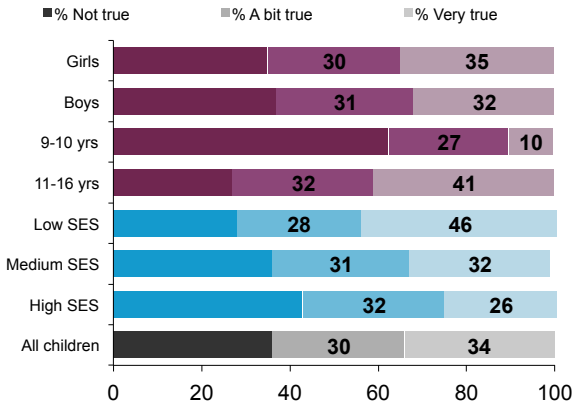


QC 319 a-b(11-16yr); QC3a-b (9-10yr): how true is it for you that… I know lots of things about using the internet?

Base: All children who use the internet.

Children's digital knowledge relative to the parents by demographic variables is presented in Figure 3.

Figure 3: Children's relative digital confidence on the internet



QC 319 a-b(11-16yr); QC3a-b (9-10yr): how true is it for you that… I know more about the internet than my parents?

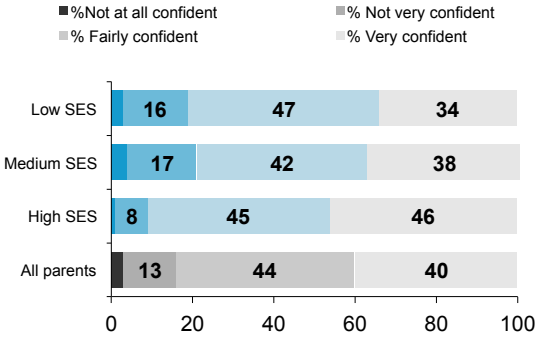
Base: All children who use the internet.

- **Here the effect of age is clearly seen** with a pronounced increase in relative digital confidence from just 10% of nine to ten year olds to 63% of fifteen to sixteen year olds saying that they know more about the internet than their parents.
- **The effect of SES is also in evidence here:** much as with self-efficacy, here it is children from lower SES homes (nearly half at 47%) who express greater levels of confidence, indicating it is

they, as digital natives, who say they know more about using the internet than their parents.

In Figure 4, we look at parents' reported levels of self-efficacy by SES.

Figure 4: Parents' self-efficacy on the internet by SES

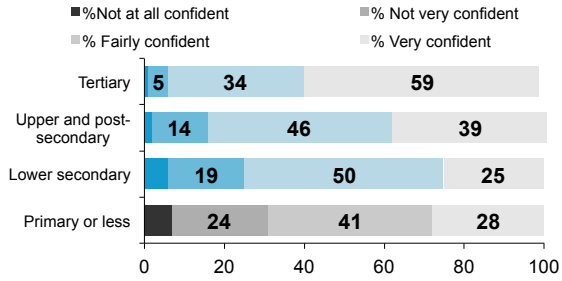


QP218 How confident are you in using the internet?

Base: all the parents

Social economic status plays a significant role in parents' self-efficacy: high SES parents show a greater confidence in their internet use (46%) compared to low SES parents (34%). This may explain why children from high SES homes have lower self-efficacy (27%) compared to children from low SES (34%).

Figure 5: Parents' self-efficacy on the internet by education



QP218 How confident are you in using the internet?

Base: all the parents

Similarly, educational levels also influence parents' self-efficacy in using the internet. Figure 5 shows parents with tertiary level education have the highest levels of confidence (59%) compared to parents with lower educational levels.

Comparing measures of digital skill

As in previous reports of EU Kids Online[5], we have used three main approaches to assess children's digital skills:

- **implicitly**: by asking about their activities
- **explicitly**: by asking about particular skills, and
- **holistically**: by asking for self-efficacy overall

Table 5 shows how these measures related to each other.

Table 6: Correlations between skills, activities and self-efficacy

	Skills	Activities	Self-efficacy
Skills			0.218
Activities	0.524		
Self-efficacy		0.148	

NB: The self-efficacy item is "I know lots of things about the internet"

Base: All children aged 11-16 who use the internet

Data shows **a positive correlation between activities, skills and self-efficacy.** In short, the more children do online, the more skills they have and the more they judge that they know a lot about the internet. Or, the more skills or self-efficacy children have, the greater the range of online activities they do.

The highest association is between activities and skills (r=0.524). Self-efficacy is less strongly related to either activities (r=0.148) or skills (r=0.218).

This suggests that improving children's skills is more important than improving their confidence (self-efficacy). It also indicates that encouraging children to do more online is a better way of improving their digital skills.

[5] Sonck, N., Livingstone, S., Kuiper, E., and de Haan, J. (2011). Digital Literacy and Safety Skills. London: LSE, EU Kids Online.

Ireland in a European context

To put findings from Ireland in perspective, it is important to view data about skills and opportunities in a comparative context. How do findings about levels of digital literacy and online opportunities compare to other countries in? Here, we look at three points of comparison across the 25 countries included in the *EU Kids Online* survey:

- Children's *daily internet use* vs parents' daily internet use ('digital natives' and 'digital immigrants');
- Children's *online activities* by daily internet use;
- Children's *digital skills* according to both daily internet use and online activities.

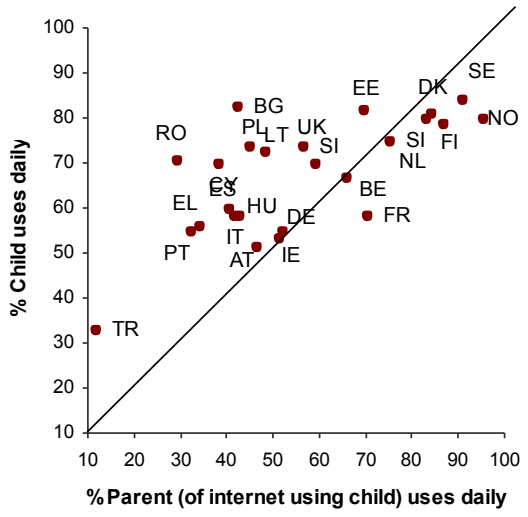
Digital natives vs. digital immigrants

The Flash Eurobarometer survey of 2008 showed that parents (digital immigrants') have been catching up on 'digital natives' and that in most countries, parents are as likely, or more likely, to use the internet compared with their children.[6] This was certainly the case for Ireland where 73% of households included parents and children using the internet (well above the European average of 66%).

EU Kids Online also examined the relative balance of daily use of the internet by both parents and children. Figure 6 plots countries according to the overall percentage of daily use among internet-using- children against daily use among the parents of these children. Thus it tells us whether the parents of internet-using children in each country use the internet as much, more or less than children.

Findings for Ireland show that daily use is evenly balanced with approximately 50% of parents and children using the internet on a daily basis. While the actual level of use is lower than Northern European and Scandinavian countries (and clearly leaves room for improvement), it compares favourably with Southern and Eastern European countries where there is a much greater generational divide in internet use.

Figure 6: Children's daily use (%) by parental daily use (%), by country



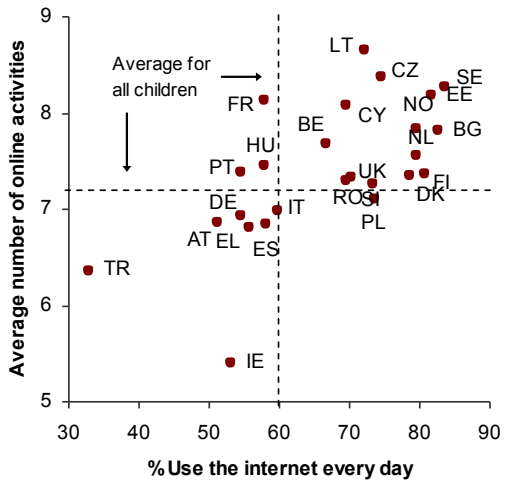
QP215: Do you personally use the internet? QC303 and QP217: How often do you use the internet?

Base: All children who use the internet; all of their parents.

Internet use and online opportunities

The more young people use the internet, the more opportunities they enjoy and potentially the more benefits they can avail of. This correlation is illustrated in Figure 7 where we take the percentage of children who use the internet on a daily basis and compare the average number of online activities.

Figure 7: Children's average number of online activities by children's daily use of the internet, by country



[6] Eurobarometer. (2008). Towards a Safer Use of the Internet for Children in the EU: A Parents' Perspective. Luxembourg: European Commission Safer Internet Programme.

Countries that make the most out of the internet are in the top right corner and in the main include most Scandinavian high-use countries as well as 'newer-use' countries of Eastern Europe. By contrast, Ireland stands as an outlier in terms of the range of activities – and opportunities foregone – for the equivalent level of usage.

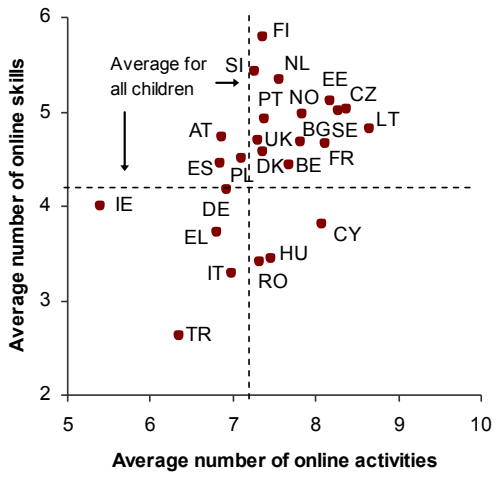
Comparing skills and activities

Finally, we look the relationship of digital skills to online activities as well as to daily internet use. The assumption is that the more young people use the internet, the more skilled they become and the better able they are to manage their own digital safety.

Figure 8 compares the average number of online skills at the country level with findings for the range of activities.

- Ireland stands out as below average in online activities and within that group of countries with fewer skills (marginally) and far fewer kinds of internet use. Efforts targeted at increasing the breadth of internet use would help move Ireland closer to those countries which are better skilled and gain more from the internet.

Figure 8: Children's average number of online skills by children's average number of online activities, by country



Conclusion and recommendations

This short report has presented new analysis of the EU Kids Online Irish dataset and confirmed the low range of online activities among 9-16 year olds in Ireland. While digital skills are closer to the European average, there are many significant gaps and more needs to be done to improve young people's digital confidence and competence.

Our analysis of patterns of online activity among Irish young people shows a strong concentration in relatively lower levels of use and risk and in entertainment/communication oriented uses. There are far fewer more intensive users and just 8% in the 'learning-oriented' cluster identified in the sample.

The strong correlation of online activities with skills provides an important guide to policy action in this area. School-based initiatives, for instance, to support greater integration of ICT into the curriculum can broaden activities and increase skills. Policy must be given to ensuring more young people gain more from the 'ladder of opportunities' – for this multi-stakeholder responses are needed to promote the full range of opportunities for young people.

Emphasis on digital production skills to expand the range of online activities for young people is a valuable area for educational/youth support for creative activities. Best practice in this area should be replicated and widely disseminated.

Low skills/digital literacy among younger age groups is a priority particularly as children are going online at ever younger ages. Younger children lack basic skills in crucial areas of safety such as blocking unwanted messages and privacy settings.

Parental engagement also very important for skills (see Working Paper 1) – here the factor of SES is particularly important, underlining the importance of those ICT initiatives particularly in designated disadvantaged schools.

Research supported by IRCHSS

Irish Research Council for the Humanities and Social Sciences
An Chomhairle um Thaighde sna Dána agus sna hEolaíochtaí Sóisialta