Evaluating the Effectiveness of Free e-Safety Software

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Abstract

The young children are increasingly using the Internet every day; they are involved in a variety of online activities ranging from learning to social networking and more. Researches indicates that the more children use the Internet the more they are exposed to risks online. Parents, Schools and other stakeholders are worried about this. Among the many solutions including parental supervision, usage policies, awareness initiatives, etc; the use of E-Safety products for safeguarding children is considered as one of the most important ways to reduce the risks to children when they are online. This report aims to look at the various available free to use solutions and to measure their effectiveness against a carefully designed framework that enables the evaluation of filtering software in a broader scope and focus in relations to the children's online risks.

Keywords

Filtering Software, Parental Control Software, Internet Safety, E-Safety, Cyber Bullying, Cyber Bullying Prevention, Prevention of online Harassment, Online bullying, Internet Harassment, Violence online and free Software.

1 Introduction

The current rapid growth of access to Internet for the young people and the children are unprecedented in this technological era of Internet tablets and Internet enabled mobile devices, Laptops and Personal Computers, etc. Governments and other organizations and parents are increasingly being aware of the benefits the Internet has to offer and several countries and other initiatives by different sort of organizations and institutions are promoting the use of the Internet and the information technology in schools. Internet provides new opportunities for children to explore, collaborate and communicate to enhance their learning experience.

Children use the Internet for a wide range of activities; different activities include the usage of Internet for; school work, watching video clips, playing Internet games, instant messaging, social networking, sending or receiving emails, reading news, downloading or sharing movies, music, videos or pictures, blogging, etc. These online activities along with the benefits they offer also poses a number of risks and threats and may expose the children against these online risks and threats. Cyber bullying, pornographic content, grooming, hateful or racist content, etc (Livingstone et al, 2010; Optem, 2007).

The existing research report also indicates that there are a wide range of risks associated with the children"s use of Internet; the frequency of access, cultural and social aspects, and the amount of time spent, etc. all contributes to the possibility of online children being under risk (Livingstong and Haddon, 2009). The slow pace in which the stake holders keep up to ensure the protective measures (such as awareness about the risks, regulations and safety protection, parental understanding, etc) is another vulnerability; the children often gain access to Internet before such infrastructures are even planned (Livingstone et al, 2010).

Contrary to the beliefs and the projected images by the digital advocates; many children still do not have adequate enough resources to explore the Internet properly in-order to exploit the benefits (Helspera and Eynon, 2010). In this technology age, the necessity of providing adequate resources and facilities for children to enhance their digital literacy skills are important and vital, the promotion of the digital literacy without proper safety measures may result in exposing children to unintended risks and threats.

2 Young children's online activities and parental concerns

The current young generation is popularly mentioned as the Internet-Generation; they use and adopt new media and technologies fairly faster than their parents and other elders; mostly because of the immense amount of influence of technology in their education. So many researchers are conducting research on related topics such as the 'Online Usage', Access, Age and Gender differences and activities of different genders and ages and so on (Livingstone and Haddon, 2009). Many studies shows that; even-though there are very good effects of technology being used in education; it also turns out that there are a vulnerable population of children online. Without proper awareness, knowledge and control sometimes the children can be mislead to threats and may be abused online in several ways. Afore mentioned statements from some of the research outcomes confirms this concern.

Some statistics show that the amount of children using Internet is rapidly growing; In the EU 27 about 75 % children use Internet (children of age range 6 to 17), ranging from less than half of the children (about 45%) Italy, 50% in Greece and Cyprus, 91% in UK and Sweden, 93% Netherlands and Denmark and 94% in Finland (Livingstone and Haddon, 2009; Ofcom, 2009); catching up with the trend, parents are also increasingly being introduced to Internet and using it (Euroberometer, 2008/9). Many of the parents are aware of the potential threats that their children may be exposed to while they are online. More than 92% of the 9-16 year old children use Internet almost every day (Livingstone et al, 2010); it is increasingly becoming embedded in their daily lives.

The findings of a report by EU Kids Online also shows that 22% of 11-16 year olds have been exposed to one or more types of potentially harmful user- generated content: hate (12%), pro-anorexia (11%), self-harm (8%), drug-taking (7%), suicide (5%). 14% of 9-16 year olds have in the past 12 months seen images online that are "obviously sexual – for example, showing people naked or people having sex (Livingstone et al, 2010). The other major threats a child might encounter while using Internet may be : Internet Addiction, Obscene and Illegitimate Contents online

such as Porn and Hate content or Violent content, Self Harm or Suicide encouragement communities, Gangs or other troublesome groups, Violent Gaming, etc (Livingstone et al, 2010; Hasebrink et al, 2009; Byron, 2008; Euroberometer, 2008/9).

The EU Kids Online research findings based on a survey of around 23,420 children indicates that 85% of the children use the Internet at home, among them 60% of the children use the Internet in the living room or other public room at home. About 48% of children use it in their bedroom or in another private room (Livingstone et al, 2010).

A Flash Eurobarometer study indicates 60 % of parents were concerned about the possibility that their children might be a victim of online grooming or their child being bullied by other children (54%); another interesting fact that the parents who did not use Internet themselves are the ones who worried most about such risks. A minority of parents also worried that their child might have access to information about self harm, suicide or anorexia (39% were very worried and 16% were rather worried) (Euroberometer, 2008/9).

The examination of these facts indicates that the children are increasingly using internet on a daily basis and many of them are exposed to harmful content or other sorts of risks during their online activities. Parents are very much worried about the fact that their children might encounter risks online. Several Parents also take precautions such as Parental Supervision or use of E-Safety Software, etc.

3 E-Safety software for a safer internet environment for children: an evaluation of effectiveness of freely available products

E-Safety software are used by several parents, schools and other stakeholders to protect children from online risks; however there were only a few studies related to the children‟s online safety and E-Safety software is done.

Hunter (2000), eTesting Labs (2001), San Jose public library (2008) have evaluated different filtering products; the focus of their research varied and the focus was on first amendment friendliness of the filtering products, ability of the software to block objectionable content based on the „Department of defence‟s‟ criteria and the ability to block pornographic content respectively. However all these studies were differed in context and scope and failed to address the various children specific risk categories.

A new study of freely available E-Safety software which will cover the scope and context to cover children specific risks to include content, contact and conduct risks a child may be exposed to during their online activities is done. A framework that is designed to address both these specific types of risks that focuses on children and the administrative capabilities of the software that might be useful for the parents is created and a random stratified, balanced (1:1 ratio) of objectionable and non objectionable contents and URLs were chosen from different content categories to

test the effectiveness of the software based on the framework. The chosen Products are: K9 Web Protection, Golden Filter Pro, Pareto Logic PG Surfer and AOL Parental Controls

Through six phases of evaluation (Ease of Obtaining the Software, Administrative Capabilities, Products‟ Effectiveness for monitoring and blocking communication

channels, Products‟ Effectiveness for filtering Search Engine Results, Products‟ Effectiveness of filtering URLs, Products‟ Effectiveness of Blocking advertisements) the software are carefully examined to measure their effectiveness.

The program K9 Web Protection demonstrated a very good ability to refine the search results and in blocking the search engines; It had a very good 96% of accuracy in blocking objectionable URLs and a 94% accuracy rate in correctly accessing the non-objectionable content. The highest Correct Blocking Ratio among the chosen products is 0.96 and that was scored by the K9 even when it is lacking in several desired administering capabilities. GF Pro and Pareto logic PG surfer software were found to demonstrate poor performances and an accelerated rate of over blocking and under blocking. With almost majority of the desired features that frame work demanded and the competing ability to filter out objectionable content and other similar features with lowest under blocking and over blocking ratios the AOL Parental control software demonstrated a steady performance and proved to be one of the best free solutions available around for the windows computers. It also seamlessly integrate with the Windows User accounts and enables the parent to create separate user accounts for each children and create profiles based on the age groups. It was also noticeable that the Correct Blocking Ratio is higher and the Incorrect Blocking Ratio was lower for the software which indicates the high effectiveness.

With 0.96% Correct Blocking Ratio; even without many of the desired administering capabilities the K9 web protection is the most effective filtering software among the reviewed products; however considering the fact that it lacks many of the major administrative capabilities that the framework demanded the AOL Parental Controls software, which has almost all the desired administrative capabilities, 0.80 Correct Blocking Ratio and a comparatively effective (0.10 over 0.60) incorrect blocking ratio has a major lead and can be considered as one of the best almost complete and packed with features product freely available to use.

4 Conclusion and Future work

Through the next four evaluation phases it is learned that there is not a single panacea solution available in the free sector; however AOL Parental Controls was found to be the most effective free solution among the compared few with majority of desired features and administrative capabilities. K9 Web Protection was the nearest with features and the capability of blocking various categories; however it seriously lacked most of the major administrative capabilities the framework demanded. It is also noticeable that the ability of these software to block the advertisements are very low and in the case of GF Pro it is nil.

Even though there are several disadvantages (mostly in terms of the administrative capabilities); AOL Parental control and the K9 Web Protection software seem to be a fairly good choice for those who are looking for a free solution. However this said it is pertinent that there is no complete solution currently available to address all these risks, but Prevention is always better and thus making use of these solutions will only reduce the Risks for children.

Recent Research Indicates that the use of mobile devices to access the Internet is increasing (Livingstone et al, 2010; Euroberometer, 2008/9), also the upcoming new technologies , increasing use of social networking (Livingstone et al, 2010), and even the arise of web 2.0 based new communication channels, etc are all increasingly making it difficult to secure the children online. Children are also increasingly using the Internet for creating content and publishing photos, videos, blogs, etc. Research on these areas can be carried out in these dimensions in future. Another interesting topic for future research is the Open Source Enterprise class solutions for E-Safety. There are only a very few reviews of Enterprise range Open Source Solutions that can be used by schools, small organizations, etc to effectively protect the children from online threats for example Smoothwall, Squid and Dans Guardian together can be used as an effective filter; the open nature of these technologies also make it a more interesting aspect as more research on this direction may result in an increase in attention to these products in this context (E-Safety) and will result in betterment of these products to reflects the suggestions of the research out comes. Many schools and small organizations will be benefited by such research as it can help them save money that they might be investing in similar commercial products.

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